WESTERN PLACERVILLE INTERCHANGES PROJECT PHASE 2

CITY PROJECT NO: 407051
FEDERAL PROJECT NOS: DEMO5LN-5015(023) & ACNH-P050(142)
FTIP ID: ELD 19347/19374
EA: 37281

Addendum No. 2

FOR

CONSTRUCTION MANAGEMENT SERVICES

RELEASE DATE: September 14, 2017

CITY OF PLACERVILLE

Engineering Division
3101 Center Street, 3rd Floor
Placerville, California 95667

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Telephone: (530) 642-5250
City Engineer: Rebecca Neves, P.E.

ATTENTION ALL PROSPECTIVE RESPONDENTS TO THE REQUEST FOR PROPOSAL FOR THE SUBJECT PROJECT:

This Addendum addresses the Additional RFP Questions received on September 13, 2017. The cut-off date for responses to questions was 9/13/2017 at 5:00 pm. The additional questions and responses received prior to the cut-off time are summarized in Attachment 1. Please note that the response to the questions includes reference to the comprehensive list of attachments below.

ATTACHMENTS:

1. Additional RFP Questions Received by September 13, 2017 at 5:00 pm
2. Caltrans and City of Placerville Cooperative Agreement 03-0567
3. El Dorado County Transit Authority and City of Placerville Cooperative Agreement
4. Caltrans and City of Placerville Cooperative Agreement 03-0624
5. Caltrans and City of Placerville Relinquishment Agreement 03-0602
6. City of Placerville and El Dorado Irrigation District Construction Reimbursement Agreement
7. City of Placerville and County of El Dorado Acquisition Agreement
8. Executed Right-of-Way Certification
9. Notice to Owner to El Dorado Irrigation District
10. Utility Agreement with El Dorado Irrigation District
11. Western Placerville Interchange Project Phase 2 – Pre Construction Parcel Transfer Exhibit
12. Western Placerville Interchange Project Phase 2 – Geotechnical Design Report
13. Western Placerville Interchange Project Phase 2 – Drainage Report
14. Western Placerville Interchange Project Phase 2 – Stormwater Data Report
15. Western Placerville Interchange Project Phase 2 – RWQCB Section 401 Certification
16. Western Placerville Interchange Project Phase 2 – Streambed Alteration Agreement
17. Western Placerville Interchange Project Phase 2 – U.S. Army Corps of Engineers Letter of Permission
18. Western Placerville Interchange Project Phase 2 – Stormwater Pollution Prevention Plan

END OF ADDENDUM #2

Attachment 1: Additional RFP Questions Received on September 13, 2017

1. Can we obtain copies of permits and co-operative agreements with other agencies?

   Yes, these Agreements are included in Attachment 2 through Attachment 10.

2. Can we obtain copies of the Right-of-Way exhibit displayed at the pre-proposal conference?

   This exhibit is included as Attachment 11.

3. Can we obtain a copy of materials handouts (to be included with bid documents) and geotechnical recommendations and reports?

   The supplemental reports, permits, and documents are included in Attachment 12 through Attachment 18.

4. When discussing page limits and what is not included, can you clarify what you mean by “Scope of Services” and “contract comments?”

   The proposal shall include the five sections outlined in the Proposal Format Requirements and Evaluation Criteria sections of the RFP. The detailed Scope of Services and contract comments can be included in the Appendix and do not count towards the page limits.

5. Please confirm that the resumes discussed in RFP Section C Qualifications of Proposed Staff should be in the Appendix and do not count towards page limits.

   The detailed resumes described in Section C can be included in the Appendix and do not count towards page limits.

ATTACHMENT 2

COOPERATIVE AGREEMENT
State Independent Quality Assurance (IQA)

This Agreement, effective on _____, is between the State of California, acting through its Department of Transportation, referred to as CALTRANS, and:

City of Placerville, a body politic and municipal corporation or chartered city of the State of California, referred to hereinafter as CITY.

RECITALS

1. PARTNERS are authorized to enter into a cooperative agreement for improvements to the state highway system (SHS) per the California Streets and Highways Code sections 114 and 130.

2. For the purpose of this Agreement, construction of Ray Lawyer Drive eastbound off-ramp, eastbound auxiliary lane, local road improvements, and a park-n-ride facility will be referred to hereinafter as PROJECT.

3. All responsibilities assigned in this Agreement will be referred to hereinafter as OBLIGATIONS, as shown in Attachment 1, attached to and made a part of this Agreement.

4. This Agreement includes the following PROJECT COMPONENTS:

   - Plans, Specifications, and Estimate (PS&E)
   - Right of Way Support (R/W SUPPORT)
   - Right of Way Capital (R/W CAPITAL)

5. This Agreement is separate from and does not modify or replace any other cooperative agreement or memorandum of understanding between PARTNERS regarding the PROJECT.

6. The following work associated with this PROJECT has been completed or is in progress:

   - CITY approved the Environmental Impact Report (EIR) on 11/1/05 (Cooperative Agreement No. 03-0222).
   - FHWA signed and approved the Findings of No Significant Impact on May 16, 2006. An Environmental Revalidation was signed on June 1, 2015.
   - CITY approved Supplemental EIR on June 24, 2014.

7. In this Agreement capitalized words represent defined terms and acronyms.

8. PARTNERS hereby set forth the terms, covenants, and conditions of this Agreement, under which they will accomplish OBLIGATIONS.

RESPONSIBILITIES

9. CITY is SPONSOR for 100% of PROJECT.

10. CITY is the only FUNDING PARTNER for this Agreement. CITY will fund work activities using local fund sources. PARTNERS agree to amend this Agreement prior to the expenditure of state or federal funds.

11. CITY is the IMPLEMENTING AGENCY for:

    - Plans, Specifications, and Estimate (PS&E)
    - Right of Way Support (R/W SUPPORT)
    - Right of Way Capital (R/W CAPITAL)

12. CITY is responsible for all WORK except any other responsibilities specifically assigned to CALTRANS in this Agreement.

13. CITY is the CEQA lead agency for PROJECT.

14. CALTRANS is the CEQA responsible agency for PROJECT.

15. CALTRANS is the NEPA lead agency for PROJECT.

16. CALTRANS will provide Independent Quality Assurance (IQA) for the portions of WORK within existing and proposed SHS right-of-way. Per NEPA assignment and CEQA statutes, CALTRANS will perform its QC/QAP process review for environmental documentation.

SCOPE

General

17. CITY will perform all OBLIGATIONS in accordance with federal and California laws, regulations, and standards; FHWA STANDARDS; and CALTRANS STANDARDS.

18. CALTRANS retains the right to reject noncompliant WORK, protect public safety, preserve property rights, and ensure that all WORK is in the best interest of the SHS.

19. CITY will ensure that personnel participating in OBLIGATIONS are appropriately qualified or licensed to perform the tasks assigned to them.

20. PARTNERS will invite each other to participate in the selection of any consultants who participate in OBLIGATIONS.

21. CALTRANS will issue, upon proper application, the encroachment permits required for WORK within SHS right-of-way. Contractors and/or agents, and utility owners will not perform activities within the SHS right-of-way without an encroachment permit issued in their name.

22. If CITY discovers unanticipated cultural, archaeological, paleontological, or other protected resources during WORK, all WORK in that area will stop and CITY will notify CALTRANS within 24 hours of discovery. WORK may only resume after a qualified professional has evaluated the nature and significance of the discovery and a plan is approved for its removal or protection.

23. PARTNERS will hold all administrative drafts and administrative final reports, studies, materials, and documentation relied upon, produced, created, or utilized for PROJECT in confidence to the extent permitted by law and where applicable, the provisions of California Government Code section 6254.5(e) shall protect the confidentiality of such documents in the event that said documents are shared between PARTNERS.

    PARTNERS will not distribute, release, or share said documents with anyone other than employees, agents, and consultants who require access to complete PROJECT without the written consent of the PARTNER authorized to release them, unless required or authorized to do so by law.

24. If a PARTNER receives a public records request pertaining to OBLIGATIONS, that PARTNER will notify PARTNERS within five (5) working days of receipt and make PARTNERS aware of any disclosed public documents. PARTNERS will consult with each other prior to the release of any public documents related to the PROJECT.

25. If HM-1 or HM-2 is found during any PROJECT COMPONENT, CITY will immediately notify CALTRANS.

26. CALTRANS, independent of PROJECT, is responsible for any HM-1 found within the existing SHS right-of-way. CALTRANS will undertake, or cause to be undertaken, HM MANAGEMENT ACTIVITIES related to HM-1 with minimum impact to PROJECT schedule.

27. CITY, independent of PROJECT, is responsible for any HM-1 found within PROJECT limits and outside the existing SHS right-of-way. CITY will undertake or cause to be undertaken HM MANAGEMENT ACTIVITIES related to HM-1 with minimum impact to PROJECT schedule.

28. If HM-2 is found within PROJECT limits, the public agency responsible for the advertisement, award, and administration (AAA) of the PROJECT construction contract will be responsible for HM MANAGEMENT ACTIVITIES related to HM-2.

29. CALTRANS' acquisition or acceptance of title to any property on which any HM-1 or HM-2 is found will proceed in accordance with CALTRANS' policy on such acquisition.

30. PARTNERS will comply with all of the commitments and conditions set forth in the environmental documentation, environmental permits, approvals, and applicable agreements as those commitments and conditions apply to each PARTNER's responsibilities in this Agreement.

31. Upon OBLIGATION COMPLETION, ownership or title to all materials and equipment constructed or installed for the operations and/or maintenance of the SHS within SHS right-of-way as part of WORK become the property of CALTRANS.

    CALTRANS will not accept ownership or title to any materials or equipment constructed or installed outside SHS right-of-way.

32. CITY will accept, reject, compromise, settle, or litigate claims of any non-Agreement parties hired to do WORK in that component.

33. If WORK stops for any reason, CITY will place PROJECT right-of-way in a safe and operable condition acceptable to CALTRANS.

34. If WORK stops for any reason, CITY will continue to implement all of its applicable commitments and conditions included in the PROJECT environmental documentation, permits, agreements, or approvals that are in effect at the time that WORK stops, as they apply to CITY's responsibilities in this Agreement, in order to keep PROJECT in environmental compliance until WORK resumes.

35. CITY will furnish CALTRANS with all relevant deliverables and history files related to PROJECT facilities on the SHS within one hundred eighty (180) days following the completion of each PROJECT COMPONENT.

Environmental Permits, Approvals and Agreements

36. Each PARTNER identified in the Environmental Permits table below accepts the responsibility to complete the assigned activities. If PARTNERS later determine that an environmental permit, approval or agreement is necessary PARTNERS will amend this Agreement to ensure completion and implementation of all environmental permits, approvals, and agreements.

ENVIRONMENTAL PERMITS						
Permit	**Coordinate**	**Prepare**	**Obtain**	**Implement**	**Renew**	**Amend**
404 USACOE	CITY	CITY	CITY	CITY	CITY	CITY
401 RWQCB	CITY	CITY	CITY	CITY	CITY	CITY
NPDES SWRCB	CITY	CITY	CITY	CITY	CITY	CITY
1602 DFG	CITY	CITY	CITY	CITY	CITY	CITY
U.S. Fish & Wildlife Service	CT	CITY	CITY	CITY	CT	CT

Scope: Plans, Specifications, and Estimate (PS&E)

37. As IMPLEMENTING AGENCY for PS&E, CITY is responsible for all PS&E WORK.

38. PARTNERS acknowledge that the PS&E package must be reviewed and approved by CALTRANS prior to advertisement. CITY will submit plans, specification and estimate work within and affecting the SHS for review, comment and concurrence. CALTRANS will comment at 30%, 60%, 95% and the final package.

Scope: Right-of-way (R/W)

39. CITY agrees to perform all survey work necessary for PROJECT. All survey work shall be performed in conformance with the methods, procedures, and requirements of CALTRANS' Surveys Manual and CALTRANS' Staking Information Booklet.

40. CITY agrees to deliver a copy of all original survey documents resulting from surveys performed for PROJECT, including original field notes, adjustment calculations, final results, and appropriate intermediate documents, to CALTRANS. Documents shall become the property of CALTRANS.

41. CITY agrees to cause, at no cost to CALTRANS, the permanent monumentation of the location of all R/W acquisitions and the re-monumentation of any control or land net monuments destroyed during construction. Land net monuments within the CALTRANS R/W need not be re-monumented, but must be referenced to monuments outside CALTRANS right-of-way. All of the above referenced permanent monumentation and re-monumentation, and the existing land net, are to be shown on a Record of Survey filed with the County Surveyor in conformance with the California Land Surveyors Act. CITY shall deliver one copy of any field notes, Corner Records, with appurtenant back up and reference data and the Record of Survey to CALTRANS for approval prior to submitting the Record of Survey to the County.

42. CITY agrees to provide, at no cost to CALTRANS, all necessary R/W Maps and documents used to acquire R/W by CITY. All maps and documents shall be prepared by or under the direction of a person authorized to practice land surveying in the State of California. All maps and documents shall be prepared in accordance with the State of California R/W Manual, Chapter 6 - R/W Engineering, Plans Preparation Manual, the Surveys Manual, applicable State laws, and other pertinent reference material and examples as provided by CALTRANS. All R/W Maps and Documents shall bear the appropriate professional seal, certificate number, and signature of the licensed person in "Responsible Charge of Work". CITY shall submit to CALTRANS for review and acceptance all documents used to acquire R/W prior to signature of the property grantor. A certified copy of the recorded deeds shall be provided to CALTRANS.

43. CITY agrees to provide, at no cost to CALTRANS for review and acceptance all R/W Engineering Hard Copies and R/W Appraisal Maps with appurtenant back up and reference data prior to the preparation of legal descriptions and acquisition documents.

44. CITY agrees to provide, at no cost to CALTRANS, an electronic copy of the Final R/W Record Maps and the Record of Survey with a hardcopy in Microstation format, including an electronic copy of the file and a color bond copy of each Final R/W Map.

45. CITY agrees to acquire and furnish all R/W, if any, outside of existing SHS R/W and to perform all R/W activities at no cost to CALTRANS, and in accordance with procedures acceptable to CALTRANS. These activities shall comply with all applicable State and Federal laws and regulations, subject to CALTRANS' IQA to insure that the completed work is acceptable for incorporation into SHS R/W.

46. CITY agrees to certify legal and physical control of R/W ready for construction and that all R/W parcels were acquired in accordance with applicable State and Federal laws and regulations, subject to review and concurrence by CALTRANS prior to the advertisement for bids for the contract to construct PROJECT.

47. CITY will provide CALTRANS a copy of conflict maps, Relocation Plan, proposed Notices to Owner, Report of Investigation, and Utility Agreement (if applicable) for CALTRANS' concurrence prior to issuing the Notices to Owner and executing the Utility Agreement. All utility conflicts will be fully addressed prior to R/W Certification and all arrangements for the protection, relocation, or removal of all conflicting facilities will be completed prior to construction contract award and included in the PROJECT plans, specifications, and estimate.

48. CITY will utilize a public agency currently qualified by CALTRANS or a properly licensed consultant for all right-of-way activities. A qualified right-of-way agent will administer all right-of-way consultant contracts in accordance with all state and federal guidelines, policies, practices and procedures, including but not limited to the Caltrans Right of Way Manual.

49. CITY will submit to CALTRANS prior to CALTRANS's granting an encroachment permit, a Right of Way Certification affirming that legal and physical control of all necessary rights of way have been obtained and that title to said rights of way are free and clear of all encumbrances detrimental to CALTRANS' interest.

50. CITY agrees to deliver to CALTRANS' legal title of R/W, including access rights, free and clear of all encumbrances detrimental to STATE's present and future uses not later than the date of acceptance by STATE of maintenance and operation of the SHS facility. Acceptance of said title by STATE is subject to a review of a Policy of Title Insurance in the name of the State of California to be provided and paid for by CITY.

51. CALTRANS' acceptance of right-of-way title is subject to review of an Updated Preliminary Title Report provided by CITY verifying that the title is free of all encumbrances and liens. Upon acceptance, CITY will provide CALTRANS with a Policy of Title Insurance in CALTRANS' name.

52. The California Transportation Commission will hear and may adopt Resolutions of Necessity. However, the authorization to hear and adopt Resolutions of Necessity may be assigned to a LPA if such assignment is approved in writing by CALTRANS.

COST

Cost: General

53. All costs associated with completing the PROJECT, except where otherwise noted in this agreement, are the responsibility of CITY including, but not limited to:

- Public meetings.
- Environmental commitments and compliance.
- Obtaining, implementing and renewing resource agency permits.

54. Legal challenges, awards, judgments, settlements, fines, interest, or penalties levied against a PARTNER will be paid, independent of OBLIGATIONS cost, by the PARTNER whose actions or lack of action caused the levy.

55. CALTRANS, independent of PROJECT, will pay, or cause to be paid, all costs for HM MANAGEMENT ACTIVITIES related to HM-1 found within the existing SHS right-of-way.

56. CITY, independent of PROJECT, will pay, or cause to be paid, all costs for HM MANAGEMENT ACTIVITIES related to HM-1 found within PROJECT limits and outside of the existing SHS right-of-way.

57. Independent of OBLIGATIONS cost, CALTRANS will fund the cost of its own IQA for WORK done within existing or proposed future SHS right-of-way.

    Independent of OBLIGATIONS cost, CALTRANS will fund the cost of its QC/QAP process review for environmental documentation.

58. CALTRANS will provide encroachment permits to PARTNERS, their contractors, consultants and agents, at no cost.

Cost: Plans, Specifications, and Estimate (PS&E)

59. CALTRANS will fund the cost of its own IQA to review, comment and approvals of PS&E.

Cost: Right-of-way (R/W) Support

60. The cost to perform R/W activities, whether inside or outside SHS right-of-way, will be determined in accordance with federal and California laws and regulations, and CALTRANS' policies, procedures, standards, practices, and applicable agreements.

Cost: Right-of-way (R/W) Capital

61. CITY will determine the cost to positively identify and locate, protect, relocate, or remove any utility facilities whether inside or outside SHS right-of-way in accordance with federal and California laws and regulations, and the applicable CALTRANS' policies, procedures, standards, practices, and applicable agreements, including, but not limited to, Freeway Master Contracts.

SCHEDULE

62. CITY will manage the schedule for OBLIGATIONS through the work plan included in the PROJECT MANAGEMENT PLAN.

GENERAL CONDITIONS

63. PARTNERS understand that this Agreement is in accordance with and governed by the Constitution and laws of the State of California. This Agreement will be enforceable in the State of California. Any PARTNER initiating legal action arising from this Agreement will file and maintain that legal action in the Superior Court of the county in which the CALTRANS district office that is signatory to this Agreement resides, or in the Superior Court of the county in which PROJECT is physically located.

64. All OBLIGATIONS of CALTRANS under the terms of this Agreement are subject to the appropriation of resources by the Legislature, the State Budget Act authority, and the allocation of funds by the California Transportation Commission.

65. When CALTRANS performs IQA activities it does so for its own benefit. No one can assign liability to CALTRANS due to its IQA activities.

66. Neither CITY nor any officer or employee thereof is responsible for any injury, damage or liability occurring by reason of anything done or omitted to be done by CALTRANS and/or its agents under or in connection with any work, authority, or jurisdiction conferred upon CALTRANS under this Agreement. It is understood and agreed that CALTRANS, to the extent permitted by law, will defend, indemnify, and save harmless CITY and all of its officers and employees from all claims, suits, or actions of every name, kind, and description brought forth under, but not limited to, tortious, contractual, inverse condemnation, or other theories and assertions of liability occurring by reason of anything done or omitted to be done by CALTRANS and/or its agents under this Agreement.

67. Neither CALTRANS nor any officer or employee thereof is responsible for any injury, damage, or liability occurring by reason of anything done or omitted to be done by CITY, its contractors, sub-contractors, and/or its agents under or in connection with any work, authority, or jurisdiction conferred upon CITY under this Agreement. It is understood and agreed that CITY, to the extent permitted by law, will defend, indemnify, and save harmless CALTRANS and all of its officers and employees from all claims, suits, or actions of every name, kind, and description brought forth under, but not limited to, tortious, contractual, inverse condemnation, or other theories and assertions of liability occurring by reason of anything done or omitted to be done by CITY, its contractors, sub-contractors, and/or its agents under this Agreement.

68. PARTNERS do not intend this Agreement to create a third party beneficiary or define duties, obligations, or rights in parties not signatory to this Agreement. PARTNERS do not intend this Agreement to affect their legal liability by imposing any standard of care for fulfilling OBLIGATIONS different from the standards imposed by law.

69. PARTNERS will not assign or attempt to assign OBLIGATIONS to parties not signatory to this Agreement.

70. PARTNERS will not interpret any ambiguity contained in this Agreement against each other. PARTNERS waive the provisions of California Civil Code section 1654.

71. A waiver of a PARTNER's performance under this Agreement will not constitute a continuous waiver of any other provision. An amendment made to any article or section of this Agreement does not constitute an amendment to or negate all other articles or sections of this Agreement.

72. A delay or omission to exercise a right or power due to a default does not negate the use of that right or power in the future when deemed necessary.

73. If any PARTNER defaults in its OBLIGATIONS, a non-defaulting PARTNER will request in writing that the default be remedied within thirty (30) calendar days. If the defaulting PARTNER fails to do so, the non-defaulting PARTNER may initiate dispute resolution.

74. PARTNERS will first attempt to resolve Agreement disputes at the PROJECT team level. If they cannot resolve the dispute themselves, the CALTRANS district director and the executive officer of CITY will attempt to negotiate a resolution. If PARTNERS do not reach a resolution, PARTNERS' legal counsel will initiate mediation. PARTNERS agree to participate in mediation in good faith and will share equally in its costs.

75. Neither the dispute nor the mediation process relieves PARTNERS from full and timely performance of OBLIGATIONS in accordance with the terms of this Agreement. However, if any PARTNER stops fulfilling OBLIGATIONS, any other PARTNER may seek equitable relief to ensure that OBLIGATIONS continue.

    Except for equitable relief, no PARTNER may file a civil complaint until after mediation, or forty-five (45) calendar days after filing the written mediation request, whichever occurs first.

    PARTNERS will file any civil complaints in the Superior Court of the county in which the CALTRANS district office signatory to this Agreement resides or in the Superior Court of the county in which PROJECT is physically located. The prevailing PARTNER will be entitled to an award of all costs, fees, and expenses, including reasonable attorney fees as a result of litigating a dispute under this Agreement or to enforce the provisions of this article including equitable relief.

76. PARTNERS maintain the ability to pursue alternative or additional dispute remedies if a previously selected remedy does not achieve resolution.

77. If any provisions in this Agreement are found by a court of competent jurisdiction to be, or are in fact, illegal, inoperative, or unenforceable, those provisions do not render any or all other Agreement provisions invalid, inoperative, or unenforceable, and those provisions will be automatically severed from this Agreement.

78. PARTNERS intend this Agreement to be their final expression and supersedes any oral understanding or writings pertaining to OBLIGATIONS.

79. If during performance of WORK additional activities or environmental documentation is necessary to keep PROJECT in environmental compliance, PARTNERS will amend this Agreement to include completion of those additional tasks.

80. If the work performed on this Project is done under contract and falls within the Labor Code section 1720(a)(1) definition of "public works" in that it is construction, alteration, demolition, installation, or repair; or maintenance work under Labor Code section 1771 CITY must conform to the provisions of Labor Code sections 1720 through 1815, and all applicable provisions of California Code of Regulations found in Title 8, Chapter 8, Subchapter 3, Articles 1-7. CITY agrees to include prevailing wage requirements in its contracts for public works. Work performed by 's own forces is exempt from the Labor Code's Prevailing Wage requirements.

    CITY shall require its contractors to include prevailing wage requirements in all subcontracts funded by this Agreement when the work to be performed by the subcontractor is "public works" as defined in Labor Code Section 1720(a)(1) and Labor Code Section 1771. Subcontracts shall include all prevailing wage requirements set forth in CITY/COUNTY's contracts.

81. Except as otherwise provided in the Agreement, PARTNERS will execute a formal written amendment if there are any changes to OBLIGATIONS.

82. PARTNERS agree to sign a COOPERATIVE AGREEMENT CLOSURE STATEMENT to terminate this Agreement. However, all indemnification, document retention, audit, claims, environmental commitment, legal challenge, maintenance and ownership articles will remain in effect until terminated or modified in writing by mutual agreement.

DEFINITIONS

CALTRANS STANDARDS – CALTRANS policies and procedures, including, but not limited to, the guidance provided in the *Guide to Capital Project Delivery Workplan Standards* (previously known as WBS Guide) available at www.dot.ca.gov/hq/projmgmt/guidance.htm.

CEQA (California Environmental Quality Act) – The act (California Public Resources Code, sections 21000 et seq.) that requires state and local agencies to identify the significant environmental impacts of their actions and to avoid or mitigate those significant impacts, if feasible.

CONSTRUCTION CAPITAL – See PROJECT COMPONENT.

COOPERATIVE AGREEMENT CLOSURE STATEMENT – A document signed by PARTNERS that verifies the completion of all OBLIGATIONS included in this Agreement and in all amendments to this Agreement.

FHWA – Federal Highway Administration

FHWA STANDARDS – FHWA regulations, policies and procedures, including, but not limited to, the guidance provided at www.fhwa.dot.gov/topics.htm.

FUNDING PARTNER – A PARTNER that commits funds to fulfill OBLIGATIONS. Each FUNDING PARTNER accepts responsibility to provide the funds it commits in this Agreement.

HM-1 – Hazardous material (including, but not limited to, hazardous waste) that may require removal and disposal pursuant to federal or state law whether it is disturbed by PROJECT or not.

HM-2 – Hazardous material (including, but not limited to, hazardous waste) that may require removal and disposal pursuant to federal or state law only if disturbed by PROJECT.

HM MANAGEMENT ACTIVITIES – Management activities related to either HM-1 or HM-2 including, without limitation, any necessary manifest requirements and disposal facility designations.

IMPLEMENTING AGENCY – The PARTNER is responsible for managing the scope, cost, and schedule of a PROJECT COMPONENT to ensure the completion of that component.

IQA (Independent Quality Assurance) – Ensuring that the IMPLEMENTING AGENCY's quality assurance activities result in WORK being developed in accordance with the applicable standards and within an established Quality Management Plan (QMP). IQA does not include any work necessary to actually develop or deliver WORK or any validation by verifying or rechecking work performed by another PARTNER.

NEPA (National Environmental Policy Act of 1969) – This federal act establishes a national policy for the environment and a process to disclose the adverse impacts of projects with a federal nexus.

OBLIGATION COMPLETION – PARTNERS have fulfilled all OBLIGATIONS included in this Agreement, and all amendments to this Agreement, and have signed a COOPERATIVE AGREEMENT CLOSURE STATEMENT.

OBLIGATIONS – All responsibilities to complete the PROJECT COMPONENTS in this Agreement.

PARTNER – Any individual signatory party to this Agreement.

PARTNERS – The term that collectively references all of the signatory agencies to this Agreement. This term only describes the relationship between these agencies to work together to achieve a mutually beneficial goal. It is not used in the traditional legal sense in which one PARTNER's individual actions legally bind the other PARTNER.

PROJECT COMPONENT – A distinct portion of the planning and project development process of a capital project as outlined in California Government Code, section 14529(b).

- **PID (Project Initiation Document)** – The activities required to deliver the project initiation document for PROJECT.
- **PA&ED (Project Approval and Environmental Document)** – The activities required to deliver the project approval and environmental documentation for PROJECT.
- **PS&E (Plans, Specifications, and Estimate)** – The activities required to deliver the plans, specifications, and estimate for PROJECT.
- **R/W (Right-of-way) SUPPORT** –The activities required to obtain all property interests for PROJECT.
- **R/W (Right-of-way) CAPITAL** – The funds for acquisition of property rights for PROJECT.
- **CONSTRUCTION SUPPORT** – The activities required for the administration, acceptance, and final documentation of the construction contract for PROJECT.
- **CONSTRUCTION CAPITAL** – The funds for the construction contract.

PROJECT MANAGEMENT PLAN – A group of documents used to guide a project's execution and control throughout that project's lifecycle.

PS&E (Plans, Specifications, and Estimate) – See PROJECT COMPONENT.

QMP (Quality Management Plan) – An integral part of the PROJECT MANAGEMENT PLAN that describes IMPLEMENTING AGENCY's quality policy and how it will be used.

QC/QAP (QUALITY CONTROL/QUALITY ASSURANCE PROGRAM) – Per NEPA assignment CALTRANS will review all environmental documents as described in the Jay Norvell Memos dated October 1, 2012 (available at http://www.dot.ca.gov/ser/memos.htm). This also includes the independent judgment, analysis, and determination under CEQA that the environmental documentation meets CEQA statute and Guideline requirements.

R/W (Right-of-way) CAPITAL – See PROJECT COMPONENT.

R/W (Right-of-way) SUPPORT – See PROJECT COMPONENT.

SHS (State Highway System) – All highways, right-of-way, and related facilities acquired, laid out, constructed, improved, or maintained as a state highway pursuant to constitutional or legislative authorization.

SPONSOR – Any PARTNER that accepts the responsibility to establish scope of PROJECT and the obligation to secure financial resources to fund PROJECT. SPONSOR is responsible for adjusting the PROJECT scope to match committed funds or securing additional funds to fully fund the PROJECT scope. If a PROJECT has more than one SPONSOR, funding adjustments will be made by percentage (as outlined in Responsibilities). Scope adjustments must be developed through the project development process and must be approved by CALTRANS as the owner/operator of the SHS.

WORK – All efforts to complete the PROJECT COMPONENTS included in this Agreement as described by the activities in the Caltrans Workplan Standards Guide for the Delivery of Capital Projects (previously known as the WBS Guide) available at http://www.dot.ca.gov/hq/projmgmt/guidance.htm.

ATTACHMENT 1
DESIGN PHASE ACTIVITIES

PROJECT ACTIVITY	RESPONSIBILITY CT	CITY
1. PRELIMINARY COORDINATION		
Request 1 - Phase EA	X	
Field Review of Site	X	X
Provide Geometrics		X
Approve Geometrics	X	
Obtain Surveys & Aerial Mapping		X
Obtain Copies of Assessor Maps and Other R/W Maps		X
Obtain Copies of As-Builts		X
Send Approved Geometrics to Local Agencies for Review	X	
Revise Approved Geometrics if Required		X
Approve Final Geometrics	X	
Determine Need for Permits from Other Agencies	X	X
Request Permits		X
Initial Hydraulics Discussion with District Staff		X
Initial Electrical Design Discussion with District Staff		X
Initial Traffic & Signing Discussion with District Staff		X
Initial Landscape Design Discussion with District Staff		X
Plan Sheet Format Discussion	X	X
2. ENGINEERING STUDIES AND REPORTS		
Prepare & Submit Materials Report & Typical Section		X
Review and Approve Materials Report & Typical Section	X	
Prepare & Submit Landscaping Recommendation		X
Review & Approve Landscaping Recommendation	X	
Prepare & Submit Hydraulic Design Studies		X
Review & Approve Hydraulic Design Studies	X	
Prepare & Submit Bridge General Plan & Structure Type Selection		X
Review & Approve Bridge General Plan & Structure Type Selection	X	

PROJECT ACTIVITY	RESPONSIBILITY CT	CITY
3. R/W ACQUISITION & UTILITIES		
(Used when qualified Local Agency is performing R/W activities.)		
Request Utility Verification		X
Request Preliminary Utility Relocation Plans from Utilities		X
Prepare R/W Requirements		X
Prepare R/W and Utility Relocation Cost Estimates		X
Submit R/W Requirements & Utility Relocation Plans for Review		X
Review and Comment on R/W Requirements	X	
Longitudinal Encroachment Review	X	
Longitudinal Encroachment Application to District		X
Approve Longitudinal Encroachment Application	X	
Request Final Utility Relocation Plans		X
Check Utility Relocation Plans		X
Submit Utility Relocation Plans for Approval		X
Approve Utility Relocation Plans	X	
Submit Final R/W Requirements for Review & Approval		X
Fence and Excess Land Review	X	
R/W Layout Review	X	
Approve R/W Requirements	X	
Obtain Title Reports		X
Complete Appraisals		X
Review Appraisals for Setting Just Compensation	X	
Prepare Acquisition Documents		X
Acquire R/W		X
Open escrows and Make Payments		X
Obtain Resolution of Necessity		X
Obtain RON approval from R/W Program Manager	X	
Perform Eminent Domain Proceedings		X
Provide Displacee Relocation Services		X
Prepare Relocation Payment Valuations		X
Provide Displacee Relocation Payments		X
Perform Property Management Activities		X
Perform R/W Clearance Activities		X
Prepare and Submit Certification of R/W		X
Review and accept Certification of R/W	X	
Transfer R/W to STATE - Approve & Record Title Transfer Documents	X	
Prepare R/W Record Maps		X

PROJECT ACTIVITY	RESPONSIBILITY CT	CITY
4. PREPARATION OF PLANS, SPECIFICATIONS AND ESTIMATES		
Prepare and Submit Preliminary Stage Construction Plans		X
Review Preliminary Stage Construction Plans	X	
Calculate and Plot Geometrics		X
Cross-Sections & Earthwork Quantities Calculation		X
Prepare and Submit BEES Estimate		X
Put Estimate in BEES	X	
Local Review of Preliminary Drainage Plans and Sanitary Sewer and Adjustment Details		X
Prepare & Submit Preliminary Drainage Plans		X
Review Preliminary Drainage Plans	X	
Prepare Traffic Striping and Roadside Delineation Plans & Submit for Review		X
Review Traffic Striping and Roadside Delineation Plans	X	
Prepare & Submit Landscaping and/or Erosion Control Plans		X
Review Landscaping and/or Erosion Control Plans	X	
Prepare & Submit Preliminary Electrical Plans		X
Review Preliminary Electrical Plans	X	
Prepare & Submit Preliminary Signing Plans		X
Review Preliminary Signing Plans	X	
Quantity Calculations		X
Safety Review	X	X
Prepare Specifications		X
Prepare & Submit Checked Structure Plans		X
Review & Approve Checked Structure Plans	X	
Prepare Final Contract Plans		X
Prepare Lane Closure Requirements		X
Review and Approve Lane Closure Requirements	X	
Prepare & Submit Striping Plan		X
Review & Approve Striping Plan	X	
Prepare Final Estimate		X
Prepare & Submit Draft PS&E		X
Review Draft PS&E	X	
Finalize & Submit PS&E to District		X

CONTACT INFORMATION

The information provided below indicates the primary contact information for each PARTNER to this Agreement. PARTNERS will notify each other in writing of any personnel or location changes. Contact information changes do not require an amendment to this Agreement.

CALTRANS:

Jess Avila, Project Manager
703 B Street
Marysville, CA 95901
Office Phone: (530) 741-4533
Mobile Phone: (590) 682-8488
Email: Jess.Avila@dot.ca.gov

CITY OF PLACERVILLE

Rebecca Neves, City Engineer
3101 Center Street
Placerville, CA 95667
Office Phone: (530) 642-5526
Email: rneves@cityofplacerville.org

SIGNATURES

PARTNERS declare that:

1. Each PARTNER is an authorized legal entity under California state law.
2. Each PARTNER has the authority to enter into this Agreement.
3. The people signing this Agreement have the authority to do so on behalf of their public agencies.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

By:_____
Thomas L. Brannon
Deputy District Director, D3 Programming and Project Management

CERTIFIED AS TO FUNDS:

By:_____

District Project Control Officer

CITY OF PLACERVILLE

By: _____
Cleve Morris
City Manager

ATTEST:

By: _____
Susan Zito
City Clerk

APPROVED AS TO FORM AND PROCEDURE:

By: _____
John Driscoll
City Attorney

CLOSURE STATEMENT INSTRUCTIONS

SAMPLE

If the following questions are ALL answered "YES" then this form may be used to terminate this Agreement.

1. Did PARTNERS complete all scope, cost and schedule commitments included in this Agreement and any amendments to this Agreement?

2. Did CALTRANS accept and approve all final deliverables submitted by CITY?

3. Did the CALTRANS HQ Office of Accounting verify that all final accounting for this Agreement and any amendments to this Agreement were completed?

4. If construction is involved, did the CALTRANS District Project Manager verify that all claims and third party billings (utilities, etc.) have been settled before termination of the Agreement?

5. Did PARTNERS complete and transmit all As-Builts and other required contract documents?

COOPERATIVE AGREEMENT CLOSURE STATEMENT

PARTNERS agree that they have completed all scope, cost, and schedule commitments included in Cooperative Agreement 03-0567 and any amendments to this Agreement.

The final signature date on this document terminates Cooperative Agreement 03-0567 except survival articles.

All survival articles in Cooperative Agreement 03-0567 will remain in effect until expired by law, terminated or modified in writing by PARTNER's mutual agreement, whichever occurs earlier.

The people signing this Agreement have the authority to do so on behalf of their public agencies.

SAMPLE

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

By: _____

Name:

Deputy District Director, D3
Programming and Project
Management

Date: _____

CERTIFIED AS TO ALL FINANCIAL OBLIGATIONS/TERMS AND POLICIES

By: _____

Name:

District Project Control Officer

CITY

By: _____

Name:

Title TBD

Date: _____

ATTACHMENT 3

AGREEMENT FOR CONSTRUCTION OF PARK AND RIDE

This Agreement for the construction of a park and ride facility is entered into by and between the El Dorado County Transit Authority ("Transit") and the City of Placerville ("City") (collectively the "Parties").

RECITALS

A. The City is planning to build a highway interchange along Highway 50 on the western edge of Placerville, known as the Western Placerville Interchanges project ("WPI" project).

B. A Transit park and ride lot is planned adjacent to the WPI project.

C. The Parties propose to include the park and ride as part of the complete construction package for Phase 2 of the WPI project.

D. Overall costs related to right-of-way acquisition, physical construction, design, processing, permitting and related matters will be reduced if the park and ride is included in the WPI project.

E. Dokken Engineering has prepared preliminary plans and estimates for the WPI project, including the park and ride facility, and has determined their relative costs.

F. Transit has approved Capital Improvement Plan #12-06, which will fund the WPI park and ride facility by allocation of Public Transportation Modernization, Improvement, and Service Enhancement Account Program funds in the amount of $1,270,620; Congestion Mitigation Air Quality (CMAQ) grant funds in the amount of $1,100,000; and State Transit Assistance funds in the amount of $330,000, totaling $2,700,620 which is the estimated cost for the complete build-out of the park and ride facility.

G. Transit has provided its share of costs for preliminary design and environmental review of the park and ride portion of the WPI project in the amount of $15,000.00.

H. Right of Way for Phase 2 is owned by various public agencies and will require realignment to support Phase 2 improvements, which the City will accomplish as part of Phase 2 work; no right of way capital costs are anticipated.

I. The funding Transit has obtained for the project will pass through to the City, which will complete final design, secure right of way, and construct the park and ride facility in the course of the WPI project. Upon completion of construction, the completed park and ride facility will be conveyed in fee to Transit.

NOW THEREFORE, the Parties hereto agree as follows:

1. City Completion of the Park and Ride

City shall, in a workmanlike manner, faithfully and fully construct or cause to be constructed the park and ride facility, in accordance with mutually agreed upon plans and specifications prepared by Dokken Engineering. All construction and installation work shall be in accordance with all applicable state and local rules, regulations, and ordinances, including but not limited to, applicable Public Contract Code sections, City and/or County bidding requirements, Labor Code requirements inclusive of prevailing wage, and State licensing regulations. The park and ride facility will be inspected by Transit, or its designee. The park and ride facility will be rejected if it is not in conformity with the plans and specifications. Rejected work shall immediately be corrected by City or its contractor. When the work is substantially completed, City must notify Transit in writing that the work will be ready for final inspection on a definite date, at least five (5) business days thereafter. Prior to award, City and Transit shall mutually agree to proceed following verification of funding to construct the project. City is under no obligation to build the park and ride if the roadway project does not proceed.

2. Payment for the Park and Ride

A. Transit's share of costs for all phases of the park and ride portion of the WPI project will be determined by actual costs for services, bidding, and construction contract award. Dokken Engineering shall prepare a spreadsheet showing items of work applicable to the park and ride portion of the project, including the percentage of each item of work attributable to the park and ride facility, as a basis for determining Transit's share of costs. Said percentages shall be applicable to each item of work as shown in the Engineer's Cost Estimate and Bid Summary for the project. The City will not charge Transit local planning or permitting fees for construction of the park and ride facility.

B. Transit shall pay to the City actual costs in an estimated amount to the sum of $2,700,000.00 for final design, right of way transfer services, bidding, construction support, construction management, and construction of the park and ride facility. Upon payment, the City will be fully responsible for construction of the park and ride during Phase 2 of the WPI project pursuant to Dokken Engineering's plans and specifications, including securing right-of-way, permitting and mitigation, bid process, construction, supervision of contractors and subcontractors, and inspection and approval of materials and work. Payment by Transit to City shall be based upon invoices submitted to Transit by City for work that has been completed and approved by City. The invoice shall designate the work completed and the allocation of costs in

relation to the total amount to be paid by Transit. Work for construction shall be based upon invoices submitted by Contractor and approved by City.

C. In the event the lowest responsible bid exceeds the construction cost estimate, the City will determine the portion of the increased cost to be attributed to Transit for the park & ride facility, based on actual costs from service providers, as provided for in paragraph 1. Time is of the essence in making this determination. Prior to City awarding the bid with an increased cost that will obligate additional Transit funds, City will consult with and obtain Transit's approval for the additional Transit costs. If the amount exceeds Transit's available funding, the park and ride portion of the project shall not be completed and Transit shall be responsible for completing the park and ride facility at a later date. In such event, the City will convey the property for the park and ride facility in fee to Transit and Transit shall be responsible for completing the park and ride portion of the project at a later date.

D. In the event the lowest responsible bid is less than the construction cost estimate, the City will determine the portion of the decreased cost to be attributed to Transit for the park & ride facility, based on actual costs from service providers. In such event, Transit's financial obligation under paragraph 2 shall be reduced.

E. In the event the contractor submits a change order request during construction that would increase Transit's financial obligation to the Project, the City will determine the portion of the increased cost to be attributed to Transit as a result of the change order, based on actual costs from service providers, as provided for in paragraph 1. Time is of the essence in making this determination. Prior to City issuing the change order that would obligate additional Transit funds, City will consult with and obtain Transit's approval for the additional Transit costs.

3. Warranty.

City shall ensure that the contractor awarded the work warrants the materials and workmanship utilized on the Project for a period of one (1) year and shall make such replacements and repairs during such one (1) year period, at the contractor's sole cost and expense, as are necessary due to defects.

4. Performance and Payment Bonds.

City shall ensure that the contractor awarded the work provides Performance and Payment Bonds that name Transit as an additional obligee, and that include a one (1) year warranty provision in the Performance Bond against defects in materials and workmanship.

5. Insurance.

City shall require each and every contractor and subcontractor that performs work on the Project to include Transit as an additional named insured in the insurance provided by the Contractor to the City on the Project and that all insurance provisions provided to protect City are also provided to Transit. City shall ensure that contractor's insurance coverage shall be primary insurance as respects Transit and City, their officers, officials, employees, and volunteers. Any insurance or self-insurance maintained by Transit or City, their officers, officials, employees, or volunteers shall be in excess of contractor's insurance and shall not contribute with it.

6. Conveyance of Park and Ride to Transit

Upon completion of the park and ride facility and the final mapping of the WPI Project, the City shall take all steps necessary to convey the park and ride in fee to Transit.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed as of the day and year written below.

EL DORADO COUNTY TRANSIT AUTHORITY	**CITY OF PLACERVILLE**
Date: _____	**Date:** _____
By: _____	**By:** _____
Mindy Jackson	**Cleve Morris**
Executive Director	**City Manager**

ATTACHMENT 4

COOPERATIVE AGREEMENT

This AGREEMENT, effective on MAY 16, 2017, is between the State of California, acting through its Department of Transportation, referred to as CALTRANS, and:

City of Placerville, a body politic and municipal corporation or chartered city of the State of California, referred to hereinafter as CITY.

RECITALS

1. PARTIES are authorized to enter into a cooperative agreement for improvements to the State Highway System per the California Streets and Highways Code sections 114 and 130.

2. For the purpose of this AGREEMENT, Western Placerville I/C Phase 2: Ray Lawyer E/B off-ramp, mainline improvements, local road improvements, pedestrian and bicycle improvements and the construction of a park and ride lot will be referred to hereinafter as PROJECT. The PROJECT scope of work is defined in the Project Report approved January 15, 2008. Supplemental Project Report approved August 4, 2015 and a Supplemental Project Report #2 was approved March 10, 2017.

3. All obligations and responsibilities assigned in this AGREEMENT to complete the following PROJECT COMPONENT will be referred to hereinafter as WORK:

   - CONSTRUCTION

   Each PROJECT COMPONENT is defined in the CALTRANS Workplan Standards Guide as a distinct group of activities/products in the project planning and development process.

4. The term AGREEMENT, as used herein, includes this document and any attachments, exhibits, and amendments.

   This AGREEMENT is separate from and does not modify or replace any other cooperative agreement or memorandum of understanding between the PARTIES regarding the PROJECT.

   PARTIES intend this AGREEMENT to be their final expression that supersedes any oral understanding or writings pertaining to the WORK. The requirements of this AGREEMENT will preside over any conflicting requirements in any documents that are made an express part of this AGREEMENT.

   If any provisions in this AGREEMENT are found by a court of competent jurisdiction to be, or are in fact, illegal, inoperative, or unenforceable, those provisions do not render any or all other AGREEMENT provisions invalid, inoperative, or unenforceable, and those provisions will be automatically severed from this AGREEMENT.

   Except as otherwise provided in the AGREEMENT, PARTIES will execute a written amendment if there are any changes to the terms of this AGREEMENT.

   PARTIES agree to sign a CLOSURE STATEMENT to terminate this AGREEMENT. However, all indemnification, document retention, audit, claims, environmental commitment, legal challenge, maintenance and ownership articles will remain in effect until terminated or modified in writing by mutual agreement or expire by the statute of limitations.

5. The following work associated with this PROJECT has been completed or is in progress:

   - CITY adopted the Original EIR and approved the project on November 22, 2005; and adopted the Supplemental EIR on June 17, 2014.
   - The FONSI was first issued by FHWA on May 18, 2006; and NEPA was Revalidation most currently June 1, 2015.
   - PARTIES executed PA&ED Cooperative Agreement 03-0222 on September 10, 2002 and PS&E and R/W Cooperative Agreement 03-0567 on September 1, 2015. R/W Certification is anticipated in June 2017.
   - PARTIES will also enter into a Relinquishment Agreement 03-0602.

6. In this AGREEMENT capitalized words represent defined terms, initialisms, or acronyms.

7. PARTIES hereby set forth the terms, covenants, and conditions of this AGREEMENT.

RESPONSIBILITIES

Sponsorship

8. A SPONSOR is responsible for establishing the scope of the PROJECT and securing the financial resources to fund the WORK. A SPONSOR is responsible for securing additional funds when necessary or implementing PROJECT changes to ensure the WORK can be completed with the funds obligated in this AGREEMENT.

   PROJECT changes, as described in the CALTRANS Project Development Procedures Manual, will be approved by CALTRANS as the owner/operator of the State Highway System.

9. CITY is the SPONSOR for the WORK in this AGREEMENT.

Implementing Agency

10. The IMPLEMENTING AGENCY is the PARTY responsible for managing the scope, cost, schedule, and quality of the work activities and products of a PROJECT COMPONENT.

    - CITY is the Construction IMPLEMENTING AGENCY.

      CONSTRUCTION work includes construction contract administration, surveying/staking, inspection, quality assurance, and assuring regulatory compliance, including but not limited to contract acceptance and closeout. The CONSTRUCTION component budget identifies the capital costs of the construction contract/furnished materials (CONSTRUCTION Capital) and the cost of the staff work in support of the construction contract administration (CONSTRUCTION Support).

11. The IMPLEMENTING AGENCY for a PROJECT COMPONENT will provide a Quality Management Plan (QMP) for the WORK in that component. The Quality Management Plan describes the IMPLEMENTING AGENCY's quality policy and how it will be used. The Quality Management Plan will include a process for resolving disputes between the PARTIES at the team level. The Quality Management Plan is subject to CALTRANS review and approval.

12. Any PARTY responsible for completing WORK will make its personnel and consultants that prepare WORK available to help resolve WORK-related problems and changes for the entire duration of the PROJECT including PROJECT work that may occur under separate agreements.

Funding

13. Funding sources, PARTIES committing funds, funding amounts, and invoicing/payment details are documented in the Funding Summary of this AGREEMENT.

    PARTIES will amend this AGREEMENT by updating and replacing the Funding Summary, in its entirety, each time the funding details change. Funding Summary replacements will be executed by a legally authorized representative of the respective PARTIES. The most current fully executed Funding Summary supersedes any previous Funding Summary created for this AGREEMENT.

14. PARTIES will not be reimbursed for costs beyond the funds obligated in this AGREEMENT.

15. Unless otherwise documented in the Funding Summary, overall liability for project costs within a PROJECT COMPONENT will be in proportion to the amount contributed to that PROJECT COMPONENT by each fund type, except CMAQ funds which will be used only toward pedestrian and bicycle improvements and the park and ride lot portions of PROJECT. SHOPP funds will be used on roadway/mainline improvements portion of PROJECT.

16. Federally ineligible work shall not be paid with a Federal or Local-Federal fund type, or the portion of a non-Federal fund type used as a match for a Federal or Local-Federal fund type. PARTIES shall ensure any fund type used for federally ineligible work will not exceed proportional share of fund type within PROJECT COMPONENT.

17. Unless otherwise documented in the Funding Summary, any savings recognized within a PROJECT COMPONENT will be credited or reimbursed, when allowed by policy or law, in proportion to the amount contributed to that PROJECT COMPONENT by each fund type.

18. WORK costs, except those that are specifically excluded in this AGREEMENT, are to be paid from the funds obligated in the Funding Summary. Costs that are specifically excluded from the funds obligated in this AGREEMENT are to be paid by the PARTY incurring the costs from funds that are independent of this AGREEMENT.

CALTRANS' Quality Management

19. CALTRANS, as the owner/operator of the State Highway System, will perform quality management work including independent quality assurance and owner/operator approvals for the portions of WORK within the existing and proposed State Highway System right-of-way.

20. CALTRANS' independent quality assurance efforts are to ensure that CITY's quality assurance results in WORK that is in accordance with the applicable standards and the PROJECT's quality management plan (QMP). Independent quality assurance does not include any efforts necessary to develop or deliver WORK or any validation by verifying or rechecking WORK.

    When CALTRANS performs independent quality assurance it does so for its own benefit. No one can assign liability to CALTRANS due to its independent quality assurance.

21. CALTRANS, as the owner/operator of the State Highway System, will approve WORK products in accordance with CALTRANS policies and guidance and as indicated in this AGREEMENT.

22. CITY will provide WORK-related products and supporting documentation upon CALTRANS' request for the purpose of CALTRANS' quality management work.

CEQA/NEPA Lead Agency

23. CITY is the CEQA Lead Agency for the PROJECT.

24. CALTRANS is a CEQA Responsible Agency for the PROJECT.

25. CALTRANS is the NEPA Lead Agency for the PROJECT.

Environmental Permits, Approvals and Agreements

26. PARTIES will comply with the commitments and conditions set forth in the environmental documentation, environmental permits, approvals, and applicable agreements as those commitments and conditions apply to each PARTIES responsibilities in this AGREEMENT.

27. Unless otherwise assigned in this AGREEMENT, the IMPLEMENTING AGENCY for a PROJECT COMPONENT is responsible for all PROJECT COMPONENT WORK associated with coordinating, obtaining, implementing, renewing, and amending the PROJECT permits, agreements, and approvals whether they are identified in the planned project scope of work or become necessary in the course of completing the PROJECT.

28. The PROJECT requires the following environmental permits/approvals:

ENVIRONMENTAL PERMITS/REQUIREMENTS
404, US Army Corps Of Engineers
401, Regional Water Quality Control Board
National Pollutant Discharge Elimination System (NPDES), State Water Resources Control Board
Federal Endangered Species Act Consultation
1602 California Department of Fish and Wildlife

CONSTRUCTION

29. As the CONSTRUCTION IMPLEMENTING AGENCY, CITY is responsible for all CONSTRUCTION WORK except those activities and responsibilities that are assigned to another PARTY and those activities that are excluded under this AGREEMENT.

30. CALTRANS will be responsible for completing the following CONSTRUCTION SUPPORT activities:

CALTRANS Work Breakdown Structure Identifier (If Applicable)	AGREEMENT Funded Cost
100.20.10.xx Quality Management	No

31. Physical and legal possession of the right-of-way must be completed prior to advertising the construction contract, unless PARTIES mutually agree to other arrangements in writing.

32. Right-of-way conveyances must be completed prior to M800 End Project completion, unless PARTIES mutually agree to other arrangements in writing. Including but not limited to CITY's dedication of right of way, as outlined in Exhibit A, to CALTRANS. CALTRANS right of way that is to be relinquished to CITY outlined in the Relinquishment Agreement 03-0602.

33. CITY will include a Disadvantaged Business Enterprise (DBE) utilization goal in the PROJECT construction contract(s) in accordance with the *Local Assistance Procedures Manual*. CITY will award the construction contract to the lowest responsive bidder who makes a Good Faith Effort to meet the DBE goal.

34. CALTRANS will not issue an Encroachment Permit to CITY for construction work until the following conditions are met:

    - CALTRANS accepts the final plans, specifications, and estimate
    - CALTRANS accepts the Right-of-Way Certification
    - Environmental Certification is obtained for PROJECT
    - Any new or amended Freeway and Electrical Maintenance Agreements required for the WORK are executed.

35. CITY will require the construction contractor to furnish payment and performance bonds naming CITY as obligee, and CALTRANS as additional obligee, and to carry liability insurance in accordance with CALTRANS Standard Specifications.

36. CITY will advertise, open bids, award, and approve the construction contract in accordance with the California Public Contract Code and the California Labor Code. By accepting responsibility to advertise and award the construction contract, CITY also accepts responsibility to administer the construction contract.

37. If the lowest responsible construction contract bid is greater than the funding commitment to CONSTRUCTION CAPITAL, PARTIES must agree in writing on a course of action within fifteen (15) working days. If no agreement is reached within fifteen (15) work days the IMPLEMENTING AGENCY will not award the construction contract.

38. CALTRANS will not issue an Encroachment Permit to CITY's construction contractor until CALTRANS accepts:

    - The payment and performance bonds
    - The CONSTRUCTION Quality Management Plan

39. The CONSTRUCTION Quality Management Plan will describe how construction material verification and workmanship inspections will be performed at manufacturing sources and the PROJECT job-site. The construction material and source inspection Quality Management Plan is subject to review and approval by the State Materials Engineer.

40. The CONSTRUCTION Quality Management Plan will address the radiation safety requirements of the California Code of Regulations 17 CCR § 30346 when the work requires Gamma-Gamma Logging acceptance testing for Cast in Drilled Hole (CIDH) pile or whenever else it is applicable. In accordance with these regulations, CITY, as the "well operator", will have a written agreement with any consultant or external entity performing these tests.

41. CITY will provide a Resident Engineer and CONSTRUCTION SUPPORT staff that are independent of the construction contractor. The Resident Engineer will be a Civil Engineer, licensed in the State of California, who is responsible for construction contract administration activities.

42. CITY will implement changes to the construction contract through Change Orders. PARTIES will review and concur on all Change Orders over $50,000.

43. CALTRANS will review and concur with:

    - Change Orders affecting public safety, public convenience, protected environmental resources, the preservation of property, all design and specification changes, and all major changes as defined in the CALTRANS Construction Manual. These Change Orders must receive written concurrence by CALTRANS prior to implementation.

    - The Stormwater Pollution Prevention Plan (SWPPP) or the Water Pollution Control Plan (WPCP).

44. If CONSTRUCTION CAPITAL is funded with state or federal funds then CITY will administer and process all construction contract claims using a CALTRANS-approved process. CALTRANS will provide Independent Quality Assurance for the claims process.

45. CITY is designated as the Legally Responsible Person pursuant to the Construction General Permit, State Water Resources Control Board (SWRCB) Order Number 2009-0009-DWQ, as defined in Appendix 5, Glossary, and assumes all roles and responsibilities assigned to the Legally Responsible Person as mandated by the Construction General Permit. CITY is required to comply with the CALTRANS MS4 National Pollutant Discharge Elimination System (NPDES) permit for all work within the State Highway System.

46. CITY will submit a written request to CALTRANS for any Department Furnished Material (DFM) identified in the PROJECT plans, specifications, and estimate a minimum of sixty (60) working days prior to the construction start of work. CITY will submit a written request to CALTRANS for any additional Department Furnished Materials deemed necessary during the PROJECT construction.

    CALTRANS will make the Department Furnished Materials available at a CALTRANS-designated location.

47. CITY may request CALTRANS to complete portions of CONSTRUCTION SUPPORT work as reimbursed engineering services. Should CALTRANS agree to perform the requested services, PARTIES will document the arrangement in a written Task Order. Such an arrangement does not change the responsibilities assigned in this AGREEMENT. Engineering services requested by CITY and provided by CALTRANS during CONSTRUCTION are to be reimbursed from the funds obligated in this AGREEMENT.

48. As the CONSTRUCTION IMPLEMENTING AGENCY, CITY is responsible for maintenance of the State Highway System within the PROJECT limits as part of the construction contract until the following conditions are met:

    - Any required Maintenance Agreements are executed for the portions of State Highway System for which relief of maintenance is to be granted.

    - CALTRANS approves a request from CITY for relief from maintenance of the PROJECT or a portion thereof.

49. CITY and CALTRANS will develop and execute a new or amended maintenance agreement prior to WORK completion for CONSTRUCTION.

50. Upon WORK completion, ownership or title to all materials and equipment constructed or installed for the operations and/or maintenance of the State Highway System within State Highway System right-of-way as part of WORK become the property of CALTRANS.

    CALTRANS will not accept ownership or title to any materials or equipment constructed or installed outside State Highway System right-of-way.

51. Within one hundred eighty (180) calendar days following the completion and acceptance of the PROJECT construction contract, CITY will furnish CALTRANS with a complete set of "As-Built" plans and Change Orders, including any changes authorized by CALTRANS, on a CD ROM and in accordance with CALTRANS' then current CADD User's Manual (Section 4.3), Plans Preparation Manual, and CALTRANS practice. The plans will have the Resident Engineer's name, contract number, and construction contract acceptance date printed on each plan sheet, and with the Resident Engineer's signature only on the title sheet. The As-Built plans will be in Microstation DGN format, version 7.0 or later. In addition, CITY will provide one set of As-Built plans and addenda in TIFF format.

    The submittal must also include all CALTRANS requested contract records, and land survey documents. The land survey documents include monument preservation documents and Records of Surveys prepared to satisfy the requirements of the California Land Surveyors Act (Business and Professions Code sections 8700 – 8805). Copies of survey documents and Records of Surveys filed in accordance with Business & Professions Code, including sections 8762 and 8771, will contain the filing information provided by the county in which filed.

Schedule

52. PARTIES will manage the WORK schedule to ensure the timely use of obligated funds and to ensure compliance with any environmental permits, right-of-way agreements, construction contracts, and any other commitments. PARTIES will communicate schedule risks or changes as soon as they are identified and will actively manage and mitigate schedule risks.

53. The IMPLEMENTING AGENCY for each PROJECT COMPONENT will furnish PARTIES with written quarterly progress reports during the completion of the WORK.

Additional Provisions

Standards

54. PARTIES will perform all WORK in accordance with federal and California laws, regulations, and standards; FHWA standards; and CALTRANS standards. CALTRANS standards include, but are not limited to, the guidance provided in the:

- CALTRANS policies and directives
- Project Development Procedures Manual (PDPM)
- Workplan Standards Guide
- Construction Manual
- Construction Manual Supplement for Local Agency Resident Engineers
- Local Agency Structure Representative Guidelines

Noncompliant Work

55. CALTRANS retains the right to reject noncompliant WORK. CITY agrees to suspend WORK upon request by CALTRANS for the purpose of protecting public safety, preserving property rights, and ensuring that all WORK is in the best interest of the State Highway System.

Qualifications

56. Each PARTY will ensure that personnel participating in WORK are appropriately qualified or licensed to perform the tasks assigned to them.

Consultant Selection

57. CITY will invite CALTRANS to participate in the selection of any consultants that participate in the WORK.

Encroachment Permits

58. CALTRANS will issue, upon proper application, the encroachment permits required for WORK within State Highway System right-of-way. Contractors and/or agents, and utility owners will not work within the State Highway System right-of-way without an encroachment permit issued in their name. CALTRANS will provide encroachment permits to PARTIES, their contractors, consultants and agents at no cost. If the encroachment permit and this AGREEMENT conflict, the requirements of this AGREEMENT will prevail.

59. The IMPLEMENTING AGENCY for a PROJECT COMPONENT will coordinate, prepare, obtain, implement, renew, and amend any encroachment permits needed to complete the WORK.

Protected Resources

60. If any PARTY discovers unanticipated cultural, archaeological, paleontological, or other protected resources during WORK, all WORK in that area will stop and that PARTY will notify all PARTIES within 24 hours of discovery. WORK may only resume after a qualified professional has evaluated the nature and significance of the discovery and CALTRANS approves a plan for its removal or protection.

Disclosures

61. PARTIES will hold all administrative drafts and administrative final reports, studies, materials, and documentation relied upon, produced, created, or utilized for the WORK in confidence to the extent permitted by law and where applicable, the provisions of California Government Code section 6254.5(e) will protect the confidentiality of such documents in the event that said documents are shared between PARTIES.

    PARTIES will not distribute, release, or share said documents with anyone other than employees, agents, and consultants who require access to complete the WORK without the written consent of the PARTY authorized to release them, unless required or authorized to do so by law.

62. If a PARTY receives a public records request pertaining to the WORK, that PARTY will notify PARTIES within five (5) working days of receipt and make PARTIES aware of any disclosed public documents. PARTIES will consult with each other prior to the release of any public documents related to the WORK.

Hazardous Materials

63. HM-1 is hazardous material (including, but not limited to, hazardous waste) that may require removal and disposal pursuant to federal or state law, irrespective of whether it is disturbed by the PROJECT or not.

    HM-2 is hazardous material (including, but not limited to, hazardous waste) that may require removal and disposal pursuant to federal or state law only if disturbed by the PROJECT.

    The management activities related to HM-1 and HM-2, including and without limitation, any necessary manifest requirements and disposal facility designations are referred to herein as HM-1 MANAGEMENT and HM-2 MANAGEMENT respectively.

64. If HM-1 or HM-2 is found the discovering PARTY will immediately notify all other PARTIES.

65. CALTRANS, independent of the PROJECT, is responsible for any HM-1 found within the existing State Highway System right-of-way. CALTRANS will undertake, or cause to be undertaken, HM-1 MANAGEMENT with minimum impact to the PROJECT schedule.

    CALTRANS will pay, or cause to be paid, the cost of HM-1 MANAGEMENT for HM-1 found within the existing State Highway System right-of-way with funds that are independent of the funds obligated in this AGREEMENT.

66. CITY, independent of the PROJECT, is responsible for any HM-1 found within the PROJECT limits and outside the existing State Highway System right-of-way. CITY will undertake, or cause to be undertaken, HM-1 MANAGEMENT with minimum impact to the PROJECT schedule.

    CITY will pay, or cause to be paid, the cost of HM-1 MANAGEMENT for HM-1 found within the PROJECT limits and outside of the existing State Highway System right-of-way with funds that are independent of the funds obligated in this AGREEMENT.

67. The CONSTRUCTION IMPLEMENTING AGENCY is responsible for HM-2 MANAGEMENT within the PROJECT limits.

68. CALTRANS' acquisition or acceptance of title to any property on which any HM-1 or HM-2 is found will proceed in accordance with CALTRANS' policy on such acquisition.

Claims

69. Any PARTY that is responsible for completing WORK may accept, reject, compromise, settle, or litigate claims arising from the WORK without concurrence from the other PARTY.

70. PARTIES will confer on any claim that may affect the WORK or PARTIES' liability or responsibility under this AGREEMENT in order to retain resolution possibilities for potential future claims. No PARTY will prejudice the rights of another PARTY until after PARTIES confer on the claim.

71. If the WORK expends state or federal funds, each PARTY will comply with the federal Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards of 2 CFR, Part 200. PARTIES will ensure that any for-profit consultant hired to participate in the WORK will comply with the requirements in 48 CFR, Chapter 1, Part 31. When state or federal funds are expended on the WORK these principles and requirements apply to all funding types included in this AGREEMENT.

Accounting and Audits

72. PARTIES will maintain, and will ensure that any consultant hired by PARTIES to participate in WORK will maintain, a financial management system that conforms to Generally Accepted Accounting Principles (GAAP), and that can properly accumulate and segregate incurred PROJECT costs and billings.

73. PARTIES will maintain and make available to each other all WORK-related documents, including financial data, during the term of this AGREEMENT.

    PARTIES will retain all WORK-related records for three (3) years after the final voucher.

    PARTIES will require that any consultants hired to participate in the WORK will comply with this Article.

74. PARTIES have the right to audit each other in accordance with generally accepted governmental audit standards.

    CALTRANS, the state auditor, FHWA (if the PROJECT utilizes federal funds), and CITY will have access to all WORK -related records of each PARTY, and any consultant hired by a PARTY to participate in WORK, for audit, examination, excerpt, or transcription.

    The examination of any records will take place in the offices and locations where said records are generated and/or stored and will be accomplished during reasonable hours of operation. The auditing PARTY will be permitted to make copies of any WORK-related records needed for the audit.

    The audited PARTY will review the draft audit, findings, and recommendations, and provide written comments within thirty (30) calendar days of receipt.

    Upon completion of the final audit, PARTIES have forty-five (45) calendar days to refund or invoice as necessary in order to satisfy the obligation of the audit.

    Any audit dispute not resolved by PARTIES is subject to mediation. Mediation will follow the process described in the General Conditions section of this AGREEMENT.

75. If the WORK expends state or federal funds, each PARTY will undergo an annual audit in accordance with the Single Audit Act in the federal Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards as defined in 2 CFR, Part 200.

76. When a PARTY reimburses a consultant for WORK with state or federal funds, the procurement of the consultant and the consultant overhead costs will be in accordance with Chapter 10 of the Local Assistance Procedures Manual.

Interruption of Work

77. If WORK stops for any reason, IMPLEMENTING AGENCY will place the PROJECT right-of-way in a safe and operable condition acceptable to CALTRANS.

78. If WORK stops for any reason, each PARTY will continue to implement the obligations of this AGREEMENT, including the commitments and conditions included in the environmental documentation, permits, agreements, or approvals that are in effect at the time that WORK stops, and will keep the PROJECT in environmental compliance until WORK resumes.

Penalties, Judgements and Settlements

79. The cost of awards, judgments, or settlements generated by the WORK are to be paid from the funds obligated in this AGREEMENT.

80. The cost of legal challenges to the environmental process or documentation may be paid from the funds obligated in this AGREEMENT.

81. Any PARTY whose action or lack of action causes the levy of fines, interest, or penalties will indemnify and hold all other PARTIES harmless per the terms of this AGREEMENT.

Project Files

82. CITY will furnish CALTRANS with the Project History Files related to the PROJECT facilities on State Highway System within sixty (60) days following the completion of each PROJECT COMPONENT. CITY will prepare the Project History File in accordance with the Project Development Procedures Manual, Chapter 7. All material will be submitted neatly in a three-ring binder and on a CD ROM in PDF format.

Environmental Compliance

83. If during performance of WORK additional activities or environmental documentation is necessary to keep the PROJECT in environmental compliance, PARTIES will amend this AGREEMENT to include completion of those additional tasks.

GENERAL CONDITIONS

Venue

84. PARTIES understand that this AGREEMENT is in accordance with and governed by the Constitution and laws of the State of California. This AGREEMENT will be enforceable in the State of California. Any PARTY initiating legal action arising from this AGREEMENT will file and maintain that legal action in the Superior Court of the county in which the CALTRANS district office that is signatory to this AGREEMENT resides, or in the Superior Court of the county in which the PROJECT is physically located.

Exemptions

85. All CALTRANS' obligations under this AGREEMENT are subject to the appropriation of resources by the Legislature, the State Budget Act authority, and the allocation of funds by the California Transportation Commission.

Indemnification

86. Neither CALTRANS nor any of their officers and employees, are responsible for any injury, damage, or liability occurring by reason of anything done or omitted to be done by CITY, its contractors, sub-contractors, and/or its agents under or in connection with any work, authority, or jurisdiction conferred upon CITY under this AGREEMENT. It is understood and agreed that CITY, to the extent permitted by law, will defend, indemnify, and save harmless CALTRANS and all of their officers and employees from all claims, suits, or actions of every name, kind, and description brought forth under, but not limited to, tortious, contractual, inverse condemnation, or other theories and assertions of liability occurring by reason of anything done or omitted to be done by CITY, its contractors, sub-contractors, and/or its agents under this AGREEMENT.

87. Neither CITY nor any of their officers and employees, are responsible for any injury, damage, or liability occurring by reason of anything done or omitted to be done by CALTRANS, its contractors, sub-contractors, and/or its agents under or in connection with any work, authority, or jurisdiction conferred upon CALTRANS under this AGREEMENT. It is understood and agreed that CALTRANS, to the extent permitted by law, will defend, indemnify, and save harmless CITY and all of their officers and employees from all claims, suits, or actions of every name, kind, and description brought forth under, but not limited to, tortious, contractual, inverse condemnation, or other theories and assertions of liability occurring by reason of anything done or omitted to be done by CALTRANS, its contractors, sub-contractors, and/or its agents under this AGREEMENT.

Non-parties

88. PARTIES do not intend this AGREEMENT to create a third party beneficiary or define duties, obligations, or rights in PARTIES not signatory to this AGREEMENT. PARTIES do not intend this AGREEMENT to affect their legal liability by imposing any standard of care for fulfilling the WORK different from the standards imposed by law.

89. PARTIES will not assign or attempt to assign obligations to PARTIES not signatory to this AGREEMENT without an amendment to this AGREEMENT.

Ambiguity and Performance

90. CITY will not interpret any ambiguity contained in this AGREEMENT against CALTRANS. CITY waives the provisions of California Civil Code section 1654.

    A waiver of a PARTY's performance under this AGREEMENT will not constitute a continuous waiver of any other provision.

91. A delay or omission to exercise a right or power due to a default does not negate the use of that right or power in the future when deemed necessary.

Defaults

92. If any PARTY defaults in its performance of the WORK, a non-defaulting PARTY will request in writing that the default be remedied within thirty (30) calendar days. If the defaulting PARTY fails to do so, the non-defaulting PARTY may initiate dispute resolution.

Dispute Resolution

93. PARTIES will first attempt to resolve AGREEMENT disputes at the PROJECT team level as described in the Quality Management Plan. If they cannot resolve the dispute themselves, the CALTRANS district director and the executive officer of CITY will attempt to negotiate a resolution. If PARTIES do not reach a resolution, PARTIES' legal counsel will initiate mediation. PARTIES agree to participate in mediation in good faith and will share equally in its costs.

    Neither the dispute nor the mediation process relieves PARTIES from full and timely performance of the WORK in accordance with the terms of this AGREEMENT. However, if any PARTY stops fulfilling its obligations, any other PARTY may seek equitable relief to ensure that the WORK continues.

Except for equitable relief, no PARTY may file a civil complaint until after mediation, or forty-five (45) calendar days after filing the written mediation request, whichever occurs first.

PARTIES will file any civil complaints in the Superior Court of the county in which the CALTRANS district office signatory to this AGREEMENT resides or in the Superior Court of the county in which the PROJECT is physically located.

PARTIES maintain the ability to pursue alternative or additional dispute remedies if a previously selected remedy does not achieve resolution.

Prevailing Wage

94. When WORK falls within the Labor Code § 1720(a)(1) definition of "public works" in that it is construction, alteration, demolition, installation, or repair; or maintenance work under Labor Code § 1771, PARTIES will conform to the provisions of Labor Code § 1720-1815, and all applicable provisions of California Code of Regulations found in Title 8, Division 1, Chapter 8, Subchapter 3, Articles 1-7. PARTIES will include prevailing wage requirements in contracts for public work and require contractors to include the same prevailing wage requirements in all subcontracts.

Work performed by a PARTY's own employees is exempt from the Labor Code's Prevailing Wage requirements.

If WORK is paid for, in whole or part, with federal funds and is of the type of work subject to federal prevailing wage requirements, PARTIES will conform to the provisions of the Davis-Bacon and Related Acts, 40 U.S.C. § 276(a).

When applicable, PARTIES will include federal prevailing wage requirements in contracts for public works. WORK performed by a PARTY's employees is exempt from federal prevailing wage requirements.

DEFINITIONS

PARTY – Any individual signatory party to this AGREEMENT.

PARTIES – The term that collectively references all of the signatory agencies to this AGREEMENT.

WORK BREAKDOWN STRUCTURE (WBS) – A WBS is a standardized hierarchical listing of project work activities/products in increasing levels of detail. The CALTRANS WBS defines each PROJECT COMPONENT as a group of work activities/products. The CALTRANS Work Breakdown Structure is defined in the CALTRANS Workplan Standards Guide.

SIGNATURES

PARTIES are empowered by California Streets and Highways Code to enter into this AGREEMENT and have delegated to the undersigned the authority to execute this AGREEMENT on behalf of the respective agencies and covenants to have followed all the necessary legal requirements to validly execute this AGREEMENT.

Signatories may execute this AGREEMENT through individual signature pages provided that each signature is an original. This AGREEMENT is not fully executed until all original signatures are attached.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

For/ Thomas L. Brannon
Deputy District Director, D3 Program / Project Management

Approved as to form and procedure:

Meera Danday
Attorney, Department of Transportation

VERIFICATION OF FUNDS AND AUTHORITY:

Stacey Salazar
District Project Control Officer

CERTIFIED AS TO FINANCIAL TERMS AND POLICIES:

Tamara Warren
HQ Accounting Supervisor

CITY OF PLACERVILLE

M. Cleve Morris
City Manager

Attest:

Regina O'Connell
City Clerk

Approved as to form and procedure:

John Driscoll
City Attorney

FUNDING SUMMARY NO. 01

FUNDING TABLE

IMPLEMENTING AGENCY→			CITY		
Source	Party	Fund Type	CONST. SUPPORT	CONST. CAPITAL	Totals
STATE	CALTRANS	**SHOPP Minor	0	470,000	470,000
STATE	CITY	STIP/RIP	969,850	4,572,150	5,542,000
LOCAL-STATE	CITY	Transit Assist	58,600	276,400	335,000
LOCAL-FEDERAL	CITY	*CMAQ (100% toll credits)	484,050	2,281,950	2,766,000
LOCAL-FEDERAL	CITY	Urban STBGP (100% toll credits)	0	272,000	272,000
LOCAL	CITY	PTMISEA	250,360	1,180,260	1,430,620
Totals			1,762,860	9,052,760	10,815,620

*CMAQ funds to be used only toward pedestrian and bicycle improvements and the Park and Ride Lot portion of PROJECT expenditures

** SHOPP funds will be used on roadway/mainline improvements portion of PROJECT

PROJECT must comply with Caltrans Division of Local Assistance Toll Credit Policy, Local Assistance Procedures Manual, Chapter 3, Section 3.10.

SPENDING SUMMARY

Fund Type	CONST. SUPPORT		CONST. CAPITAL		Totals
	CALTRANS	CITY	CITY	DFM CALTRANS	
STIP/RIP	0	969,850	4,564,150	8,000	5,542,000
SHOPP Minor**	0	0	470,000	0	470,000
Transit Assist	0	58,600	276,400	0	335,000
CMAQ*	0	484,050	2,281,950	0	2,766,000
Urban STBGP	0	0	272,000	0	272,000
PTMISEA	0	250,360	1,180,260	0	1,430,620
Totals	0	1,762,860	9,044,760	8,000	10,815,620

* CMAQ funds to be used only toward pedestrian and bicycle improvements and the Park and Ride Lot portion of the PROJECT expenditures
**SHOPP funds will be used on roadway/mainline improvements portion of PROJECT

Funding

1. If there are insufficient funds available in this AGREEMENT to place the PROJECT right-of-way in a safe and operable condition, the appropriate IMPLEMENTING AGENCY will fund these activities until such time as PARTIES amend this AGREEMENT.

   That IMPLEMENTING AGENCY may request reimbursement for these costs during the amendment process.

2. If there are insufficient funds in this AGREEMENT to implement the obligations and responsibilities of this AGREEMENT, including the applicable commitments and conditions included in the PROJECT environmental documentation, permits, agreements, and/or approvals that are in effect at a time that WORK stops, each PARTY accepts responsibility to fund their respective WORK until such time as PARTIES amend this AGREEMENT.

   Each PARTY may request reimbursement for these costs during the amendment process.

ICRP Rate

3. The cost of any engineering support performed by CALTRANS includes all direct and applicable indirect costs. CALTRANS calculates indirect costs based solely on the type of funds used to pay support costs. State and federal funds administered by CALTRANS are subject to the current Program Functional Rate. All other funds are subject to the current Program Functional Rate and the current Administration Rate. The Program Functional Rate and Administration Rate are adjusted periodically.

4. If the WORK is funded with state or federal funds, any PARTY seeking CALTRANS reimbursement of indirect costs must submit an indirect cost rate proposal and central service cost allocation plan (if any) in accordance with 2 CFR, Part 200 and Chapter 5 of the Local Assistance Procedures Manual. These documents are to be submitted annually to CALTRANS' Audits and Investigations for review and acceptance prior to CALTRANS' reimbursement of indirect costs.

5. Travel, per diem, and third-party contract reimbursements for WORK are to be paid from the funds in this AGREEMENT only after the contractor performs the work and incurs said costs.

Payments for travel and per diem will not exceed the rates paid rank and file state employees under current California Department of Personnel Administration (DPA) rules current at the effective date of this AGREEMENT.

If CITY invoices for rates in excess of DPA rates, CITY will fund the cost difference and reimburse CALTRANS for any overpayment.

6. In accordance with the CALTRANS Federal-Aid Project Funding Guidelines, PARTIES must obtain approval from the Federal Highway Administration prior to any PROJECT funding changes that that will change the federal share of funds.

Invoicing and Payment

7. PARTIES will invoice for funds where the SPENDING SUMMARY shows that one PARTY provides funds for use by another PARTY. PARTIES will pay invoices within forty-five (45) calendar days of receipt of invoice when not paying with Electronic Funds Transfer (EFT). When paying with EFT, CITY will pay invoices within five (5) calendar days of receipt of invoice.

8. If CITY has received EFT certification from CALTRANS then CITY will use the EFT mechanism and follow all EFT procedures to pay all invoices issued from CALTRANS.

9. When a PARTY is reimbursed for actual cost, invoices will be submitted each month for the prior month's expenditures. After all PROJECT COMPONENT WORK is complete, PARTIES will submit a final accounting of all PROJECT COMPONENT costs. Based on the final accounting, PARTIES will invoice or refund as necessary to satisfy the financial commitments of this AGREEMENT.

10. If an executed Program Supplement Agreement (PSA) or STIP Planning, Programming, and Monitoring Program Fund Transfer Agreement (PPM) exists for this PROJECT then CITY will abide by the billing and payment conditions detailed for the fund types identified in the PSA or PPM.

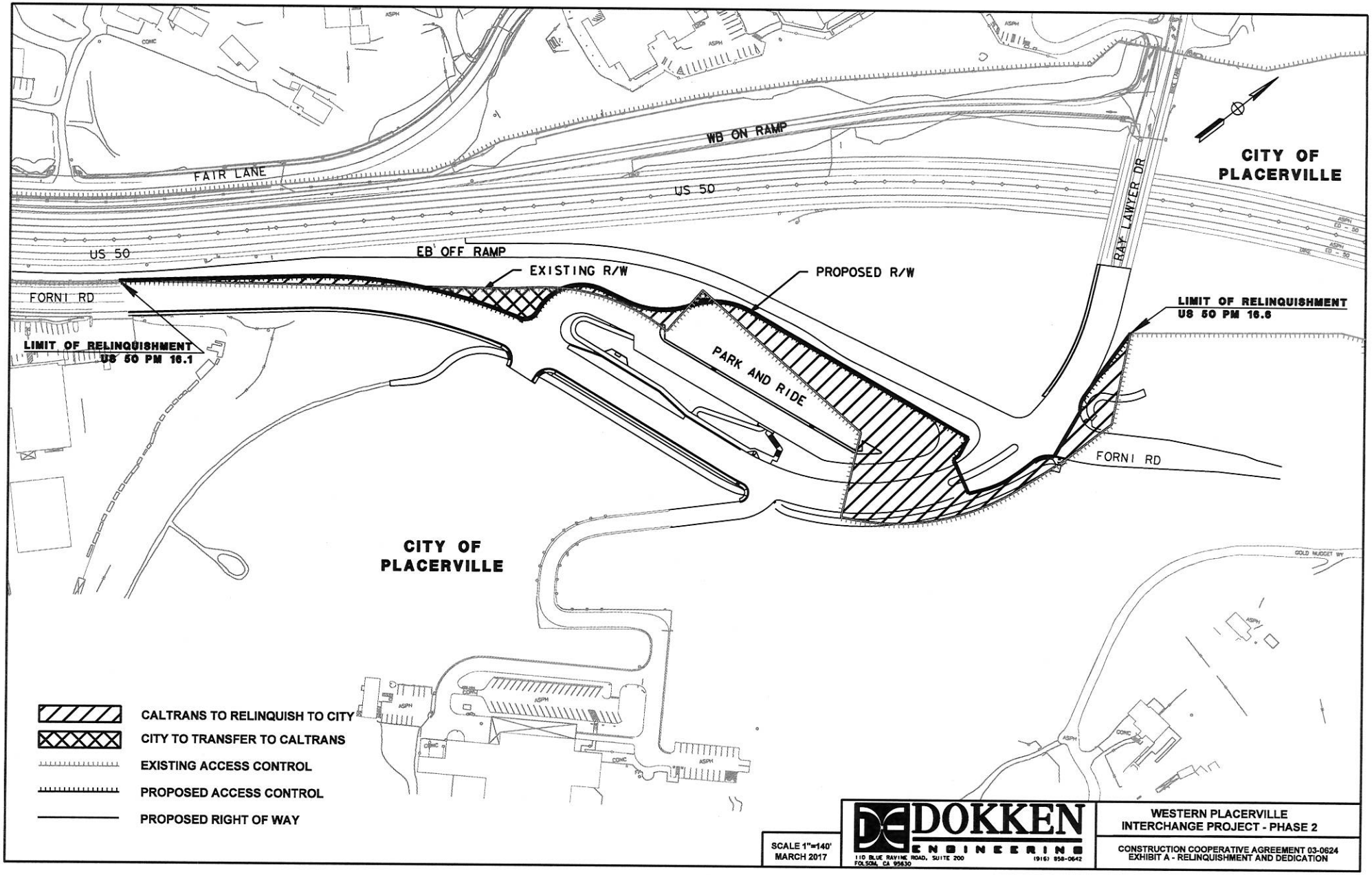
11. If CALTRANS reimburses CITY for any costs later determined to be unallowable, CITY will reimburse those funds.

CONSTRUCTION Support

12. CITY will invoice and CALTRANS will reimburse for actual costs incurred and paid.

CONSTRUCTION Capital

13. CITY will invoice and CALTRANS will reimburse for actual costs incurred and paid.



SCALE 1"=140'
MARCH 2017

DOKKEN ENGINEERING
110 BLUE RAVINE ROAD, SUITE 200
FOLSOM, CA 95630
(916) 858-0642

WESTERN PLACERVILLE INTERCHANGE PROJECT - PHASE 2

CONSTRUCTION COOPERATIVE AGREEMENT 03-0624
EXHIBIT A - RELINQUISHMENT AND DEDICATION

ATTACHMENT 5

03-ED-50 PM 15.6/16.8
Project Number: 0314000301
EA: 03-37281
District Agreement No. 03-0602

RELINQUISHMENT AGREEMENT

This Agreement, entered into effective on MAY 16, 2017, is between the STATE OF CALIFORNIA, acting by and through its Department of Transportation, referred to herein as "CALTRANS", and the

City of Placerville, a body politic and a municipal corporation of the State of California, referred to herein as "CITY".

RECITALS

1. CALTRANS and CITY, pursuant to Streets and Highways Code Section 73, are authorized to enter into a Cooperative Agreement in order to relinquish to CITY a portion of a State Highway within CITY's jurisdiction.

2. CITY will construct Phase 2 of the Western Placerville Interchange Project (PROJECT) partly on CITY's right of way and partly on CALTRANS right of way. PROJECT will add an off-ramp from eastbound United States 50 (US 50) to Ray Lawyer Drive, reconfigure Forni Road, and add a park and ride facility between the new eastbound US 50 off-ramp and Forni Road.

3. After construction of PROJECT, CALTRANS shall relinquish that portion of the park and ride facility constructed within CALTRANS right of way as well as the roadway portion of the PROJECT, also constructed on CALTRANS right of way, to the CITY as shown in Exhibit A, attached to and made a part of this Agreement, referred to hereinafter as "RELINQUISHED FACILITIES". This relinquishment is based on collateral facilities. CITY is willing to accept said RELINQUISHED FACILITIES upon approval by the California Transportation Commission (CTC) of a Resolution of Relinquishment and CALTRANS' recording of said Resolution in the County Recorder's Office.

4. CALTRANS and CITY agree that no known dangerous conditions exist on RELINQUISHED FACILITIES and CITY will accept it in an as is condition. CITY will accept and assume full maintenance, ownership, responsibility, control and liability henceforth in perpetuity over the RELINQUISHED FACILITIES.

5. The parties hereto intend to define herein the terms and conditions under which RELINQUISHED FACILITIES is to be accomplished.

SECTION I

CITY AGREES:

1. Execution of this Agreement constitutes CITY's waiver of CALTRANS' obligation to provide ninety (90) days prior notice of CALTRANS' "Intention to Relinquish" as set forth in Streets and Highways Code section 73.

2. To accept ownership, including all of CALTRANS' current obligations, rights, title and interest in RELINQUISHED FACILITIES upon recordation of the CTC's Resolution of Relinquishment in the County Recorder's Office and to thereafter operate, maintain, and be liable for RELINQUISHED FACILITIES at no additional cost to CALTRANS.

3. To provide all necessary dedication maps and documents, after construction, to CALTRANS for review, in accordance with State of California R/W Manual, Chapter 6 - R/W Engineering, Plans Preparation Manual, the Surveys Manual, applicable State laws, and other pertinent reference material and examples as provided by CALTRANS.

4. To accept RELINQUISHED FACILITIES in their current environmental condition and setting, including, but not limited to, the presence of hazardous materials as described in the Hazardous Waste Initial Site Assessment (ISA) for the Western Placerville Interchanges Project prepared by LSA dated June 12, 2000; the Initial Site Assessment Update Technical Memorandum prepared by Dokken Engineering dated March 26, 2010; and the Memo to Caltrans District 3 prepared by Dokken Engineering dated June 10, 2014; and the Update of ESA Memo by CALTRANS, collectively ISA Materials. CITY has received and reviewed copies of the above-referenced ISA Material. Upon recordation of the CTC's Resolution of Relinquishment in the County Recorder's Office, CALTRANS will not be responsible for any present or future remediation of said hazardous materials.

5. CITY agrees to make all necessary changes of ownership of utility accounts with the utility companies applicable to RELINQUISHED FACILITIES, as shown on Exhibit B, attached to and made part of this Agreement

SECTION II

CALTRANS AGREES:

1. To relinquish, upon the approval of the CTC's Resolution of Relinquishment, the RELINQUISHED FACILITIES.

2. To submit the CTC Resolution of Relinquishment to the County Recorder's Office for recording.

3. Thereafter, upon CITY's specific request, to transfer to CITY within sixty (60) days of such request, copies of available CALTRANS records and files for RELINQUISHED FACILITIES, such as plans, survey data and right of way information.

SECTION III

IT IS MUTUALLY AGREED:

1. All obligations of CALTRANS under the terms of this Agreement are subject to the appropriation of resources by the Legislature, State Budget Act authority, and the allocation of any funds by the CTC.

2. CALTRANS reserves the right to enter, at no cost to CALTRANS, RELINQUISHED FACILITIES, to modify or add signage, drainage, and other improvements necessary for State Highway operations. CITY agrees to allow CALTRANS access to operate, maintain, add, remove, or modify CALTRANS' facilities retained in those collateral facilities.

3. CITY shall fully defend, indemnify and save harmless CALTRANS and all its officers and employees from all claims, suits or actions related to environmental theories or assertions of liability, including, but not limited to, claims or lawsuits related to the presence of hazardous materials as described in the ISA Materials, provided that the actions, events, injuries, damages, or losses giving rise to any claims, suits or actions occurred on or arise after the date of the recordation of the CTC's Resolution of Relinquishment.

4. CALTRANS shall fully defend, indemnify and save harmless CITY and all its officers and employees from all claims, suits or actions related to environmental theories or assertions of liability, including, but not limited to, claims or lawsuits related to the presence of hazardous materials as described in the ISA Materials, provided that the actions, events, injuries, damages, or losses giving rise to any claims, suits or actions occurred or arose before the date of recordation of the CTC's Resolution of Relinquishment.

5. Neither CALTRANS nor any officer or employee thereof is responsible for any injury, damage or liability occurring by reason of anything done or omitted to be done by CITY, its contractors, sub-contractors, and/or its agents under or in connection with any work, authority or jurisdiction conferred upon CITY under this Agreement. It is understood and agreed that CITY, to the extent permitted by law, will defend, indemnify and save harmless CALTRANS and all its officers and employees from all claims, suits or actions of every name, kind and description brought forth under, but not limited to, tortious, contractual, inverse condemnation or other theories or assertions of liability occurring by reason of anything done or omitted to be done by CITY, its contractors, sub-contractors, and/or its agents under this Agreement.

6. Neither CITY nor any officer or employee thereof is responsible for any injury, damage or liability occurring by reason of anything done or omitted to be done by CALTRANS, its contractors, sub-contractors, and/or its agents under or in connection with any work, authority or jurisdiction conferred upon CALTRANS under this Agreement. It is understood and agreed that CALTRANS, to the extent permitted by law, will defend, indemnify and save harmless CITY and all its officers and employees from all claims, suits or actions of every name, kind and description brought forth under, but not limited to, tortious, contractual, inverse condemnation or other theories or assertions of liability occurring by reason of anything done or omitted to be done by CALTRANS, its contractors, sub-contractors, and/or its agents under this Agreement.

7. No alteration of the terms of this Agreement shall be valid unless made in writing and signed by the parties hereto and no oral understanding or agreement not incorporated herein shall be binding on any of the parties hereto.

8. This Agreement shall terminate upon recordation of the CTC's Resolution of Relinquishment for RELINQUISHED FACILITIES in the County Recorder's Office, except for those provisions which relate to indemnification, ownership, operation, and maintenance, which shall remain in effect until terminated or modified in writing by mutual agreement.

SIGNATURES

PARTIES declare that:

1. Each PARTY is an authorized legal entity under California state law.
2. Each PARTY has the authority to enter into this agreement.
3. The people signing this agreement have the authority to do so on behalf of their public agencies.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

For Thomas L. Brannon
Deputy District Director
D3 Program & Project Management

CITY OF PLACERVILLE

M. Cleve Morris
City Manager

Approved as to form and procedure:

Meera Danday
Attorney, Department of Transportation

Attest:

Regina O'Connell
City Clerk

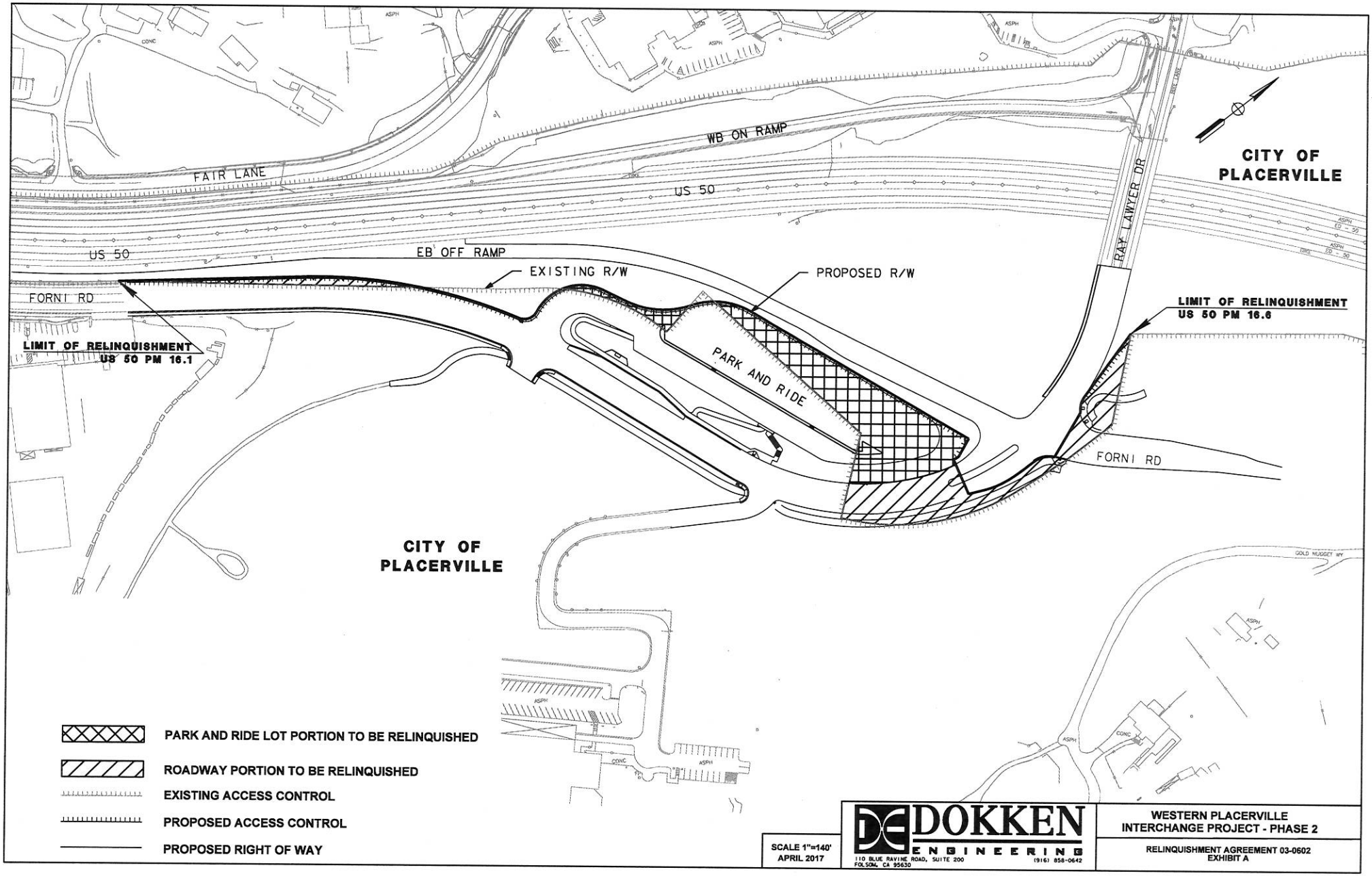
Certified as to funds:

Stacey Salazar
District Project Control Officer

Approved as to form and procedure:

John Driscoll
City Attorney

EXHIBIT "A"
Relinquishment Map



SCALE 1"=140'
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WESTERN PLACERVILLE INTERCHANGE PROJECT - PHASE 2

RELINQUISHMENT AGREEMENT 03-0602
EXHIBIT A

EXHIBIT "B"
Utilities

List of Utility Accounts to which ownership details needs to be changed from CALTRANS to CITY.

- None

DESIGN AND CONSTRUCTION RESPONSIBILITY AND REIMBURSEMENT AGREEMENT BETWEEN THE CITY OF PLACERVILLE AND THE EI DORADO IRRIGATION DISTRICT

FOR THE WESTERN PLACERVILLE INTERCHANGES PROJECT, PHASE 2

CITY CIP: 407051 EID PN 16039

The City of Placerville, a political subdivision of the State of California (hereinafter referred to as "City"), and the El Dorado Irrigation District, a special district created pursuant to State law (hereinafter referred to as "EID"), hereby agree to the following Design and Construction Responsibility and Reimbursement Agreement (hereinafter referred to as "Agreement") terms set forth below.

City of Placerville Engineering Division is constructing an Interchange with U.S. 50 and Ray Lawyer Drive at Forni Road (the "Western Placerville Interchanges Project, Phase 2" hereinafter referred to as "Project"). The work will require relocating EID facilities impacted by the project.

The following are EID facilities to be abandoned in place:

- Approximately 2,000 linear feet of 12" AC water line located within franchise public right of way within the existing alignment of Forni Road, a City owned road. (EID cost item)

The following are EID facilities to be constructed to replace abandonments and removal as needed:

- Installation of approximately 2000 feet of new 12" water line to maintain service to the adjacent parcels and customers currently served by the existing 12" AC water main located in Forni Road. Work involves (EID cost item)
- Installation of blow off valves, air relief valves (ARVs) and gate valves on the new water line. (EID cost item)
- Adjustment of existing valve boxes that are to remain at tie-in connection points as described within the contract documents. (EID cost item)

Details of the above scope of work are shown on Exhibit A, marked "El Dorado Irrigation District (EID) Conflict Work," Exhibit (B) marked "Cost Estimate Summary incorporated herein and made by reference a part hereof.

EID has requested that the City include the design and installation of new EID facilities, as detailed in Exhibit A hereto, in City's design and construction bid packages, award documents, and construction contract for the Project, and City has agreed to do so under the terms and conditions of this Agreement.

A. LIABILITY FOR WORK

Cost for facilities shall be allocated between EID and City as follows:

1. City and EID have agreed to the abandonment, relocation, and installation of EID facilities that are in conflict with the Project that are within franchise public right of way and not within an EID easement as further described herein (hereinafter cumulatively referred to as the "EID Relocation Work").

   City and EID agree that EID shall be responsible for 100% of the actual costs associated with the EID Relocation Work affected by City's construction project, as expressly identified in Exhibit B marked "COST ESTIMATE SUMMARY," incorporated herein and made by reference a part hereof.

   a) The EID cost for items EID is responsible for is estimated to be approximately $841,973.00 including a 10% contingency, as shown on Exhibit B herein.

2. As the construction work progresses, City shall submit invoices to EID, no more frequently than monthly, with supporting documentation indicating the percentage of the work completed since the previous submittal and the amount of costs then due and owing. The invoices submitted by City to EID will include an accounting of any amount retained by City from the contractor. EID will not be liable for payment of any retention amount shown on the invoices until City pays retention either to the contractor or subcontractor(s) or into an escrow account as provided under the Public Contract Code, whichever occurs first. EID shall make payment of the amount indicated on the invoice within thirty (30) calendar days of receiving each invoice, unless an invoice is challenged in accordance with subsection (3) herein below, in which case EID shall make payment of that portion of the invoice which is not in dispute within thirty (30) calendar days of receiving the invoice.

3. In the event that EID challenges any portion of, or any line item shown on, the invoice from City, then EID shall notify City of such challenge, the basis therefore, and provide adequate justification for the challenge, within ten (10) calendar days of receiving said invoice. If the payment of, or adjustment to, any amount challenged by EID cannot be resolved by the parties within thirty (30) calendar days of notification to City of the challenged amount, then both parties mutually agree to resolve the dispute in accordance with the dispute resolution provisions set forth in City's construction contract.

4. The final invoice sent by City to EID shall include and clearly indicate any adjustments made throughout the Project, including the total amount of retention due from all previous invoices, and indicate the final payment required. City shall submit the final invoice no later than sixty (60) calendar days after final payment to City's contractor has been made. EID shall pay the final invoice within thirty (30) calendar days of receipt of invoice, subject to the provisions of Section B-3 of this Agreement regarding submittal by City to EID of as-built drawings.

5. The contractor shall provide City with monthly updates per Caltrans specifications for Progress Schedule General (Critical Path Method). City will supply EID with a copy of these monthly updated schedules.

B. WORK TO BE DONE

1. In order for City to include the EID Relocation Work in City's bid package, design drawings and specifications must be developed for the work. City shall provide design drawings, specifications and estimates to EID for review, and City will incorporate the EID approved drawings and specifications into City's contract documents. The consultant used by City for the design of the Project will perform the design for the EID facilities. Except as provided in Section B-6 below, EID is solely responsible for its installed facilities after construction and its acceptance of the facilities. Three copies of the construction bid package/contract prepared by City will be provided to EID. City bid plans and specifications that incorporate EID's various utility designs, prepared by City, shall be reviewed and approved by EID prior to advertising for bids. EID shall be solely responsible for content accuracy, adequacy, and clarity of the bid plans and specifications pertaining to EID installation work. EID shall have fifteen (15) working days to review and approve the bid plans and specifications. In addition to content accuracy, adequacy, and clarity, EID review shall include the following scope:

   a) Conformance of the EID Relocation Work design with EID, applicable Caltrans standards, standard drawings and standard specifications; and conformance with City Engineering Division standards and with the plans, details, and specifications for the Project.
   b) Ability of relocation design to meet the same performance standards as the existing EID facilities.

   EID's authorized representative may review the lowest responsible, responsive bidder's documents and may provide recommendations, if any, to City within seventy-two (72) hours of bid opening. Notwithstanding that review, City shall have sole authority to reject any or all construction bids, resolve any bid protests, and/or to award the construction contract for the entire work.

2. EID shall provide one or more inspectors for all work involving, pertaining to, or affecting EID facilities to verify construction is completed in accordance with EID standards and applicable EID standard drawings and technical specifications.

3. City shall provide EID with a set of as-built drawings. At the conclusion of the final cost accounting, EID shall retain no more than five percent (5%) of the EID reimbursable portion of the total cost associated with EID facilities until as-built drawings are provided and approved by EID.

4. City shall be solely responsible for all items of contract administration for City's Project, such as surveying and contractor correspondence. All submittals related to EID's facilities shall be provided by City or City's representative to EID for review and approval. EID shall provide comments on the submittals within 14 calendar days of receipt. The City's design consultant shall also review and approve all EID related submittals.

5. All EID relocation Work, inclusive of all extra work and additional work performed shall be in conformance with all applicable Caltrans, City, and EID standards and with the plans, details, and specifications for the Project.

6. City's contractor shall provide written guarantee of all of its work for one (1) year from acceptance by City. The guarantee shall inure to both City's and EID's benefit.

7. City shall provide in the Project bid specifications for the Project that the selected contractor shall add EID, and its officials, employees, agents, and representatives as an additional insured on contractor's general liability insurance policy for the Project.

8. It is understood that time is of the essence and that City would be harmed by delays to the Project. In order to avoid delays, City and EID agree that City must maintain administrative control of the Project. To protect City from unnecessary Project delays arising from the EID Relocation Work, City and EID agree that changes to the EID Relocation Work on the Project will be handled in the following manner:

   a. **Extra Work Required:** As used in this section, "extra work" means work that is not foreseen at the time the Project is bid, and is not anticipated in the bid documents, but must necessarily be performed in order to address conflicts, changed or differing conditions, or otherwise necessary in order to complete the Project. The expense of any increased costs or the credit for any reduced costs resulting from any and all extra work required shall be apportioned in accordance with Sections a-i and a-ii, herein below. EID, at its sole expense, will be responsible for designing and inspecting all facets of any extra work on, related to, or caused by EID relocation work.

      In the event that a contract change order ("CCO") is required, City will notify EID on the next working day from notification from City's contractor, and within five (5) working days will prepare a CCO. If the CCO impacts construction items of work on the contractor's critical path schedule, EID will then have five (5) working days to review, approve, and return the CCO to City or return it to City for modification. If the CCO does not impact the critical path schedule, EID will have ten (10) working days to review, approve, and return the CCO to City or return it to City for modification. City will notify EID at the time City submits a proposed CCO to EID whether the CCO impacts the critical path schedule or not. If EID fails to return the submitted CCO to City as approved within the time periods set forth herein, then City will take one of the following actions:

         i. The CCO will be executed by City per the terms, conditions, and price shown on the CCO that had been submitted to EID. EID will be required to reimburse City, in accordance with Section A-1, Liability For Work, for the cost of the CCO.

         ii. City will direct the contractor to perform the work on a force account basis in accordance with Caltrans Standard Specification 9-1.03. For extra work performed at force account, EID shall be responsible for inspecting the extra work and tracking the time that the contractor's forces spend pursuing the extra work. On each day that extra work is performed at force account, an EID inspector will prepare and sign a work report that details the labor, equipment, and materials that were used during that day's force account work. Said reports shall be given to City's Resident Engineer for payment processing. EID will be required to reimburse City, in accordance with Section A-1, Liability For Work, for the cost of the force account work.

iii. City will direct the contractor to stop work on the contract only to the extent reasonably deemed necessary by City. EID will then be responsible for justified costs associated with Project delay arising from the EID work. Such delay costs include but are not limited to right of way delays, extended contractor overhead, additional water pollution control costs due to the Project extending into winter, and equipment rental. EID will be required to reimburse City, in accordance with Section A-1, Liability For Work, for all said delay costs.

When City submits a CCO to EID for EID's review and approval, the CCO will clearly state which of the actions listed above that City intends to take should EID fail to return the CCO to City within the time specified above. In the event that the CCO exceeds One Hundred Thousand dollars ($100,000), City shall only execute actions ii, or iii above.

It is agreed that all increases or decreases in justified costs associated with CCOs related to EID Relocation Work may include but are not limited to direct construction costs, extended contractor overhead, additional water pollution control costs due to CCOs extending the Project into winter, dust control, and equipment rental.

b. **Additional Work:** As used in this section, "additional work" means work that is not foreseen at the time the Project is bid, and is not necessary work for the Project but may be desirable for the benefit of the EID facilities. Any and all additional work requested by EID shall be at EID's sole expense. EID, at its sole expense, will be further responsible for designing and inspecting all facets of any additional work requested by EID. In the event that EID desires additional work to be performed by City's contractor, EID shall address its request to City. If a price for additional work can be directly negotiated between EID and City's contractor, then the additional work will be in accordance with a CCO for the negotiated cost. If City's contractor and EID cannot agree to a negotiated price, EID may request that the work be performed on a force account basis in accordance with the 2010 Caltrans Standard Specification 9-1.04,. For additional work performed at force account, EID shall be responsible for inspecting the additional work and tracking the time that the contractor's forces spend pursuing the additional work. On each day that EID work is performed at force account, an EID inspector will prepare and sign a work report that details the labor, equipment, and materials that were used during that day's force account work. Said reports shall be given to City's Resident Engineer for payment processing. Before any additional work may commence, City must write and execute the CCO for EID's additional work, at EID's direct negotiated price or at force account, whichever is applicable. If the CCO impacts construction items of work on the contractor's critical path schedule, then EID will have five (5) calendar days to review, approve, and return the CCO to City. If the CCO does not impact the critical path schedule, EID will have ten (10) calendar days to review, approve, and return the CCO to City. If EID fails to return the CCO as approved to City within the time periods set forth herein, then City shall have no obligation to compel the contractor to perform the additional work.

It is agreed that all increases or decreases in justified costs associated with CCOs related to additional EID work may include but are not limited to direct construction

costs, extended contractor overhead, additional water pollution control costs due to CCOs extending the Project into winter, dust control, and equipment rental.

c. **EID Forces:** EID may alternatively request of City that EID use its own forces to perform additional work, as that term is defined hereinabove. The determination of whether to allow the additional work to be done by EID forces shall be within City's sole discretion. In the event City determines to allow EID to perform the additional work, EID shall comply with all conditions of City's standard encroachment permit, inclusive of indemnity and insurance, and shall provide proof of insurance meeting those requirements in advance of the commencement of the work. All additional work performed by EID shall comply with the requirements of this Agreement, with the Project construction schedule and be coordinated with City's contractor work. Any and all of City's contractor justified extra work, claims or delay costs arising from or caused by EID's force work shall be EID's sole responsibility. City and EID will determine in advance of City's approval whether any Project cost savings arise from EID's proposed force work and will mutually agree to whom said cost savings, if any, shall be credited. If the parties cannot reach agreement, City may decline to allow the EID force work.

C. DUTY OF COOPERATION, DEFENSE AND INDEMNITY OF CONTRACTUAL CLAIMS

1. City has agreed to include the EID Relocation Work within its Project on condition that EID remain solely responsible for the design, operation, inspection, relocation and maintenance of its facilities, and solely responsible for all actual costs associated therewith, and so long as the performance of the EID Relocation Work does not result in any delays to City's Project. Accordingly, EID shall fully cooperate with City in the timely response to all inquiries, notices, and contractual claims asserted by City's contractors and subcontractors as they pertain to the EID Relocation Work. Further, EID shall fully cooperate and assist City in the resolution and/or settlement of all claims from City's contractor and subcontractors as it relates to the EID Relocation Work. EID shall reimburse City for any amounts paid by City to City's contractor as a result of the settlement or resolution of said claims in accordance with the parties' respective rights and responsibilities under this Agreement.

2. As between EID and City, EID shall bear the sole and exclusive responsibility for any and all errors and omissions, costs associated with delays, claims, penalties, fines, damages, and liabilities of whatever kind or nature arising from the construction of the EID Relocation Work, whether to City's contractor or utility performing work in the Project area. Therefore, to the fullest extent allowed by law, EID shall hold harmless, defend at its own expense, and indemnify City and the officers, agents, employees and volunteers of City from any and all fines, penalties, liability, claims, losses, delays, damages or expenses, including reasonable attorney's fees, and economic or consequential losses, which are claimed to or in any way arise out of or are connected with the construction of EID Relocation Work, inclusive of the design, plans and specifications, excepting only the sole or active negligence, or willful misconduct, of City. Notwithstanding the above, in the event it is ultimately determined that the claim or liability is the result of the joint negligence of City and EID, EID'S obligation to indemnify City shall be reduced to the extent of City's negligence. However, EID's obligation to defend and indemnify City, except for City's sole and active negligence, shall apply in the first instance and until a determination of respective negligence is made. A determination made of respective liability between the two parties may be made either

by agreement between City and EID, or by a court of competent jurisdiction and City shall make any reimbursements required as a result of that determination. Each party shall notify the other party immediately in writing of any anticipated claim or damage related to activities performed under this Agreement. The parties shall cooperate with each other in the investigation and disposition of any claim arising out of the activities under this Agreement, providing that nothing shall require either party to disclose any documents, records or communications that are protected under the attorney-client privilege.

D. GENERAL PROVISIONS.

1. City shall disclose to its contractor for the Project the horizontal and vertical locations of EID facilities as provided by EID to City. City's construction contract for the Project shall require the contractor to indemnify and save harmless and defend, including attorneys fees and expenses, EID, its officials, agents, employees, and representatives from and against any and all claims, liability, losses, and/or causes of action which arise or are claimed to arise from the negligence or willful misconduct of the contractor, its subcontractor(s), or the agents, servants or employees of any of them.

2. EID shall reimburse City for EID's portion of Design, Mobilization, Flagging Traffic, Traffic Control Systems, Water and Dust Pollution Control Measures and City Construction Management Costs (which include Soils Testing and Surveying), for the design and placement of EID's facilities by City's engineer and contractor as outlined in this Agreement. All the above listed costs will be calculated at a total of twenty-five percent (25%) of EID's direct construction contract costs related to those facilities EID is responsible for as detailed in Exhibit B.

   EID shall reimburse City for EID's portion of Mobilization, for the placement of EID's facilities by City's contractor as outlined in this Agreement, for which total cost will be calculated as the actual percentage of the Mobilization bid line item of the total direct construction cost.

   EID shall reimburse City for City Construction Management costs for any extra or additional work as defined in Section B-8 above, at a rate of eight percent (8%) of the direct construction cost of the extra or additional work. Any additional flagging, traffic control, water and dust pollution control measures or mobilization required by the extra or additional work shall be included in the direct construction contract cost of the CCO and no additional reimbursement will be added thereto.

3. City shall maintain all books, documents, papers, accounting records, and other evidence pertaining to direct construction costs incurred by City related to those facilities detailed in Exhibit A, and shall make such materials available for inspection at City's offices at reasonable times during this Agreement, the Project construction contract period, and for three (3) years from the date of final payment. In order to provide complete information for an audit, the Project billings must show separate detailed and itemized line items of work performed by City's contractor.

4. All notices to be given by the parties hereto shall be in writing and served by depositing same in the United States Post Office, postage prepaid and return receipt requested. Notices to City shall be in duplicate and addressed as follows:

To City:

City of Placerville
Engineering Division
3101 Center Street
Placerville, CA 95667
Attn.: Rebecca Neves,
City Engineer
Engineering Division

or to such other location as City directs in writing.

Notices to EID shall be in duplicate and shall be addressed as follows:

To EID:

El Dorado Irrigation District
2890 Mosquito Road
Placerville, CA 95667
Attn.: Brian Mueller,
Director of Engineering

With a Copy to:

El Dorado Irrigation District
2890 Mosquito Road
Placerville, CA 95667
Attn.: Elizabeth Wells,
Engineering Manager

or to such other location as EID directs in writing.

5. City Officer or employee with responsibility for administering this Agreement is Rebecca Neves, City Engineer, Engineering Division, or successor.

6. The EID Officer or employee with responsibility for administering this Agreement is Elizabeth Wells, Engineering Manager, El Dorado Irrigation District, or successor.

7. The parties to this Agreement represent that the undersigned individuals executing this Agreement on their respective behalf are fully authorized to do so by law or other appropriate instrument and to bind upon said parties to the obligations set forth herein.

8. This Agreement and the attached Exhibits contain all of the terms of agreement between City and EID. All modifications or amendments to this Agreement must be in writing and signed by both parties.

9. Any dispute resolution action arising out of this Agreement, including, but not limited to, litigation, mediation, or arbitration, shall be brought in El Dorado County, California, and shall be resolved in accordance with the laws of the State of California.

10. If any provision of this Agreement is held by a court of competent jurisdiction to be invalid, void, or unenforceable, the remaining provisions will continue in full force and effect without being impaired or invalidated in any way.

11. The waiver by either party of any requirements, condition or provision of this Agreement shall not be deemed a waiver of any subsequent breach of that or any other requirement, condition or provision of this Agreement.

12. City and EID understand and agree that this Agreement creates rights and obligations solely between City and EID and is not intended to benefit any other party. No provision of this Agreement shall in any way inure to the benefit of any third-person so as to constitute any such third-person as a third-party beneficiary of this Agreement or any of its items or conditions, or otherwise give rise to any cause of action in any person not a party hereto.

13. This Agreement may be executed in one or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument.

14. City and EID agree that the following approvals, permits and authorizations per the contract documents will be obtained by City and/or City's contractor prior to the commencement of the Project: the SWPPP, City encroachment permit, all discharge permits, trenching and shoring, grading permits and Dust Control Plan and Asbestos Mitigation Plan. Any other permits, approvals, and authorizations necessary for the commencement of construction of the EID Relocation Work shall be the responsibility of EID. After the issuance of the notice to proceed and commencement of work, if there are any necessary additional permits, approvals and authorizations that arise from or are related to the EID Relocation Work, EID shall be responsible for obtaining said permits, approvals and authorizations in a timely fashion so as not to delay the work. If EID is unable to obtain said permit, approval, or authorization, or to do so will result in a delay in either the EID Installation Work or City's Project as a whole, then either (i) City may issue a CCO deleting the EID work in its entirety if it has not yet commenced, or (ii) if work has commenced on the EID work, EID shall be responsible for all costs and claims associated with the delay, inclusive of delay claims or extra work claims resulting to City's Project as a result of the delay.

Contract Administrator Concurrence:

By: Rebecca Neves _____ Dated: 5/25/17

Rebecca Neves, P.E.
City Engineer
Engineering Division
City of Placerville

Reviewed & Approved:

By: _____ Dated: 5/22/17

EID General Counsel's Office

IN WITNESS WHEREOF, the parties have executed this Agreement on the dates indicated below, the latest of which shall be deemed to be the effective date of this Agreement.

- - CITY OF PLACERVILLE - -

By: _____ Dated: 5/24/17

M. Cleve Morris
City Manager
"City"

Attest:
Regina O'Connell
City Clerk

By: _____ Dated: 5/25/17

City Clerk

- - EL DORADO IRRIGATION DISTRICT - -

By: _____ Dated: 5/23/17

Jim Abercrombie
General Manager
"EID"

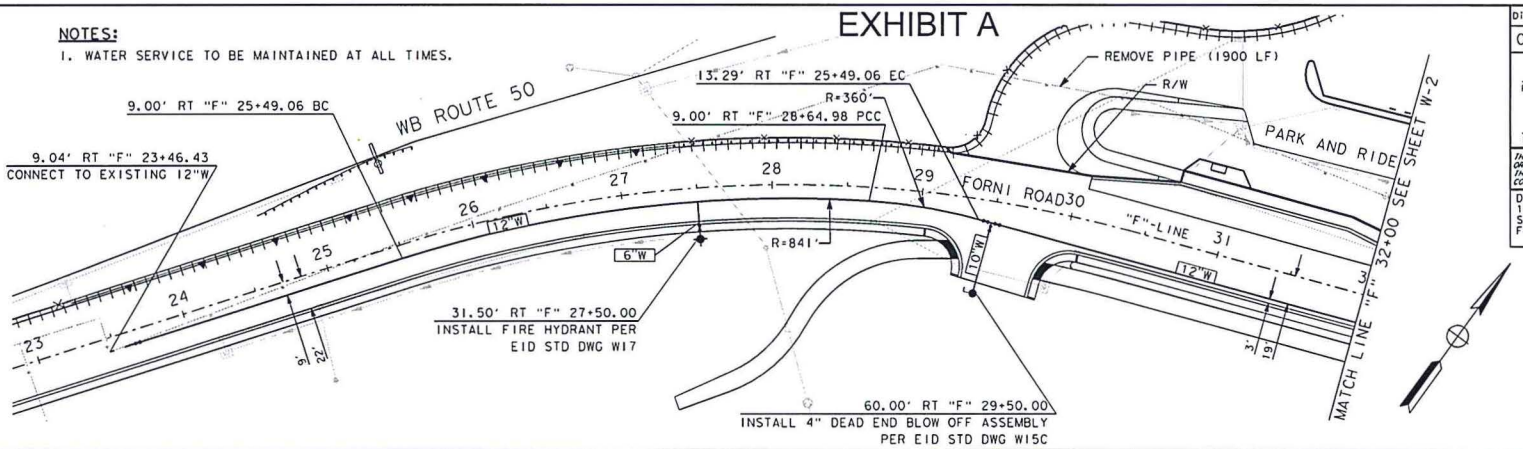
Attachments

A. Exhibit A – El Dorado Irrigation District (EID) Conflict Work
B. Exhibit B – Cost Estimate Summary

EXHIBIT A

NOTES:

1. WATER SERVICE TO BE MAINTAINED AT ALL TIMES.



Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
03	ED	50	16.0-16.6	XX	128

REGISTERED CIVIL ENGINEER DATE

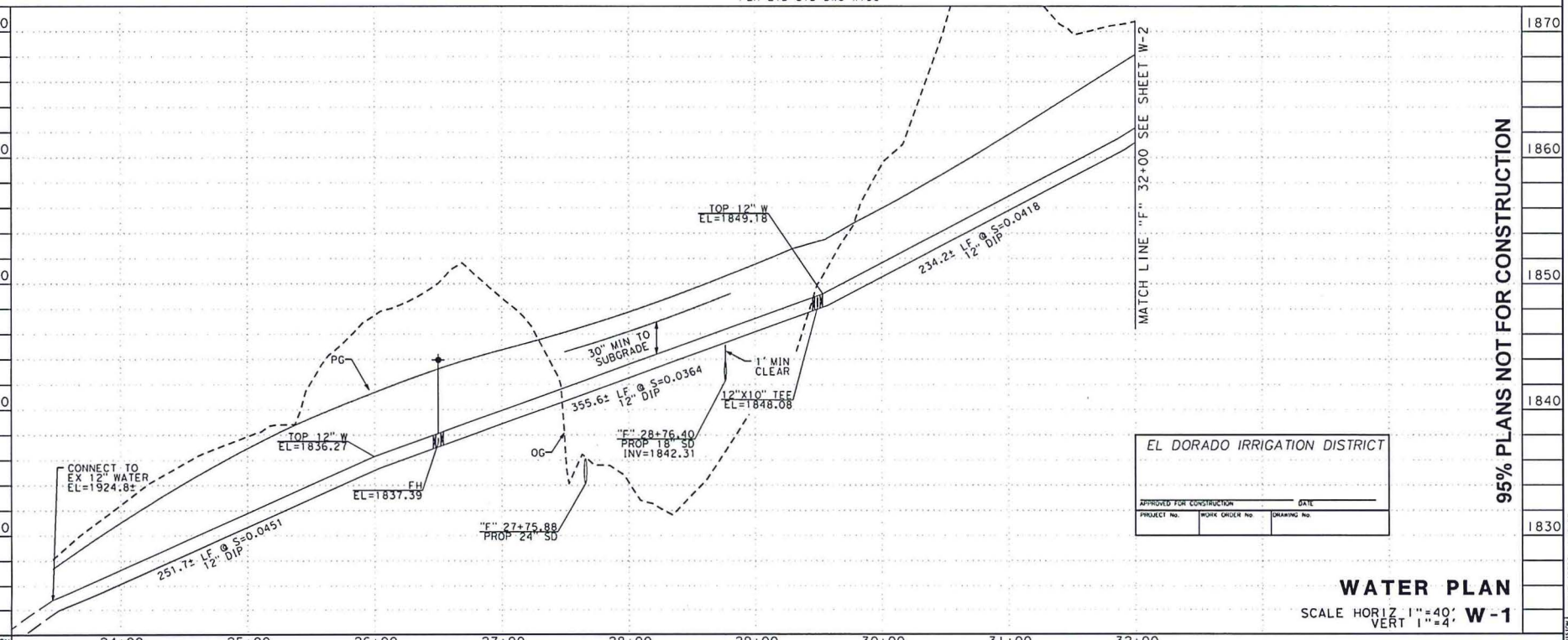
MATTHEW J. ATKINSON No. 82099 Exp. 03/31/18 CIVIL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

DOKKEN ENGINEERING
110 BLUE RAVINE ROAD,
SUITE 200
FOLSOM, CA 95630

CITY OF PLACERVILLE
DEVELOPMENT SERVICES
DEPARTMENT
3101 CENTER STREET
PLACERVILLE, CA 95667



EL DORADO IRRIGATION DISTRICT

APPROVED FOR CONSTRUCTION DATE

PROJECT No.	WORK ORDER No.	DRAWING No.

95% PLANS NOT FOR CONSTRUCTION

WATER PLAN

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VERT 1"=4'

W-1

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TIME PLOTTED => 7:58:13 AM
LAST ACTION 00-00-00

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans

CONSULTANT FUNCTIONAL SUPERVISOR: ELIZABETH B. DIAMOND
CALCULATED-DESIGNED BY: MATT ATKINSON
CHECKED BY: JUANN RAMOS
REVISED BY
DATE REVISED

BORDER LAST REVISED 4/11/2008

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

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CU 00000

EA 37280

EXHIBIT A

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
03	ED	50	16.0-16.6	XX	128

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REGISTERED PROFESSIONAL ENGINEER — MATTHEW J. ATKINSON — No. 82099 — Exp. 03/31/18 — CIVIL — STATE OF CALIFORNIA

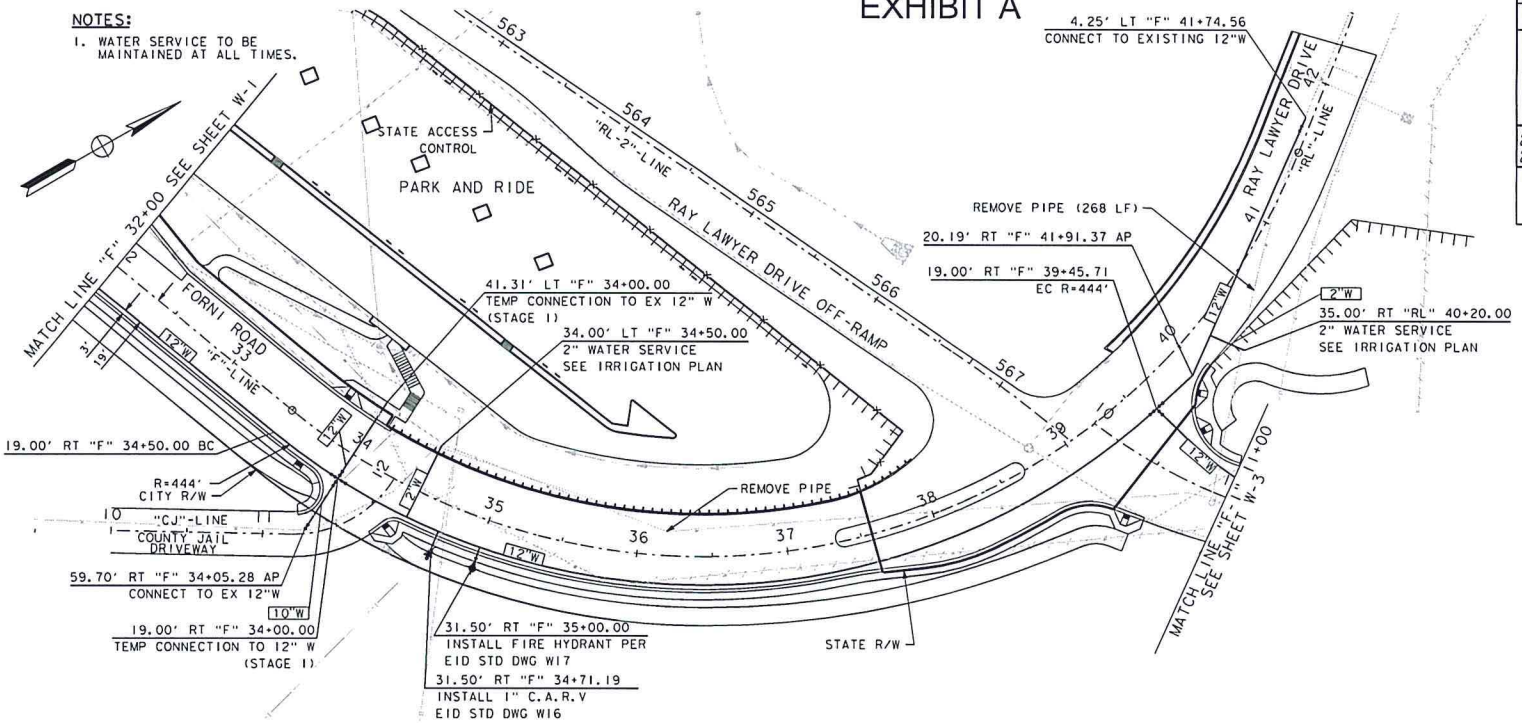
DOKKEN ENGINEERING
110 BLUE RAVINE ROAD,
SUITE 200
FOLSOM, CA 95630

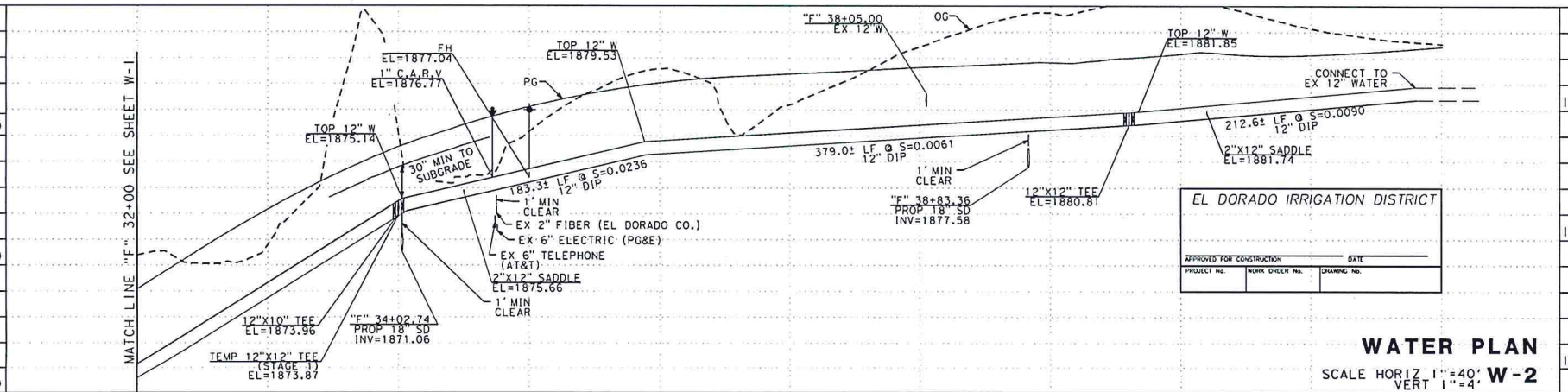
CITY OF PLACERVILLE
DEVELOPMENT SERVICES
DEPARTMENT
3101 CENTER STREET
PLACERVILLE, CA 95667

95% PLANS NOT FOR CONSTRUCTION

NOTES:

1. WATER SERVICE TO BE MAINTAINED AT ALL TIMES.





EL DORADO IRRIGATION DISTRICT

APPROVED FOR CONSTRUCTION DATE

PROJECT No.	WORK ORDER No.	DRAWING No.

WATER PLAN

SCALE HORIZ 1"=40'
VERT 1"=4'

W-2

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans

REVISED BY	DATE REVISED
MATT ATKINSON	JUANN RAMOS
CALCULATED-DESIGNED BY	CHECKED BY
CONSULTANT FUNCTIONAL SUPERVISOR	ELIZABETH B. DIAMOND

LAST REVISION 00-00-00 DATE PLOTTED => %DATE
TIME PLOTTED => %TIME

BORDER LAST REVISED 4/11/2008

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EA 37280

EXHIBIT A

NOTES:

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REGISTERED PROFESSIONAL ENGINEER — MATTHEW J. ATKINSON — No. 82099 — Exp. 03/31/18 — CIVIL — STATE OF CALIFORNIA

DOKKEN ENGINEERING
110 BLUE RAVINE ROAD,
SUITE 200
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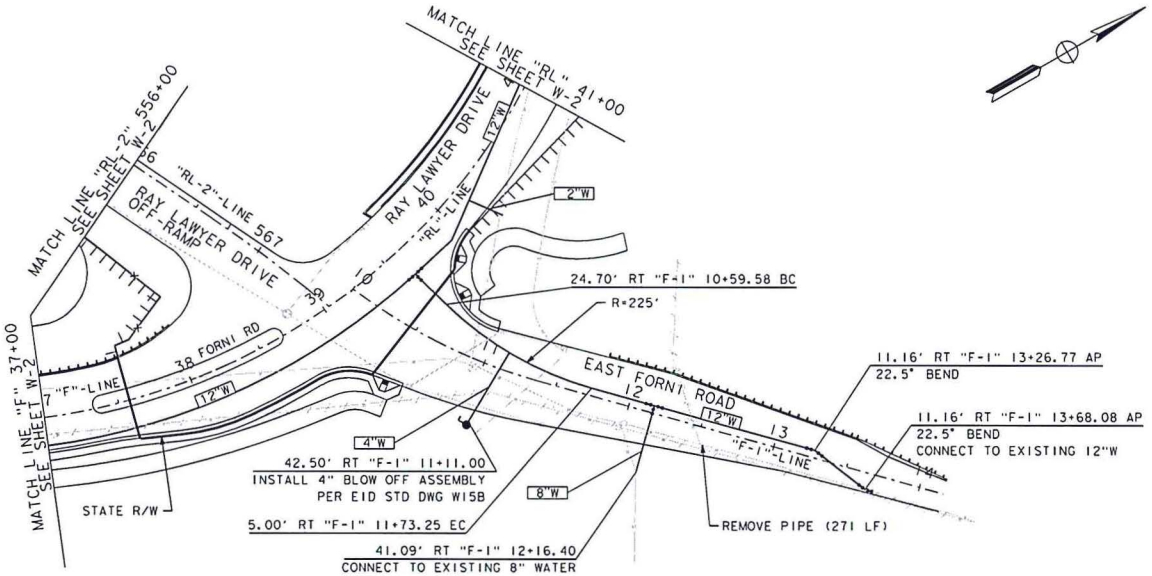
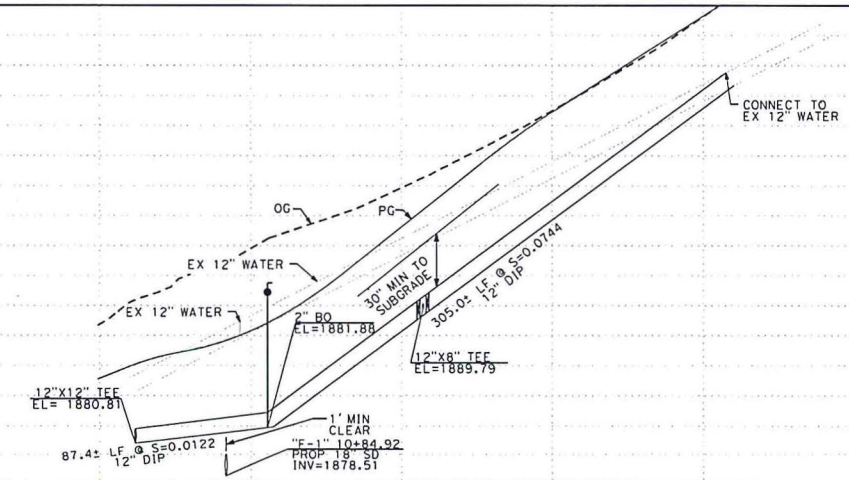
CITY OF PLACERVILLE
DEVELOPMENT SERVICES
DEPARTMENT
3101 CENTER STREET
PLACERVILLE, CA 95667

95% PLANS NOT FOR CONSTRUCTION





EL DORADO IRRIGATION DISTRICT

APPROVED FOR CONSTRUCTION DATE

PROJECT No.	WORK ORDER No.	DRAWING No.

WATER PLAN

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VERT 1"=4'

W-3

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans

CONSULTANT FUNCTIONAL SUPERVISOR: ELIZABETH B. DIAMOND
CALCULATED-DESIGNED BY: MATT ATKINSON
CHECKED BY: JUANN RAMOS
REVISED BY
DATE REVISED

LAST REVISION DATE PLOTTED => 00-00-00
TIME PLOTTED => 7:58:14 AM

BORDER LAST REVISED 4/11/2008

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EA 37280

EXHIBIT A

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REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

MATTHEW J. ATKINSON No. 82099 Exp. 03/31/18 CIVIL STATE OF CALIFORNIA REGISTERED PROFESSIONAL ENGINEER

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

DOKKEN ENGINEERING
110 BLUE RAVINE ROAD,
SUITE 200
FOLSOM, CA 95630

CITY OF PLACERVILLE
DEVELOPMENT SERVICES
DEPARTMENT
3101 CENTER STREET
PLACERVILLE, CA 95667

GENERAL WATER NOTES:

1. WORK SHALL BE ACCOMPLISHED UNDER THE APPROVAL, INSPECTION AND TO THE SATISFACTION OF THE EL DORADO IRRIGATION DISTRICT (EID). CONSTRUCTION SHALL CONFORM TO THESE PLANS AND EID'S LATEST VERSION OF THE TECHNICAL SPECIFICATIONS AND STANDARD DRAWINGS.
2. CONTRACTOR SHALL SCHEDULE A PRECONSTRUCTION CONFERENCE WITH EID INSPECTION 5 WORKING DAYS IN ADVANCE OF DOING WORK WITHIN THEIR JURISDICTION. CONSTRUCTION SHALL BE STARTED NO LATER THAN FIVE(5) DAYS AFTER THE PRECONSTRUCTION CONFERENCE.
3. LOCATION OF ALL UNDERGROUND FACILITIES ARE APPROXIMATE ONLY – THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE LOCATION AND DEPTH OF ALL FACILITIES PRIOR TO ANY EXCAVATION.
4. CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING AND PROTECTING ALL UNDERGROUND FACILITIES AFFECTED BY THE WORK AND SHALL CONTACT UNDERGROUND SERVICES ALERT (USA) 48 HOURS PRIOR TO ANY EXCAVATION WORK FOR DETERMINATION AND LOCATION OF UNDERGROUND UTILITIES (PHONE 1-800-642-2444)
5. CONNECTIONS TO EXISTING WATER FACILITY SHALL BE DONE BY A LICENSED CONTRACTOR IN ACCORDANCE WITH EID TIE-IN PROCEDURES PER TECHNICAL SPECIFICATION.
6. WHERE EXCAVATIONS FOR ANY FACILITIES CONSTRUCTION EXCEED 5 FEET IN DEPTH, CONTRACTOR SHALL OBTAIN AN EXCAVATION PERMIT FORM CAL/OSHA IN SACRAMENTO (PHONE 1-916-263-2800) POST PERMIT AT THE CONSTRUCTION SITE AND COMPLY WITH ALL REQUIREMENTS.
7. THE CONTRACTOR SHALL NOTIFY EID INSPECTION 48 HOURS PRIOR TO START OR RESTART OF WORK.
8. ONLY EID PERSONNEL SHALL OPERATE ANY VALVES ON EXISTING WATER SYSTEM.
9. THE TOTAL SITE REQUIRED FIRE FLOW IS __ GPM AT 20 PSIG RESIDUAL.
10. BASED UPON A HYDRAULIC GRADE LINE OF_ FT AT STATIC CONDITIONS AND _FT DURING FIRE FLOW AND MAXIMUM DAY DEMANDS, THE MAXIMUM AND MINIMUM PRESSURES ARE CALCULATED TO BE PSI AND PSI RESPECTIVELY.
11. PIPELINES SHALL BE DISINFECTED, FLUSHED AND HYDROSTATICALLY TESTED IN ACCORDANCE WITH EID'S TECHNICAL SPECIFICATION.
12. SERVICE INSTALLATIONS IN ROADWAYS WITH CUTS OR FILLS GREATER THAN 6 FEET IN HEIGHT AND SLOPES STEEPER THAN 3o1 SHALL HAVE THE METER BOX SET AT FINISH GRADE NEXT TO THE ROAD IN THE LOCATION DIRECTED BY EID. THE SERVICE LINE SHALL THEN BE EXTENDED 5 FEET BEYOND THE SLOPE CATCH POINT WITH PVC SCHEDULE 40 SIZED TO MATCH THE SERVICE. PLACE STEEL T –POSTS PAINTED BLUE AT THE END OF THIS SERVICE LINE.
13. LIDS SHALL BE MARKED "WATER".
14. CURBS SHALL BE WET STAMPED WITH A "=" BRAND WHERE WATER SERVICES INTERCEPT.
15. CONTRACTOR SHALL HAVE A COPY OF EID'S CONSTRUCTION STANDARDS ON THE JOB.
16. REVISIONS TO THE DRAWINGS MUST BE APPROVED IN WRITING BY EID.
17. STAKING INFORMATION: MINIMUM SPACING SHALL BE 50 FEET (25 FEET IN RADIUS) UNLESS OTHERWISE DIRECTED BY EID. INFORMATION WILL INCLUDE OFFSET, TYPE OF FACILITY AND CUT TO FLOW LINE ON THE FRONT OF THE STAKE AND ELEVATION AND STATION NUMBER ON THE BACK. ANGLE POINTS AND APPURTENANCES TO BE STAKED INCLUDING LINE AND CURB STAKES AS NEEDED. CUT SHEETS REQUIRED WHERE SUBGRADE HAS NOT BEEN MADE.

LEGEND

PROPOSED:

- WATER LINE
- GATE VALVE
- FIRE HYDRANT
- COMB. A.V.R.V
- BLOW OFF ASSEMBLY
- DRAINAGE IMPROVEMENTS

EXISTING

- WATER LINE (ACTIVE)
- WATER LINE (ABANDONED)
- TELEPHONE (UNDERGROUND)
- ELECTRIC (UNDERGROUND)

95% PLANS NOT FOR CONSTRUCTION

EL DORADO IRRIGATION DISTRICT

APPROVED FOR CONSTRUCTION DATE

PROJECT No.	WORK ORDER No.	DRAWING No.

WATER NOTES
W-4

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans

CONSULTANT FUNCTIONAL SUPERVISOR: ELIZABETH B. DIAMOND

CALCULATED-DESIGNED BY: MATT ATKINSON
CHECKED BY: JUANN RAMOS

REVISED BY | DATE REVISED

LAST REVISION 00-00-00 DATE PLOTTED => &DATE TIME PLOTTED => 7:58:14 AM

BORDER LAST REVISED 4/11/2008

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

USERNAME => DAN
DGN FILE => J:\1773_W_Placerville_IC\511\PHASE 2B-2C\Water Plan\1773_WP04.dgn

CU 00000

EA 37280

DESIGN AND CONSTRUCTION RESPONSIBILITY AND REIMBURSEMENT AGREEMENT

WESTERN PLACERVILLE INTERCHANGES PROJECT, PHASE 2

EXHIBIT "B"

COST ESTIMATE SUMMARY

TASK	ESTIMATED AMOUNT	
FINAL DESIGN/PS&E*	$	61,973.00
R/W	$	-
CONSTRUCTION*	$	600,000.00
CONSTRUCITON SUPPORT (5% COST OF CON)*	$	30,000.00
CONSTRUCTION MANAGEMENT (15% COST OF CON)	$	90,000.00
CONTINGENCY (10% OF CONSTRUCTION VALUE)	$	60,000.00
TOTAL	**$**	**841,973.00**

*Estimated Amount is based on written proposal prepared by Dokken Engineering.

ATTACHMENT 7

Owner: County of El Dorado
APN: 325-300-37
Project: WPIC Phase 2

ACQUISITION AGREEMENT FOR PUBLIC PURPOSES

This Agreement ("Agreement") is made by and between the **City of Placerville, a municipal corporation in the State of California** ("City"), and the **County of El Dorado, a political subdivision of the State of California**, referred to herein as ("County"), with reference to the following facts:

RECITALS

A. County owns that certain real property located in the County of El Dorado, California, a legal description of which is attached hereto as Exhibit A (the "Property").

B. County desires to convey and City desires to accept for public purposes in furtherance of the Western Placerville Interchange Phase 2 Project, a portion of the Property, in fee by Grant Deed as described and depicted in Exhibit B and the exhibits thereto, a Slope Easement as described and depicted in Exhibit C and the exhibits thereto, and a Temporary Construction Easement as described and depicted in Exhibit D and the exhibits thereto, all of which are attached hereto and collectively referred to hereinafter as "the Acquisition Properties", on the terms and conditions herein set forth.

NOW, THEREFORE, in consideration of the mutual covenants and conditions herein contained, the parties hereto agree as follows:

AGREEMENT

1. ACQUISITION

County hereby agrees to convey, upon approval by its Board of Supervisors, and City, upon

County Initials S.T.

approval by its City Manager, hereby agrees to accept from County, the Acquisition Properties, as described and depicted in the attached Exhibits B, C, and D and the exhibits thereto. The terms of the Temporary Construction Easement shall be the terms set forth in Exhibit D, which is attached hereto and hereby incorporated by reference and made a part hereof. The Temporary Construction Easement is for a period of 36 months from the date of full execution of this Agreement. Construction is anticipated to take no more than 36 months.

2. JUST COMPENSATION

The Just Compensation for the Acquisition Properties is valued at $66,900.00 (sixty-six thousand nine hundred dollars and no/100). County hereby waives its right to the compensation amount determined in the Appraisal Report and as offered by the City, as the public project proposed will mutually benefit the County, City and its citizens.

3. ESCROW

The acquisition of the Acquisition Properties will not be controlled by an escrow. Upon full execution of this Agreement, the City shall record the Grant Deed and Easement Deeds.

4. FEES

City shall pay:

A. Recording fees; and

B. The premium for the policy of title insurance should the City elect to purchase; and

C. Any documentary transfer tax, if any; and

D. All costs of executing and delivering the Grant Deed and Easements Deeds.

5. TITLE

County shall by Grant Deed and Easement Deeds convey to the City, the Acquisition Properties free and clear of title defects, liens, encumbrances, taxes, and deeds of trust. Title to the Acquisition Properties shall vest in the City subject only to:

A. Covenants, conditions, restrictions and reservations of record, if any; and

B. Easements or rights of way over the land for public or quasi-public utility or public road purposes, as contained in Placer Title Company Preliminary Report Order No. P-186191, if any; and

C. Exceptions 1, 2, and 3 paid current if required and subject to items 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16 and 17 as listed in said preliminary title report.

City may at its option choose to obtain a California Land Title Association standard policy of title insurance in the amount of the Purchase Price showing title vested in the City, insuring that title to the Acquisition Properties is vested in City free and clear of all title defects, liens, encumbrances, conditions, covenants, restrictions, and other adverse interests of record or known to County, subject only to those exceptions set forth hereinabove.

6. WARRANTIES

County warrants that:

A. County owns the Acquisition Properties, free and clear of all liens, licenses, claims, encumbrances, easements, and encroachments on the Acquisition Properties from adjacent properties, encroachments by improvements on the Acquisition Properties onto adjacent properties, and rights of way of any nature, not disclosed by the public record.

County Initials SF

B. County has no knowledge of any pending litigation involving the Acquisition Properties.

C. County has no knowledge of any violations of, or notices concerning defects or noncompliance with, any applicable code statute, regulation, or judicial order pertaining to the Acquisition Properties.

D. All warranties, covenants, and other obligations described in this contract section and elsewhere in this Agreement shall survive delivery of the Deeds.

7. PRORATION OF TAXES

The parcel containing the Acquisition Properties known as Assessor's Parcel Number 325-300-37 is owned by the County and is therefore exempt from property taxes. Proration of taxes and or payments thereof does not apply to the acquisitions from this Agreement.

8. NO ENVIRONMENTAL VIOLATIONS

The Acquisition Properties are adjacent to a public roadway which may or may not have pollutants and or water runoff which may have caused or created pollution or contamination. County represents that, to the best of County's knowledge, County knows of no fact or circumstance which would give rise to a claim or administrative proceeding that the Acquisition Properties are in violation of any federal, state, or local law, ordinance, or regulation relating to the environmental conditions on, under, or about the Acquisition Properties, including, but not limited to, soil and groundwater contamination.

9. POSSESSION

It is agreed and confirmed by the parties hereto that notwithstanding other provisions in this Agreement, the right to possession and use of the Acquisition Properties by the City or City's

County Initials S.F

contractors or authorized agents, for the purpose of performing activities related to and incidental to the construction of improvements Western Placerville Interchange Project Phase 2, inclusive of the right to remove and dispose of any existing improvements, shall commence upon the last date of execution of this Agreement by City and County.

10. COUNTERPARTS

This Agreement may be executed in one or more counterparts, each of which shall be an original and all of which together shall constitute one and the same instrument.

11. ITEMS TO BE DELIVERED

The following items shall be delivered to the County:

A. City shall provide the County with a fully executed copy of the Agreement.

B. City shall record and provide conformed copies of the Grant and Easement Deeds.

12. TIME IS OF THE ESSENCE

Time is of the essence to this Agreement. This Agreement may not be extended, modified, altered, or changed except in writing signed by City and County.

13. BEST EFFORTS

City and County shall act in good faith and use their best efforts after the effective date hereof to ensure that their respective obligations hereunder are fully and punctually performed. City and County shall perform any further acts and execute and deliver any other documents or instruments that may be reasonably necessary to carry out the provisions of this Agreement.

14. BINDING EFFECT

This Agreement shall be binding on and inure to the benefit of the parties to this Agreement,

their heirs, personal representatives, successors, and assigns except as otherwise provided in this Agreement.

15. GOVERNING LAW

This Agreement and the legal relations between the parties shall be governed by and construed in accordance with the laws of the State of California.

16. HEADINGS

The headings of the articles and sections of this Agreement are inserted for convenience only. They do not constitute part of this Agreement and shall not be used in its construction.

17. WAIVER

The waiver by any party to this Agreement of a breach of any provision of this Agreement shall not be deemed a continuing waiver or a waiver of any subsequent breach of that or any other provision of this Agreement.

18. CONSTRUCTION CONTRACT WORK

City or City's contractors or authorized agents shall, at the time of construction, perform the following construction work on the County's remaining property:

A. City or City's contractor or authorized agent will remove existing fencing as necessary and replace with new fencing of a like-kind material if necessary and where applicable.

B. City or City's contractor or authorized agent will conform the new roadway to the existing driveway according to Caltrans standard specifications. The driveway to the jail and its facilities shall remain open at all times during construction.

County Initials S.E

C. City or City's contractor or authorized agent will remove and reinstall the "El Dorado County Jail" concrete sign in the same manner and style as its pre-construction condition if its removal is necessary. If the sign is removed due to construction, a temporary sign stating the same verbiage and size will be placed nearest the existing sign during construction.

All work done under this Agreement shall conform to all applicable building, fire and sanitary laws, ordinances, and regulations relating to such work, and shall be done in a good and workmanlike manner. All structures, improvements or other facilities, when removed and relocated, or reconstructed by City, shall be left in as good a condition as found. County understands and agrees that after completion of the work described, said facilities, except utility facilities, will be considered County's sole property and County will be responsible for their maintenance and repair.

19. PERMISSION TO ENTER FOR CONSTRUCTION PURPOSES

Permission is hereby granted to City, the City's contractor or its authorized agent to enter County's Property, (Assessor's Parcel Number 325-300-37) where necessary, to perform the work as described in Section 18 of this Agreement.

20. EFFECTIVE DATE

This Agreement shall be subject to the approval of the County's Board of Supervisors after due notice and in accordance with the provisions of applicable law.

21. ENTIRE AGREEMENT

This Agreement constitutes the entire agreement between the parties pertaining to the subject

matter hereof. No amendment, supplement, modification, waiver, or termination of this Agreement shall be binding unless executed in writing by the party to be bound thereby.

22. INDEMNIFICATION

City agrees to indemnify and hold harmless the County from any liability arising out of City's operations under this agreement. City further agrees to assume responsibility for any damages proximately caused by reason of City's operation under this agreement and City will, at its option, either repair or pay for such damage.

23. AUTHORIZED SIGNATURES

The parties to this Agreement represent that the undersigned individuals executing this Agreement on their respective behalf are fully authorized to do so by law or other appropriate instrument and to bind upon said parties the obligations set forth herein.

COUNTY:

Date: 5/23/17

By: _____
Shiva Fentzen, Chair
Board of Supervisors

ATTEST:
Clerk of the Board of Supervisors
By: _____
Deputy Clerk

CITY:

Date: 5/25/17

By: _____
M. Cleve Morris, City Manager

County Initials S.F

Exhibit "A"
Legal Description

The land described herein is situated in the State of California, County of El Dorado, City of , described as follows:

PARCEL ONE:

PARCEL A:

A PORTION OF THE NORTHEAST QUARTER AND NORTHWEST QUARTER OF SECTION 13, TOWNSHIP 10 NORTH, RANGE 10 EAST, M.D.B.&M. DESCRIBED AS FOLLOWS:

BEGINNING AT THE MOST EASTERLY CORNER OF THE TRACT HEREIN DESCRIBED, A 3/4 INCH DIAMETER CAPPED PIPE FROM WHICH THE NORTHEAST CORNER OF SECTION 13, TOWNSHIP 10 NORTH, RANGE 10 EAST, M.D.B.&M. BEARS NORTH 49 DEG 52' 45" EAST 2544.83 FEET; THENCE FROM THE POINT OF BEGINNING SOUTH 43 DEG 35' 55" WEST 664.44 FEET TO A SIMILAR PIPE AT THE MOST SOUTHERLY CORNER THEREOF IN THE EASTERLY LINE OF THE SOUTHERN PACIFIC RAILROAD RIGHT OF WAY FROM WHICH A POINT IN THE CENTERLINE OF SAID RIGHT OF WAY AT OR NEAR STATION 3083+89.0 BEARS SOUTH 43 DEG 35' 55" WEST 53.56 FEET; THENCE ALONG THE EASTERLY LINE OF SAID RIGHT OF WAY 50 FEET FROM THE CENTERLINE THEREOF AND PARALLEL THEREWITH NORTH 25 DEG 15' 45" WEST 475.30 FEET TO A SIMILAR PIPE; NORTH 23 DEG 26' 05" WEST 86.08 FEET TO A SIMILAR PIPE; NORTH 20 DEG 24' 35" WEST 16.61 FEET TO A SIMILAR PIPE; NORTH 14 DEG 35' 25" WEST 91.28 FEET; NORTH 4 DEG 20' 05" WEST 91.28 FEET; NORTH 5 DEG 25' 25" EAST 91.28 FEET TO A SIMILAR PIPE; NORTH 15 DEG 27' 25" EAST 91.28 FEET TO A SIMILAR PIPE; NORTH 25 DEG 48' 25" EAST 91.28 FEET; NORTH 35 DEG 36' 55" EAST 91.28 FEET TO A SIMILAR PIPE; NORTH 45 DEG 55' 25" EAST 91.28 FEET TO A SIMILAR PIPE AND NORTH 53 DEG 10' 25" EAST 22.29 FEET TO A SIMILAR PIPE AT THE MOST NORTHERLY CORNER THEREOF SOUTHEASTERLY FROM THE CENTERLINE STATION 3097+15.0; THENCE LEAVING SAID RIGHT OF WAY LINE SOUTH 39 DEG 26' 20" EAST 821.52 FEET TO THE POINT OF BEGINNING. ACCORDING TO A SURVEY BY ELMER J. KENT, COUNTY SURVEYOR, NO. 1820, COUNTY OF EL DORADO, STATE OF CALIFORNIA.

PARCEL B:

ALL THAT PORTION OF THE NORTH HALF OF SECTION 13, TOWNSHIP 10 NORTH, RANGE 10 EAST, M.D.B.& M. DESCRIBED AS FOLLOWS:

BEGINNING AT A 3/4 INCH CAPPED IRON PIPE, THE NORTHEAST CORNER OF THE PARCEL OF LAND HEREIN DESCRIBED, FROM WHICH POINT THE NORTHEAST CORNER OF SAID SECTION 13 BEARS NORTH 64 DEG 36' 05" EAST 1519.14 FEET, AND FROM WHICH POINT OF BEGINNING A 1 1/4 INCH CAPPED IRON PIPE BEARS NORTH 7 DEG 28' EAST 445.17 FEET; THENCE LEAVING SAID POINT OF BEGINNING, WEST 629.38 FEET TO A 3/4 INCH CAPPED IRON PIPE AT THE INTERSECTION OF THE SOUTHERLY BOUNDARY OF FORNI ROAD AND THE EASTERLY BOUNDARY OF THE SOUTHERN PACIFIC RAILROAD RIGHT OF WAY, SAID PIPE BEING EAST 66.62 FEET FROM ENGINEER'S STATION 3102+48.6 OF THE CENTERLINE OF SAID RAILROAD RIGHT OF WAY; THENCE LEAVING SAID FORNI ROAD AND ALONG THE EASTERLY BOUNDARY OF SAID RAILROAD RIGHT OF WAY, SOUTH 40 DEG 56' 30" WEST 46.16 FEET, A SIMILAR PIPE; THENCE SOUTH 48 DEG 18' 25" WEST 72.51 FEET A SIMILAR PIPE; THENCE SOUTH 53 DEG 10' 25" WEST 94.09 FEET, A SIMILAR PIPE; THENCE SOUTH 55 DEG 25' 25" WEST 310.20 FEET, A SIMILAR PIPE; THENCE SOUTH 53 DEG 10' 25" WEST 63.79 FEET, A SIMILAR PIPE; THE MOST WESTERLY CORNER OF THE PARCEL OF LAND HEREIN DESCRIBED; THENCE LEAVING SAID

RAILROAD RIGHT OF WAY LINE, SOUTH 39 DEG 26' 20" EAST 821.52 FEET TO A SIMILAR PIPE, FROM WHICH THE NORTHEAST CORNER OF SAID SECTION 13 BEARS NORTH 49 DEG 52' 45" EAST 2544.83 FEET; THENCE NORTH 43 DEG 35' 55" EAST 825.54 FEET, A SIMILAR PIPE, FROM WHICH A 1 1/4 INCH CAPPED IRON PIPE BEARS SOUTH 59 DEG 26' 50" EAST 390.29 FEET; THENCE NORTH 0 DEG 38' 40" EAST 390.41 FEET TO THE POINT OF BEGINNING. ACCORDING TO A SURVEY MADE IN DECEMBER 1961, UNDER THE DIRECTION OF ELMER J. KENT, L.S. 1820.

EXCEPTING THEREFROM ALL THAT PORTION GRANTED TO THE STATE OF CALIFORNIA IN DEED RECORDED JANUARY 28, 1997 IN BOOK 4846 AT PAGE 142 OFFICIAL RECORDS DESCRIBED AS FOLLOW:
THAT PORTION OF THE NORTH 1/2 OF SECTION 13, TOWNSHIP 10 NORTH, RANGE 10 EAST, M.D.B.& M. DESCRIBED AS FOLLOW:

BEGINNING AT A 3/4 INCH CAPPED IRON PIPE STAMPED "LS 1820, 1961", FROM WHICH THE SOUTHWEST CORNER OF PARCEL 3 AS SHOWN ON THAT PARCEL MAP FILED FEBRUARY 2, 1982 IN BOOK 30 OF PARCEL MAPS AT PAGE 90 BEARS NORTH 89 DEG 35' 51" EAST 2.50 FEET, SAID PIPE IS ALSO THE NORTHWEST CORNER OF SAID GRANT DEED RECORDED IN BOOK 582 AT PAGE 253; THENCE FROM SAID POINT OF BEGINNING ALONG THE SOUTHERLY BOUNDARY OF SAID PARCEL 3, NORTH 89 DEG 35' 51" EAST 39.84 FEET; THENCE LEAVING SAID BOUNDARY, NON-TANGENT, ALONG A 392.00 FOOT RADIUS CURVE TO THE RIGHT, THROUGH A CENTRAL ANGLE OF 06 DEG 03' 08" AN ARC DISTANCE OF 41.41 FEET, SUBTENDED BY A CHORD OF SOUTH 47 DEG 53' 28" WEST 41.39 FEET, THENCE SOUTH 50 DEG 55' 02" WEST 8.05 FEET; THENCE NORTH 39 DEG 04' 58" WEST 23.74 FEET TO THE EASTERLY BOUNDARY OF THE SOUTHERN PACIFIC RAILROAD RIGHT OF WAY; THENCE ALONG SAID RIGHT OF WAY NORTH 40 DEG 32' 56" EAST 18.59 FEET TO THE POINT OF BEGINNING.

ALSO EXCEPTING THEREFROM ALL THAT PORTION DEEDED TO JOHN V. BRIGGS AKA JUNIOR VERN BRIGGS AND CARMEN BRIGGS, TRUSTEES OF THE BRIGGS FAMILY TRUST DATED MARCH 30, 1992 BY GRANT DEED RECORDED ON FEBRUARY 24, 2015 IN SERIES NO,. 2015-6925 OFFICIAL RECORDS, DESCRIBED AS FOLLOWS:

A PORTION OF THAT CERTAIN REAL PROPERTY DESCRIBED IN BOOK 582 OF OFFICIAL RECORDS AT PAGE 253 ON FILED IN THE OFFICE OF THE EL DORADO COUNTY RECORDER BEING A PORTION OF SECTION 13, TOWNSHIP 10 NORTH, RANGE 10 EAST, M.D.M., CITY OF PLACERVILLE, COUNTY OF EL DORADO, STATE OF CALIFORNIA, ALSO BEING A PORTION OF THAT CERTAIN 24.99 ACRE PARCEL SHOWN ON THAT CERTAIN RECORD OF SURVEY FILED IN BOOK 24 AT PAGE 35, OF THE OFFICIAL RECORDS OF SAID COUNTY MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTHEAST CORNER OF SAID REAL PROPERTY MARKED BY THE 3/4" CAPPED IRON PIPE STAMPED "LS 1820" AND SHOWN ON SAID RECORD OF SURVEY FILED IN BOOK 24 AT PAGE 35; THENCE ALONG THE EASTERLY BOUNDARY OF SAID RECORD OF SURVEY, SOUTH 00 DEG 15' 08" WEST 390.41 FEET TO A SIMILAR PIPE; THENCE SOUTH 43 DEG 12' 23" WEST 269.91 FEET; THENCE LEAVING SAID EASTERLY BOUNDARY NORTH 44 DEG 54' 09" WEST 563.06 FEET; THENCE NORTH 45 DEG 05' 51" EAST 262.92 FEET TO THE NORTH BOUNDARY OF SAID RECORD OF SURVEY; THENCE ALONG SAID NORTH BOUNDARY NORTH 89 DEG 36' 28" EAST 397.75 FEET TO THE POINT OF BEGINNING.

APN #325-300-37-100

Exhibit 'B'

RECORDING REQUESTED BY AND
WHEN RECORDED MAIL TO:

City of Placerville
3101 Center Street
Placerville, CA 95667

APN: 325-300-37
Seller: County of El Dorado
Project: Western Placerville Interchange Phase 2

Mail Tax Statements to above.
Exempt from Documentary Tax Transfer
Per Revenue and Taxation Code 11922

Above section for Recorder's use

GRANT DEED

FOR VALUABLE CONSIDERATION, receipt of which is hereby acknowledged, **The County of El Dorado, a political subdivision of the State of California,** hereinafter referred to as "Grantor", grants to the **City of Placerville, a municipal corporation in the State of California**, in fee, all that certain real property situate in the County of El Dorado, State of California,

Described in Exhibit "A" and depicted in Exhibit "B" attached hereto and made a part hereof, which description is by this reference incorporated herein.

IN WITNESS WHEREOF, Grantor has herein subscribed its name on this _____ day of _____, 20__.

GRANTOR: The County of El Dorado, a political subdivision of the State of California

_____
Shiva Frentzen, Chair
Board of Supervisors

ATTEST:
James S. Mitrisin
Clerk of the Board of Supervisors

By: _____
Deputy Clerk

Exhibit 'B'

(First signature must be acknowledged by a Notary Public)

EXHIBIT "A"

A.P.N. : 325-300-37
RIGHT OF WAY ACQUISITION

All that real property situate in the City of Placerville, County of El Dorado, State of California, lying within a portion of Section 13, Township 10 North, Range 10 East, M.D.M and being a portion of the Tract of land as shown on Record of Survey filed in Book 24 at Page 35 of Maps, Records of El Dorado County, and being more particularly described as follows:

Beginning at an angle point in the North line of the above mentioned Tract of land, said point also being the Westerly terminus of the line shown as North 89°36'28" East, 252.69 feet on said map; thence from the point of beginning along the North line of said Tract of land North 89°36'44" East, 8.52 feet; thence leaving said North line along a curve to the right and having a radius of 471.00 feet and a chord bearing and distance of South 52°43'20" West, 271.89 feet; thence South 69°29'55" West, 58.03 feet to a point on the Westerly line of said Tract of land; thence along the Westerly line of said Tract of land the following described courses:
North 55°08'01" East, 78.17 feet to a 3/4" capped iron pipe stamped LS 1820 1961; thence North 52°45'57" East, 93.80 feet; thence North 47°59'49" East, 72.20 feet; thence North 40°32'56" East, 27.31 feet, thence South 39°08'51" East, 23.75 feet to a rebar with aluminum cap stamped LS 6626; thence North 50°58'09" East, 8.03 feet to a similar rebar; thence along a curve to the left and having a radius of 392.00 feet and a chord bearing and distance of North 47°51'16" East, 41.43 feet to a point on the North line of said Tract of land and the point of beginning containing 7,557 square feet more or less.

See Exhibit 'B' attached hereto and made a part of this description.

End of Description

The **Basis of Bearings** for this description is identical to that of Record of Survey Map filed in Book 23 at Page 26 of Maps, El Dorado County Records as determined by found monuments.

This description has been prepared by me or under my direct supervision.

Ryan Thompson L.S. 8749

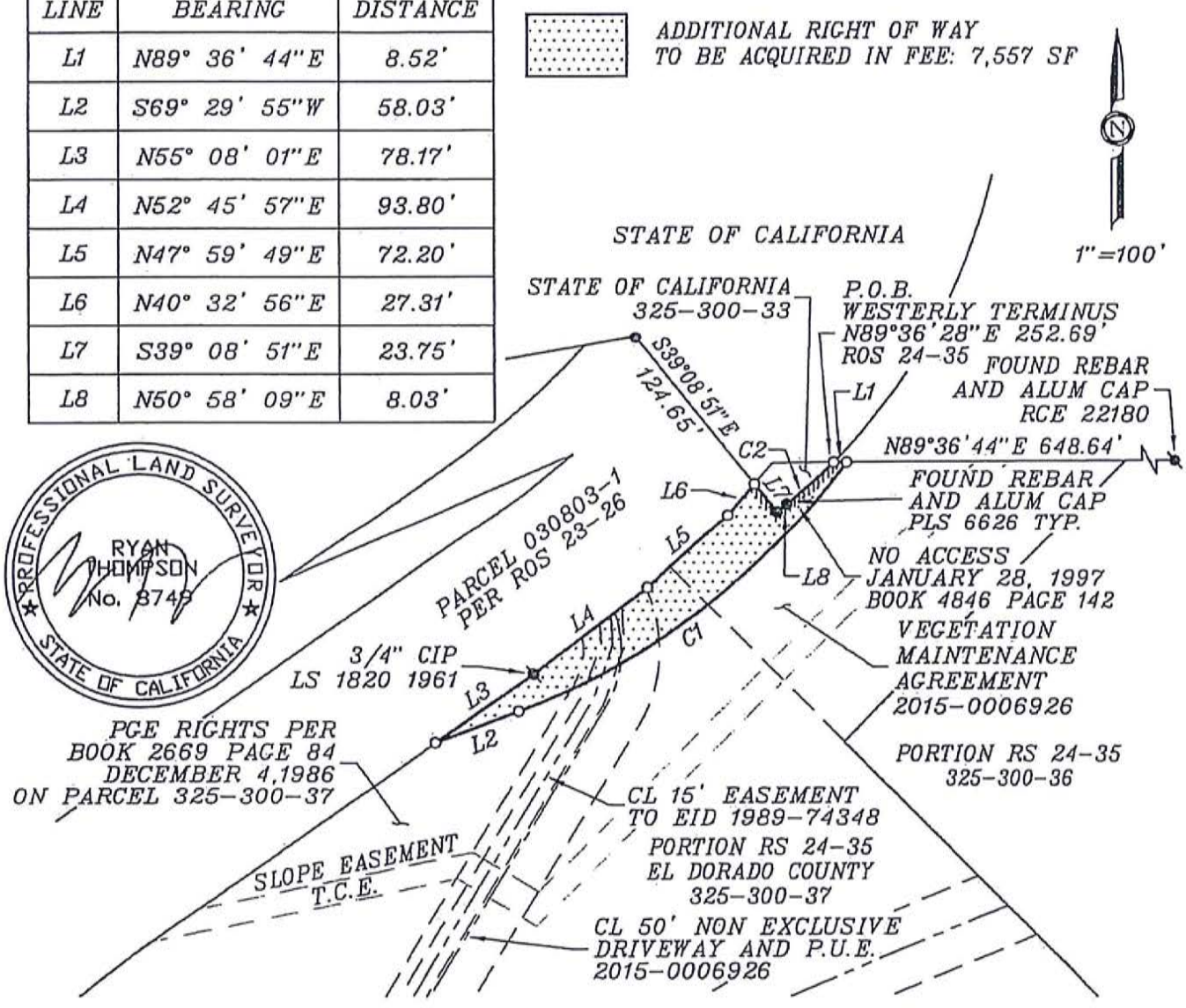
3-20-17
Date

UNICO Engineering, Inc.
Folsom, CA

EXHIBIT B

CURVE TABLE					
CURVE	ARC LENGTH	RADIUS	DELTA	CHORD BEARING	CHORD LENGTH
C1	275.81'	471.00'	33°33'07"	S52° 43' 20"W	271.89'
C2	41.45'	392.00'	06°03'32"	N47° 51' 16"E	41.43'

LINE TABLE		
LINE	BEARING	DISTANCE
L1	N89° 36' 44"E	8.52'
L2	S69° 29' 55"W	58.03'
L3	N55° 08' 01"E	78.17'
L4	N52° 45' 57"E	93.80'
L5	N47° 59' 49"E	72.20'
L6	N40° 32' 56"E	27.31'
L7	S39° 08' 51"E	23.75'
L8	N50° 58' 09"E	8.03'



APN 325-300-37	WESTERN PLACERVILLE INTERCHANGE PROJECT PHASE 2	UNICO ENGINEERING
SHEET 2 OF 2	RIGHT OF WAY ACQUISITION CITY OF PLACERVILLE CALIFORNIA	110 BLUE RAVINE RD SUITE 101 | FOLSOM, CA 95630 PHONE: 800.277.6623 | unicoengineering.com

Exhibit 'C'

RECORDING REQUESTED BY AND
WHEN RECORDED MAIL TO:

City of Placerville
3101 Center Street
Placerville, CA 95667

APN: 325-300-37
Seller: County of El Dorado
Project: Western Placerville Interchange Phase 2

Mail Tax Statements to above.
Exempt from Documentary Tax Transfer
Per Revenue and Taxation Code 11922

Above section for Recorder's use

GRANT OF SLOPE EASEMENT

FOR VALUABLE CONSIDERATION, receipt of which is hereby acknowledged, **The County of El Dorado, a political subdivision of the State of California,** hereinafter referred to as "Grantor", grants to the **City of Placerville, a municipal corporation in the State of California**, a slope easement for construction and maintenance of slope/s together with any and all appurtenances appertaining thereto, over, under, upon, and across a portion of all that certain real property situate in the County of El Dorado, State of California,

Described in Exhibit "A" and depicted in Exhibit "B" attached hereto and made a part hereof, which description is by this reference incorporated herein.

IN WITNESS WHEREOF, Grantor has herein subscribed its name on this _____ day of _____, 20__.

GRANTOR: **The County of El Dorado, a political subdivision of the State of California**

_____
Shiva Frentzen, Chair
Board of Supervisors

ATTEST:
James S. Mitrisin
Clerk of the Board of Supervisors

By: _____
Deputy Clerk

Exhibit 'C'

(First signature must be acknowledged by a Notary Public)

EXHIBIT "A"

A.P.N. : 325-300-37
Slope Easement

All that real property situate in the City of Placerville, County of El Dorado, State of California, lying within a portion of Section 13, Township 10 North, Range 10 East, M.D.M and being a portion of the Tract of land as shown on Record of Survey filed in Book 24 at Page 35 of Maps, Records of El Dorado County, and being more particularly described as follows:

Beginning at a point in the North line of the above mentioned Tract of land, from which the Westerly terminus of the line shown as North 89°36'28" East, 252.69 feet on said map bears South 89°36'44" West, 8.52 feet; thence from the point of beginning and along the North line of said Tract of land North 89°36'44" East, 85.00 feet; thence leaving said North line of said Tract of land South 45°37'05" West, 404.68 feet; thence North 58°50'53" West, 50.00 feet; thence South 78°21'12" West, 182.35 feet to a point on the Westerly line of said Tract of Land; thence along the Westerly line of said Tract of land North 55°00'46" East, 189.08 feet; thence leaving said Westerly line of said Tract of land North 69°29'55" East, 58.03 feet; thence along a curve to the left and having a radius of 471.00 feet and a chord bearing and distance of North 52°43'20" East, 271.89 feet to a point on the Northerly line of said Tract of land and the point of beginning containing 33,417 square feet more or less.

See Exhibit 'B' attached hereto and made a part of this description.

End of Description

The **Basis of Bearings** for this description is identical to that of Record of Survey Map filed in Book 23 at Page 26 of Maps, El Dorado County Records as determined by found monuments.

This description has been prepared by me or under my direct supervision.

Ryan Thompson L.S. 8749

3-20-17
Date

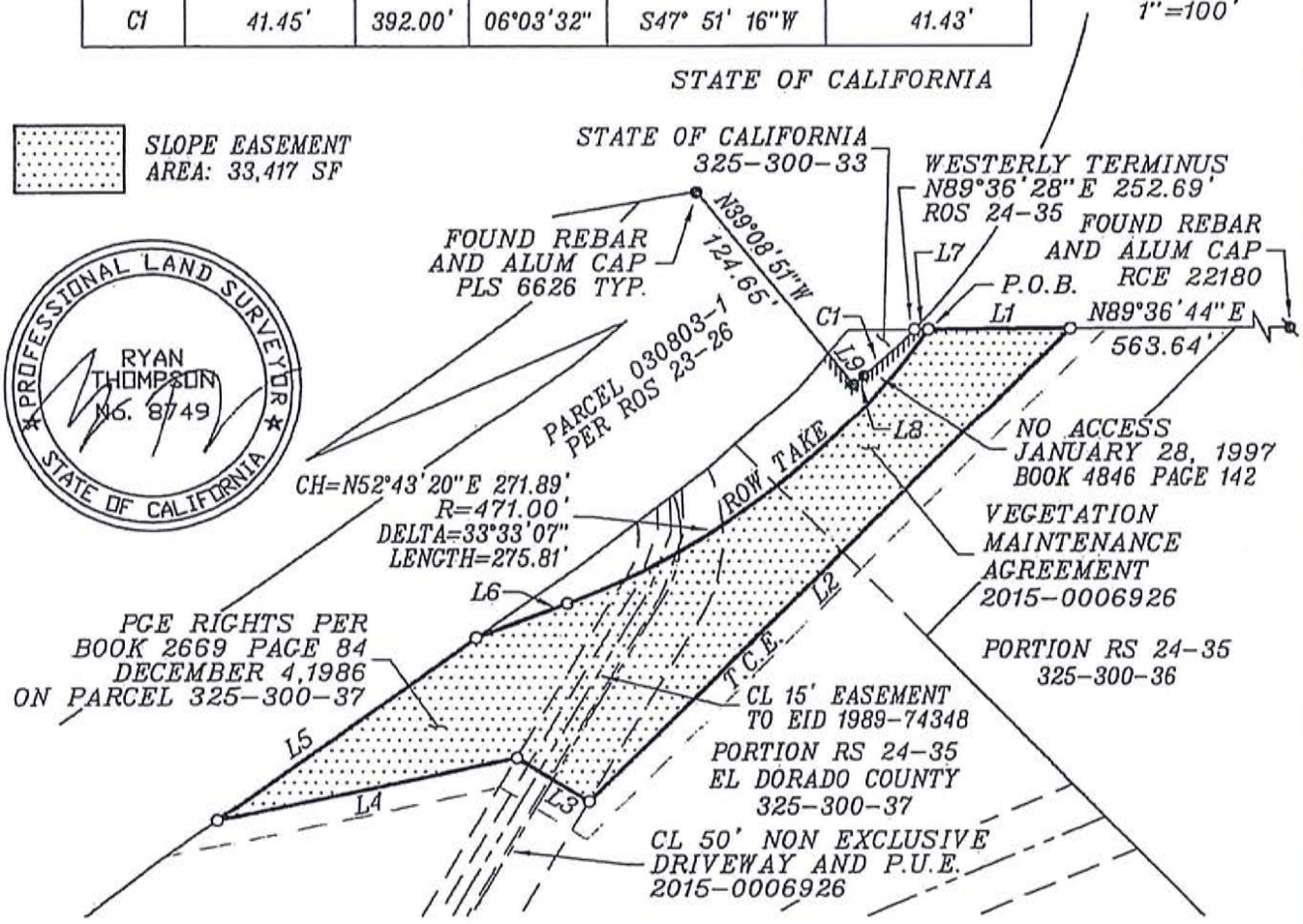
UNICO Engineering, Inc.
Folsom, CA

EXHIBIT B

LINE TABLE					
LINE	BEARING	DISTANCE	LINE	BEARING	DISTANCE
L1	N89° 36' 44"E	85.00'	L5	N55° 00' 46"E	189.08'
L2	S45° 37' 05"W	404.68'	L6	N69° 29' 55"E	58.03'
L3	N58° 50' 53"W	50.00'	L7	S89° 36' 44"W	8.52'
L4	S78° 21' 12"W	182.35'	L8	S50° 58' 09"W	8.03'
			L9	N39° 08' 51"W	23.75'

CURVE TABLE					
CURVE	ARC LENGTH	RADIUS	DELTA	CHORD BEARING	CHORD LENGTH
C1	41.45'	392.00'	06°03'32"	S47° 51' 16"W	41.43'

1"=100'



APN 325-300-37	WESTERN PLACERVILLE INTERCHANGE PROJECT PHASE 2	UNICO ENGINEERING
SHEET 2 OF 2	SLOPE EASEMENT ACQUISITION CITY OF PLACERVILLE CALIFORNIA	110 BLUE RAVINE RD SUITE 101 | FOLSOM, CA 95630 PHONE: 800.277.6623 | unicoengineering.com

Exhibit 'D'

RECORDING REQUESTED BY AND
WHEN RECORDED MAIL TO:

City of Placerville
3101 Center Street
Placerville, CA 95667

APN: 325-300-37
Seller: County of El Dorado
Project: Western Placerville Interchange Phase 2

Mail Tax Statements to above.
Exempt from Documentary Tax Transfer
Per Revenue and Taxation Code 11922

Above section for Recorder's use

GRANT OF TEMPORARY CONSTRUCTION EASEMENT

The County of El Dorado, a political subdivision of the State of California, hereinafter referred to as "Grantor", grants to the **City of Placerville, a municipal corporation in the State of California,** hereinafter referred to as "Grantee", a temporary construction easement over, upon, and across a portion of that real property in the County of El Dorado, State of California, described as:

See Exhibits "A" and "B" attached hereto and by reference is made a part hereof.

This temporary construction easement is granted under the express conditions listed below:

1. In consideration of $0.00 (zero dollars AND 00/100) and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, Grantor does hereby Grant to Grantee an easement for temporary construction over and across those identified portions of the Grantor parcel.

2. Grantor represents and warrants that they are the owner of the property described in Exhibit A and depicted on the map in Exhibit B attached hereto and made a part hereof, and that Grantor has the exclusive right to grant the temporary construction easement.

3. This temporary construction easement is necessary for the purpose of constructing the **Western Placerville Interchange Phase 2 (Project)**. Specifically, this temporary construction easement shall allow Grantee or its agents, employees, and contractors the right of ingress and egress as may be reasonably necessary for construction purposes, inclusive of such repairs, replacements, and removals as may be from time to time required as well as for other purposes incidental to construction of the project. This temporary construction easement shall not be revoked and shall not expire until the recordation of the Notice of Completion of the Project. Included within this temporary construction easement is the right of ingress and egress of Grantee, its

agents, employees, and contractors for warranty repairs and the correction of defects in the work within the first year following completion of construction. This right during the one-year warranty period survives the expiration of this easement.

4. The Temporary Construction Easement is for a period of 36 months from the date of full execution of this Agreement. Construction is anticipated to take 36 months. This Easement also covers a one-year warranty period.

5. Grantee agrees to indemnify and hold harmless Grantor from and against any liability arising out of the entry onto the property by Grantee or its agents, employees, and contractors during the term of this temporary construction easement. In the event of property damage, Grantee, at its sole option, may either repair the damage or pay the estimated costs for the repair.

IN WITNESS WHEREOF, Grantor has herein subscribed its name on this _____ day of _____, 20__.

GRANTOR: The County of El Dorado, a political subdivision of the State of California

_____
Shiva Frentzen, Chair
Board of Supervisors

ATTEST:
James S. Mitrisin
Clerk of the Board of Supervisors

By: _____
Deputy Clerk

(First signature must be acknowledged by a Notary Public)

RECORDING REQUESTED BY AND
WHEN RECORDED MAIL TO:

City of Placerville
3101 Center Street
Placerville, CA 95667

APN: 325-300-37
Seller: County of El Dorado
Project: Western Placerville Interchange Phase 2

Mail Tax Statements to above.
Exempt from Documentary Tax Transfer
Per Revenue and Taxation Code 11922

Above section for Recorder's use

GRANT DEED

FOR VALUABLE CONSIDERATION, receipt of which is hereby acknowledged, **The County of El Dorado, a political subdivision of the State of California,** hereinafter referred to as "Grantor", grants to the **City of Placerville, a municipal corporation in the State of California**, in fee, all that certain real property situate in the County of El Dorado, State of California,

Described in Exhibit "A" and depicted in Exhibit "B" attached hereto and made a part hereof, which description is by this reference incorporated herein.

IN WITNESS WHEREOF, Grantor has herein subscribed its name on this _____ day of _____, 20__.

GRANTOR: **The County of El Dorado, a political subdivision of the State of California**

_____
Shiva Frentzen, Chair
Board of Supervisors

ATTEST:
James S. Mitrisin
Clerk of the Board of Supervisors

By: _____
Deputy Clerk

(First signature must be acknowledged by a Notary Public)

EXHIBIT "A"

A.P.N. : 325-300-37
RIGHT OF WAY ACQUISITION

All that real property situate in the City of Placerville, County of El Dorado, State of California, lying within a portion of Section 13, Township 10 North, Range 10 East, M.D.M and being a portion of the Tract of land as shown on Record of Survey filed in Book 24 at Page 35 of Maps, Records of El Dorado County, and being more particularly described as follows:

Beginning at an angle point in the North line of the above mentioned Tract of land, said point also being the Westerly terminus of the line shown as North 89°36'28" East, 252.69 feet on said map; thence from the point of beginning along the North line of said Tract of land North 89°36'44" East, 8.52 feet; thence leaving said North line along a curve to the right and having a radius of 471.00 feet and a chord bearing and distance of South 52°43'20" West, 271.89 feet; thence
South 69°29'55" West, 58.03 feet to a point on the Westerly line of said Tract of land; thence along the Westerly line of said Tract of land the following described courses:
North 55°08'01" East, 78.17 feet to a 3/4" capped iron pipe stamped LS 1820 1961; thence
North 52°45'57" East, 93.80 feet; thence North 47°59'49" East, 72.20 feet; thence
North 40°32'56" East, 27.31 feet, thence South 39°08'51" East, 23.75 feet to a rebar with aluminum cap stamped LS 6626; thence North 50°58'09" East, 8.03 feet to a similar rebar; thence along a curve to the left and having a radius of 392.00 feet and a chord bearing and distance of North 47°51'16" East, 41.43 feet to a point on the North line of said Tract of land and the point of beginning containing 7,557 square feet more or less.

See Exhibit 'B' attached hereto and made a part of this description.

End of Description

The **Basis of Bearings** for this description is identical to that of Record of Survey Map filed in Book 23 at Page 26 of Maps, El Dorado County Records as determined by found monuments.

This description has been prepared by me or under my direct supervision.

Ryan Thompson L.S. 8749

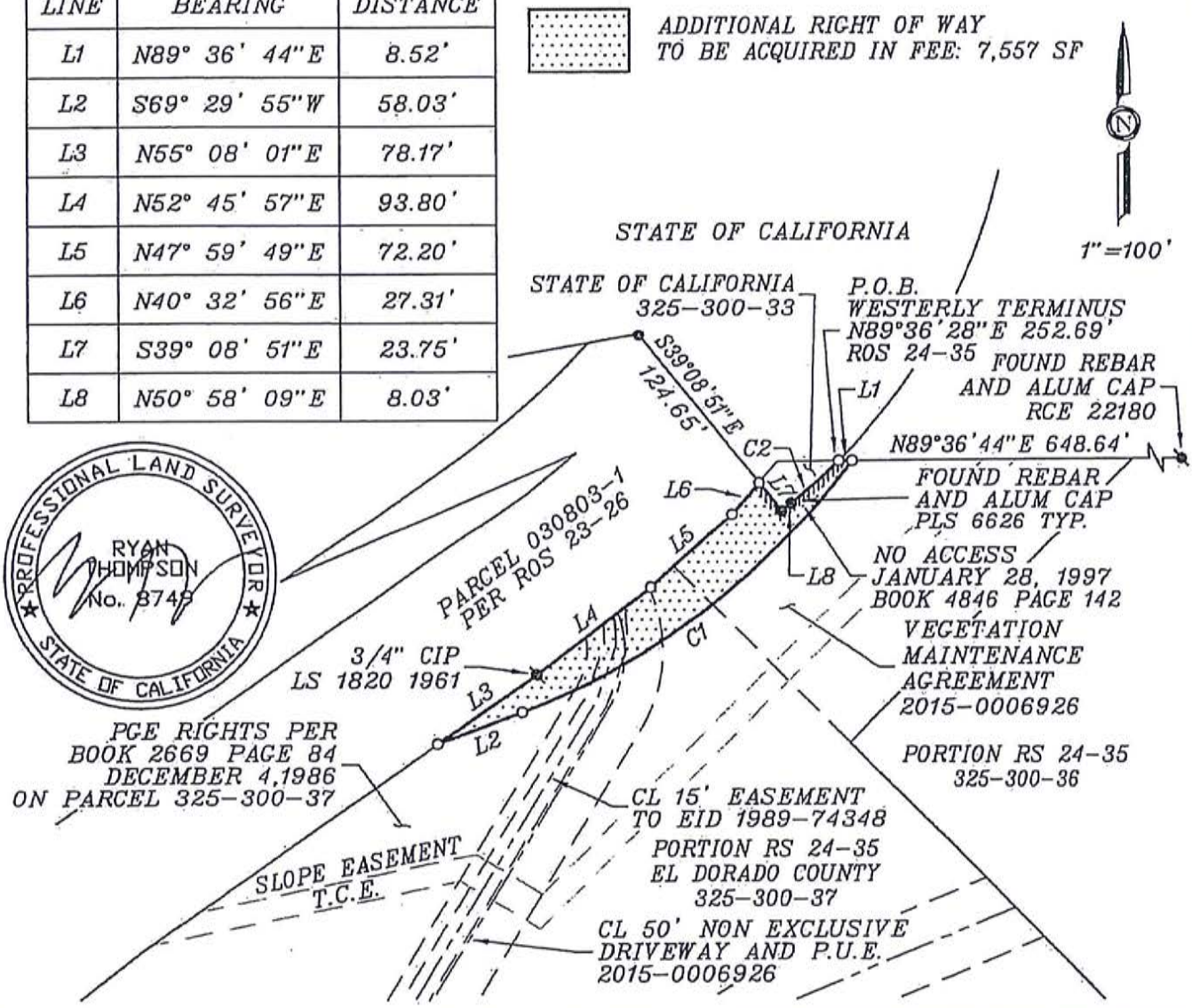
3-20-17
Date

UNICO Engineering, Inc.
Folsom, CA

EXHIBIT B

CURVE TABLE					
CURVE	ARC LENGTH	RADIUS	DELTA	CHORD BEARING	CHORD LENGTH
C1	275.81'	471.00'	33°33'07"	S52° 43' 20"W	271.89'
C2	41.45'	392.00'	06°03'32"	N47° 51' 16"E	41.43'

LINE TABLE		
LINE	BEARING	DISTANCE
L1	N89° 36' 44"E	8.52'
L2	S69° 29' 55"W	58.03'
L3	N55° 08' 01"E	78.17'
L4	N52° 45' 57"E	93.80'
L5	N47° 59' 49"E	72.20'
L6	N40° 32' 56"E	27.31'
L7	S39° 08' 51"E	23.75'
L8	N50° 58' 09"E	8.03'



APN 325-300-37	WESTERN PLACERVILLE INTERCHANGE PROJECT PHASE 2	UNICO ENGINEERING
SHEET 2 OF 2	RIGHT OF WAY ACQUISITION CITY OF PLACERVILLE CALIFORNIA	110 BLUE RAVINE RD SUITE 101 | FOLSOM, CA 95630 PHONE: 800.277.6623 | unicoengineering.com

RECORDING REQUESTED BY AND
WHEN RECORDED MAIL TO:

City of Placerville
3101 Center Street
Placerville, CA 95667

APN: 325-300-37
Seller: County of El Dorado
Project: Western Placerville Interchange Phase 2

Mail Tax Statements to above.
Exempt from Documentary Tax Transfer
Per Revenue and Taxation Code 11922

Above section for Recorder's use

GRANT OF SLOPE EASEMENT

FOR VALUABLE CONSIDERATION, receipt of which is hereby acknowledged, **The County of El Dorado, a political subdivision of the State of California,** hereinafter referred to as "Grantor", grants to the **City of Placerville, a municipal corporation in the State of California**, a slope easement for construction and maintenance of slope/s together with any and all appurtenances appertaining thereto, over, under, upon, and across a portion of all that certain real property situate in the County of El Dorado, State of California,

Described in Exhibit "A" and depicted in Exhibit "B" attached hereto and made a part hereof, which description is by this reference incorporated herein.

IN WITNESS WHEREOF, Grantor has herein subscribed its name on this _____ day of _____, 20__.

GRANTOR: The County of El Dorado, a political subdivision of the State of California

_____
Shiva Frentzen, Chair
Board of Supervisors

ATTEST:
James S. Mitrisin
Clerk of the Board of Supervisors

By: _____
Deputy Clerk

(First signature must be acknowledged by a Notary Public)

EXHIBIT "A"

A.P.N. : 325-300-37
Slope Easement

All that real property situate in the City of Placerville, County of El Dorado, State of California, lying within a portion of Section 13, Township 10 North, Range 10 East, M.D.M and being a portion of the Tract of land as shown on Record of Survey filed in Book 24 at Page 35 of Maps, Records of El Dorado County, and being more particularly described as follows:

Beginning at a point in the North line of the above mentioned Tract of land, from which the Westerly terminus of the line shown as North 89°36'28" East, 252.69 feet on said map bears South 89°36'44" West, 8.52 feet; thence from the point of beginning and along the North line of said Tract of land North 89°36'44" East, 85.00 feet; thence leaving said North line of said Tract of land South 45°37'05" West, 404.68 feet; thence North 58°50'53" West, 50.00 feet; thence South 78°21'12" West, 182.35 feet to a point on the Westerly line of said Tract of Land; thence along the Westerly line of said Tract of land North 55°00'46" East, 189.08 feet; thence leaving said Westerly line of said Tract of land North 69°29'55" East, 58.03 feet; thence along a curve to the left and having a radius of 471.00 feet and a chord bearing and distance of North 52°43'20" East, 271.89 feet to a point on the Northerly line of said Tract of land and the point of beginning containing 33,417 square feet more or less.

See Exhibit 'B' attached hereto and made a part of this description.

End of Description

The **Basis of Bearings** for this description is identical to that of Record of Survey Map filed in Book 23 at Page 26 of Maps, El Dorado County Records as determined by found monuments.

This description has been prepared by me or under my direct supervision.

Ryan Thompson L.S. 8749

3-20-17
Date

UNICO Engineering, Inc.
Folsom, CA

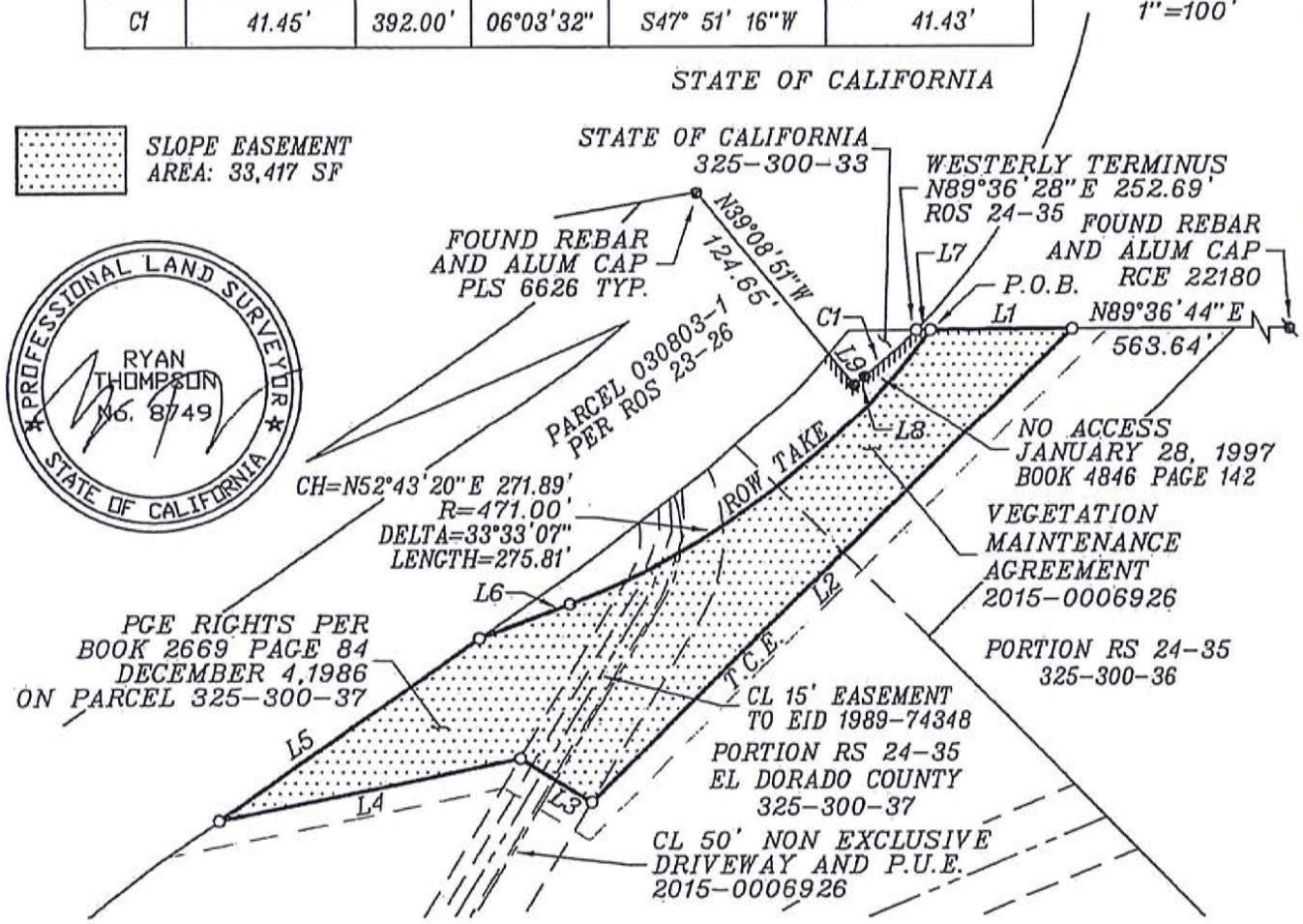
LICENSED LAND SURVEYOR
RYAN THOMPSON
No. 8749
STATE OF CALIFORNIA

EXHIBIT B

LINE TABLE					
LINE	BEARING	DISTANCE	LINE	BEARING	DISTANCE
L1	N89° 36' 44"E	85.00'	L5	N55° 00' 46"E	189.08'
L2	S45° 37' 05"W	404.68'	L6	N69° 29' 55"E	58.03'
L3	N58° 50' 53"W	50.00'	L7	S89° 36' 44"W	8.52'
L4	S78° 21' 12"W	182.35'	L8	S50° 58' 09"W	8.03'
			L9	N39° 08' 51"W	23.75'

CURVE TABLE					
CURVE	ARC LENGTH	RADIUS	DELTA	CHORD BEARING	CHORD LENGTH
C1	41.45'	392.00'	06°03'32"	S47° 51' 16"W	41.43'

1"=100'



APN 325-300-37	WESTERN PLACERVILLE INTERCHANGE PROJECT PHASE 2	UNICO ENGINEERING
SHEET 2 OF 2	SLOPE EASEMENT ACQUISITION CITY OF PLACERVILLE CALIFORNIA	110 BLUE RAVINE RD SUITE 101 | FOLSOM, CA 95630 PHONE: 800.277.6623 | unicoengineering.com

RECORDING REQUESTED BY AND
WHEN RECORDED MAIL TO:

City of Placerville
3101 Center Street
Placerville, CA 95667

APN: 325-300-37
Seller: County of El Dorado
Project: Western Placerville Interchange Phase 2

Mail Tax Statements to above.
Exempt from Documentary Tax Transfer
Per Revenue and Taxation Code 11922

Above section for Recorder's use

GRANT OF TEMPORARY CONSTRUCTION EASEMENT

The County of El Dorado, a political subdivision of the State of California, hereinafter referred to as "Grantor", grants to the **City of Placerville, a municipal corporation in the State of California,** hereinafter referred to as "Grantee", a temporary construction easement over, upon, and across a portion of that real property in the County of El Dorado, State of California, described as:

See Exhibits "A" and "B" attached hereto and by reference is made a part hereof.

This temporary construction easement is granted under the express conditions listed below:

1. In consideration of $0.00 (zero dollars AND 00/100) and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, Grantor does hereby Grant to Grantee an easement for temporary construction over and across those identified portions of the Grantor parcel.

2. Grantor represents and warrants that they are the owner of the property described in Exhibit A and depicted on the map in Exhibit B attached hereto and made a part hereof, and that Grantor has the exclusive right to grant the temporary construction easement.

3. This temporary construction easement is necessary for the purpose of constructing the **Western Placerville Interchange Phase 2 (Project).** Specifically, this temporary construction easement shall allow Grantee or its agents, employees, and contractors the right of ingress and egress as may be reasonably necessary for construction purposes, inclusive of such repairs, replacements, and removals as may be from time to time required as well as for other purposes incidental to construction of the project. This temporary construction easement shall not be revoked and shall not expire until the recordation of the Notice of Completion of the Project. Included within this temporary construction easement is the right of ingress and egress of Grantee, its agents, employees, and contractors for warranty repairs and the correction of

defects in the work within the first year following completion of construction. This right during the one-year warranty period survives the expiration of this easement.

4. The Temporary Construction Easement is for a period of 36 months from the date of full execution of this Agreement. Construction is anticipated to take 36 months. This Easement also covers a one-year warranty period.

5. Grantee agrees to indemnify and hold harmless Grantor from and against any liability arising out of the entry onto the property by Grantee or its agents, employees, and contractors during the term of this temporary construction easement. In the event of property damage, Grantee, at its sole option, may either repair the damage or pay the estimated costs for the repair.

IN WITNESS WHEREOF, Grantor has herein subscribed its name on this _____ day of _____, 20__.

GRANTOR: The County of El Dorado, a political subdivision of the State of California

_____
Shiva Frentzen, Chair
Board of Supervisors

ATTEST:
James S. Mitrisin
Clerk of the Board of Supervisors

By: _____
Deputy Clerk

(First signature must be acknowledged by a Notary Public)

EXHIBIT "A"

A.P.N. : 325-300-37
Temporary Construction Easement

All that real property situate in the City of Placerville, County of El Dorado, State of California, lying within a portion of Section 13, Township 10 North, Range 10 East, M.D.M and being a portion of the Tract of land as shown on Record of Survey filed in Book 24 at Page 35 of Maps, Records of El Dorado County, and being more particularly described as follows:

Beginning at a point in the North line of the above mentioned Tract of land, from which the Westerly terminus of the line shown as North 89°36'28" East, 252.69 feet on said map bears South 89°36'44" West, 93.52 feet; thence from the point of beginning and along the North line of said Tract of land North 89°36'44" East, 21.59 feet; thence leaving said North line of said Tract of land South 45°37'05" West, 437.00 feet; thence North 58°50'53" West, 59.85 feet; thence South 78°21'12" West, 203.87 feet to a point on the Westerly line of said Tract of land; thence along the Westerly line of said Tract of land North 55°00'46" East, 37.86 feet; thence leaving the Westerly line of said Tract of land North 78°21'12" East, 182.35 feet; thence South 58°50'53" East, 50.00 feet; thence North 45°37'05" East, 404.68 feet to a point on the Northerly line of said Tract of land and the point of beginning containing 10,306 square feet more or less.

See Exhibit 'B' attached hereto and made a part of this description.

End of Description

The **Basis of Bearings** for this description is identical to that of Record of Survey Map filed in Book 23 at Page 26 of Maps, El Dorado County Records as determined by found monuments.

This description has been prepared by me or under my direct supervision.

Ryan Thompson L.S. 8749

3-20-17
Date

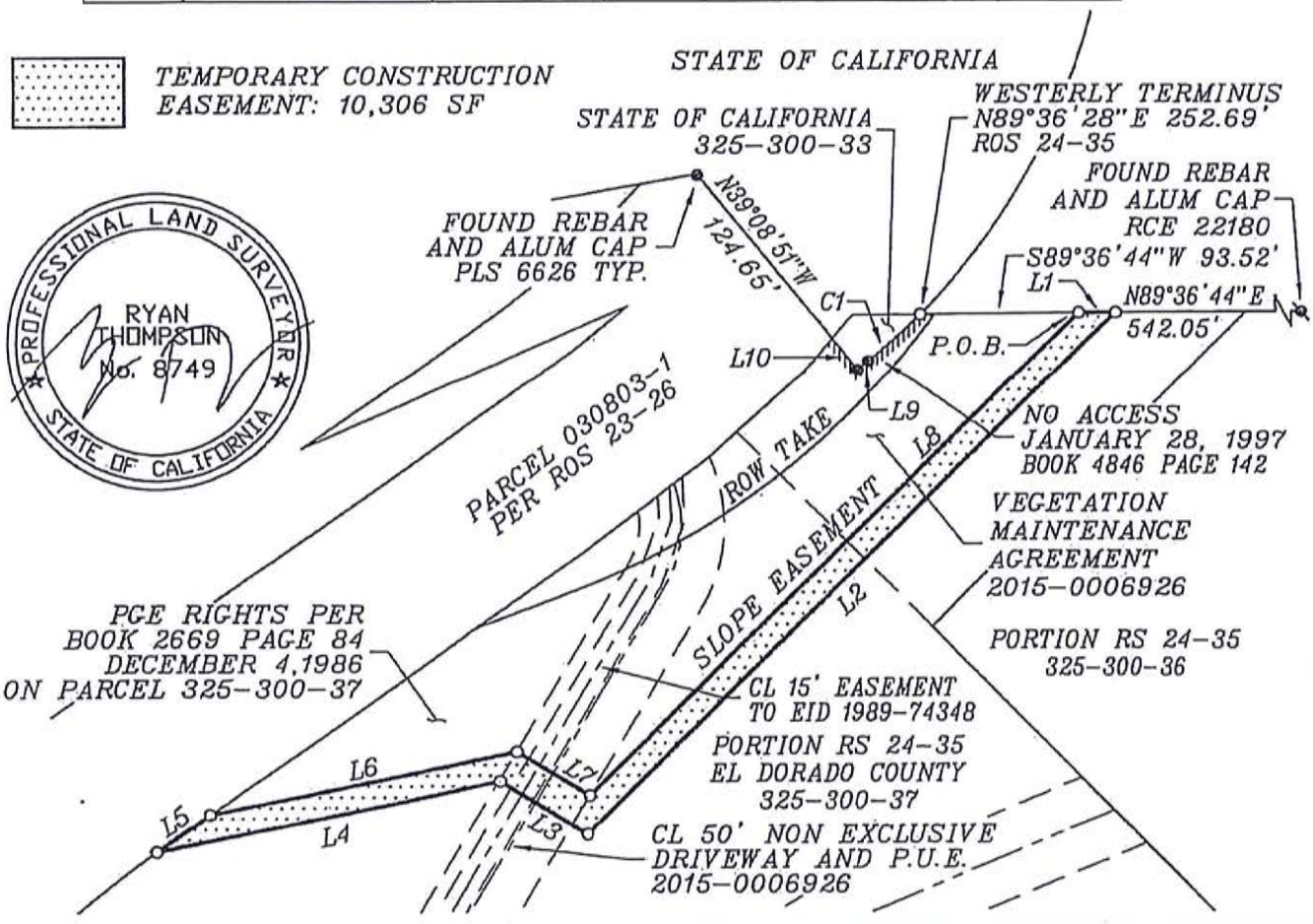
UNICO Engineering, Inc.
Folsom, CA

EXHIBIT B

CURVE TABLE					
CURVE	ARC LENGTH	RADIUS	DELTA	CHORD BEARING	CHORD LENGTH
C1	41.45'	392.00'	06°03'32"	S47° 51' 16"W	41.43'

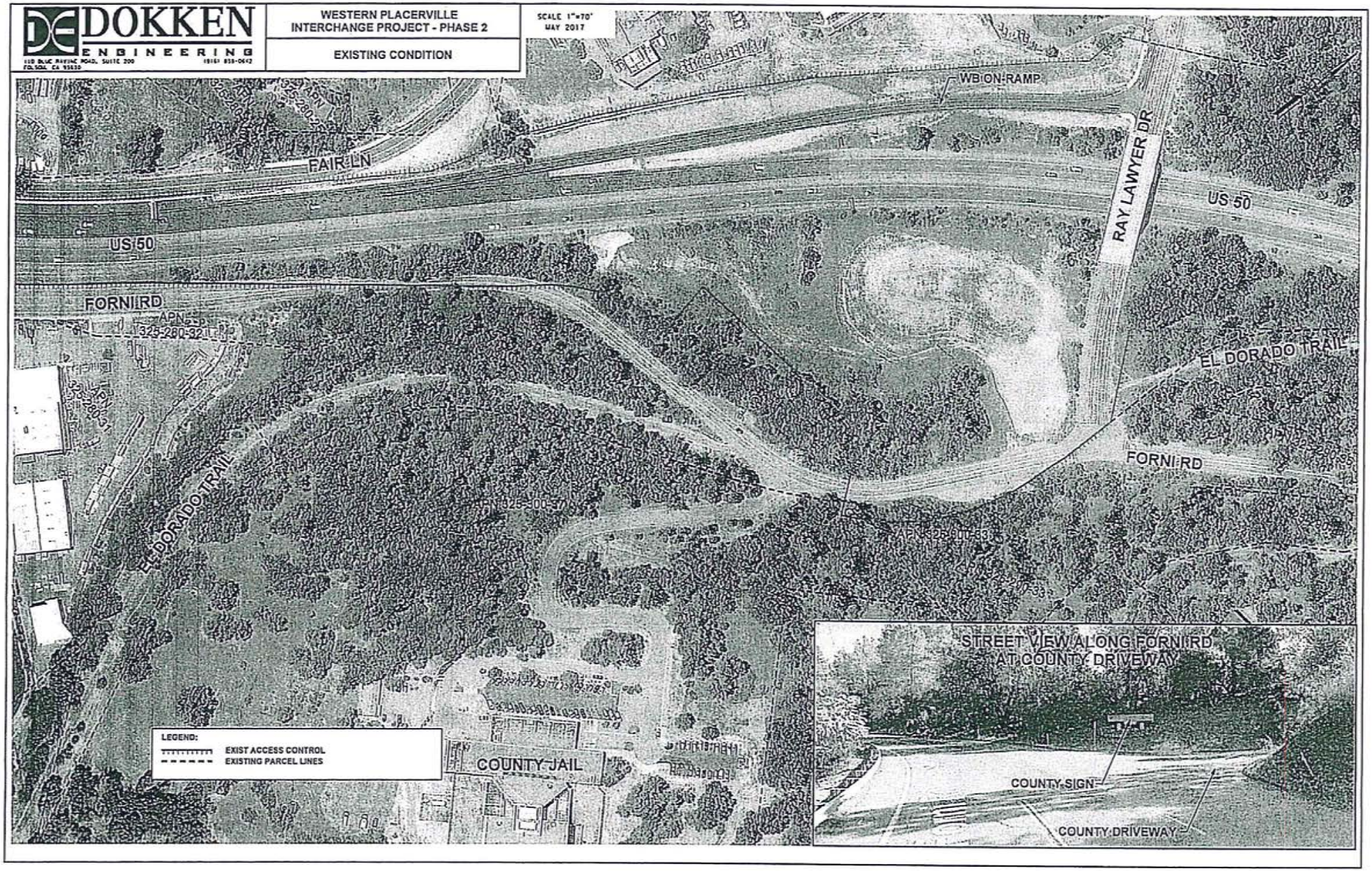
LINE TABLE					
LINE	BEARING	DISTANCE	LINE	BEARING	DISTANCE
L1	N89° 36' 44"E	21.59'	L6	N78° 21' 12"E	182.35'
L2	S45° 37' 05"W	437.00'	L7	S58° 50' 53"E	50.00'
L3	N58° 50' 53"W	59.85'	L8	N45° 37' 05"E	404.68'
L4	S78° 21' 12"W	203.87'	L9	S50° 58' 09"W	8.03'
L5	N55° 00' 46"E	37.86'	L10	N39° 08' 51"W	23.75'

1"=100'



APN 325-300-37	WESTERN PLACERVILLE INTERCHANGE PROJECT PHASE 2	UNICO ENGINEERING
SHEET 2 OF 2	TEMPORARY CONSTRUCTION EASEMENT CITY OF PLACERVILLE CALIFORNIA	110 BLUE RAVINE RD SUITE 101 | FOLSOM, CA 95630 PHONE: 800.277.6623 | unicoengineering.com

17-0246 E 4 of 4


DOKKEN ENGINEERING
110 BLUE RAVINE ROAD, SUITE 200
FOLSOM, CA 95630
(916) 858-0642
WESTERN PLACERVILLE
INTERCHANGE PROJECT - PHASE 2
EXISTING CONDITION
SCALE 1"=70'
MAY 2017
WB ON-RAMP
FAIR LN
US 50
RAY LAWYER DR
US 50
FORNI RD
APN 325-280-32
EL DORADO TRAIL
EL DORADO TRAIL
FORNI RD
APN 325-300-37
APN 325-300-53
COUNTY JAIL
LEGEND:
EXIST ACCESS CONTROL
EXISTING PARCEL LINES
STREET VIEW ALONG FORNI RD
AT COUNTY DRIVEWAY
COUNTY SIGN
COUNTY DRIVEWAY

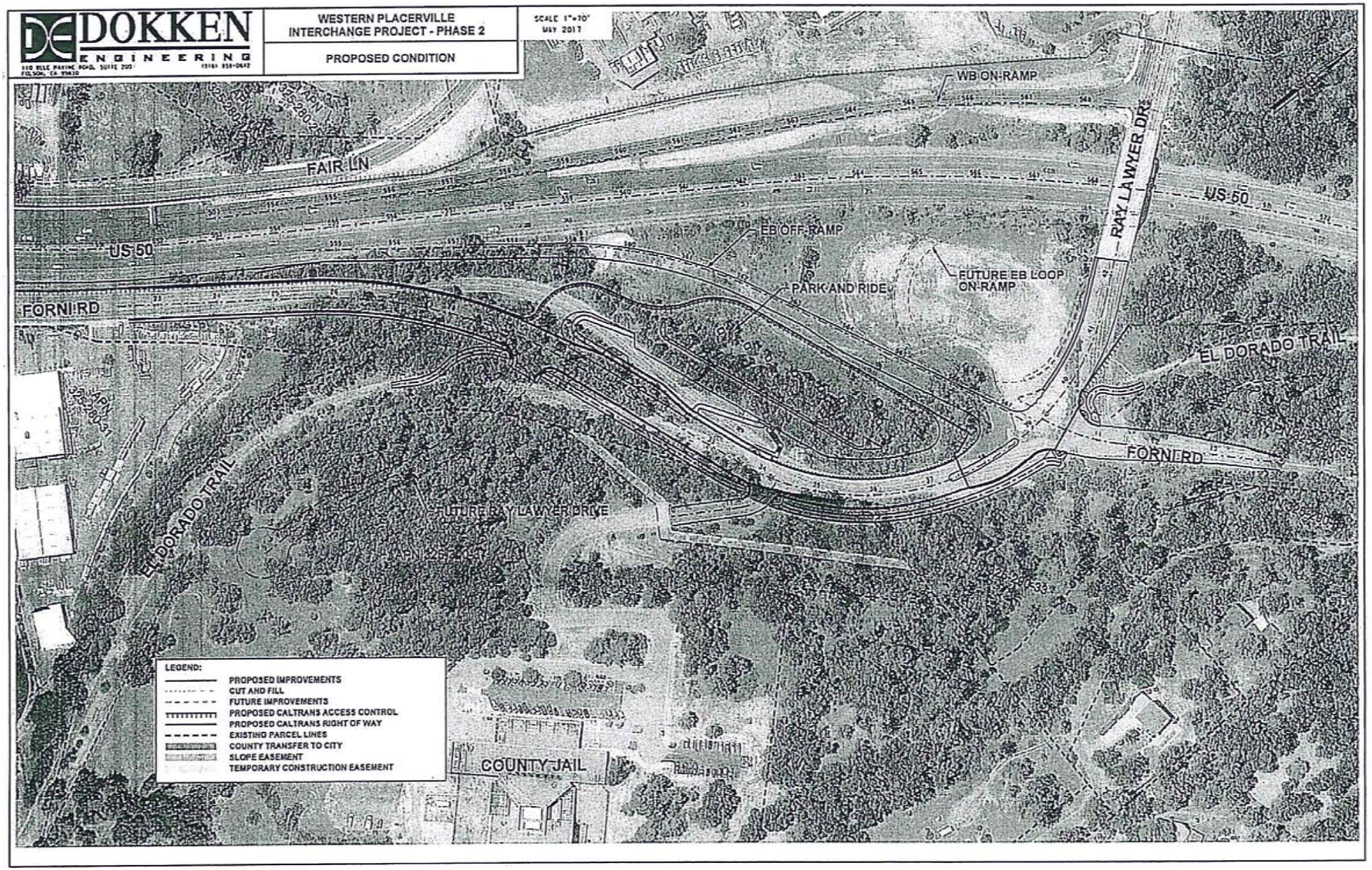

DOKKEN ENGINEERING
WESTERN PLACERVILLE INTERCHANGE PROJECT - PHASE 2
PROPOSED CONDITION
SCALE 1"=70'
MAY 2017
WB ON-RAMP
FAIR LN
RAY LAWYER DR
US 50
EB OFF-RAMP
PARK AND RIDE
FUTURE EB LOOP ON-RAMP
FORNI RD
EL DORADO TRAIL
FUTURE RAY LAWYER DRIVE
COUNTY JAIL
LEGEND:
PROPOSED IMPROVEMENTS
CUT AND FILL
FUTURE IMPROVEMENTS
PROPOSED CALTRANS ACCESS CONTROL
PROPOSED CALTRANS RIGHT OF WAY
EXISTING PARCEL LINES
COUNTY TRANSFER TO CITY
SLOPE EASEMENT
TEMPORARY CONSTRUCTION EASEMENT

EXHIBIT "A"

A.P.N. : 325-300-37
Temporary Construction Easement

All that real property situate in the City of Placerville, County of El Dorado, State of California, lying within a portion of Section 13, Township 10 North, Range 10 East, M.D.M and being a portion of the Tract of land as shown on Record of Survey filed in Book 24 at Page 35 of Maps, Records of El Dorado County, and being more particularly described as follows:

Beginning at a point in the North line of the above mentioned Tract of land, from which the Westerly terminus of the line shown as North 89°36'28" East, 252.69 feet on said map bears South 89°36'44" West, 93.52 feet; thence from the point of beginning and along the North line of said Tract of land North 89°36'44" East, 21.59 feet; thence leaving said North line of said Tract of land South 45°37'05" West, 437.00 feet; thence North 58°50'53" West, 59.85 feet; thence South 78°21'12" West, 203.87 feet to a point on the Westerly line of said Tract of land; thence along the Westerly line of said Tract of land North 55°00'46" East, 37.86 feet; thence leaving the Westerly line of said Tract of land North 78°21'12" East, 182.35 feet; thence South 58°50'53" East, 50.00 feet; thence North 45°37'05" East, 404.68 feet to a point on the Northerly line of said Tract of land and the point of beginning containing 10,306 square feet more or less.

See Exhibit 'B' attached hereto and made a part of this description.

End of Description

The **Basis of Bearings** for this description is identical to that of Record of Survey Map filed in Book 23 at Page 26 of Maps, El Dorado County Records as determined by found monuments.

This description has been prepared by me or under my direct supervision.

Ryan Thompson L.S. 8749

3-20-17
Date

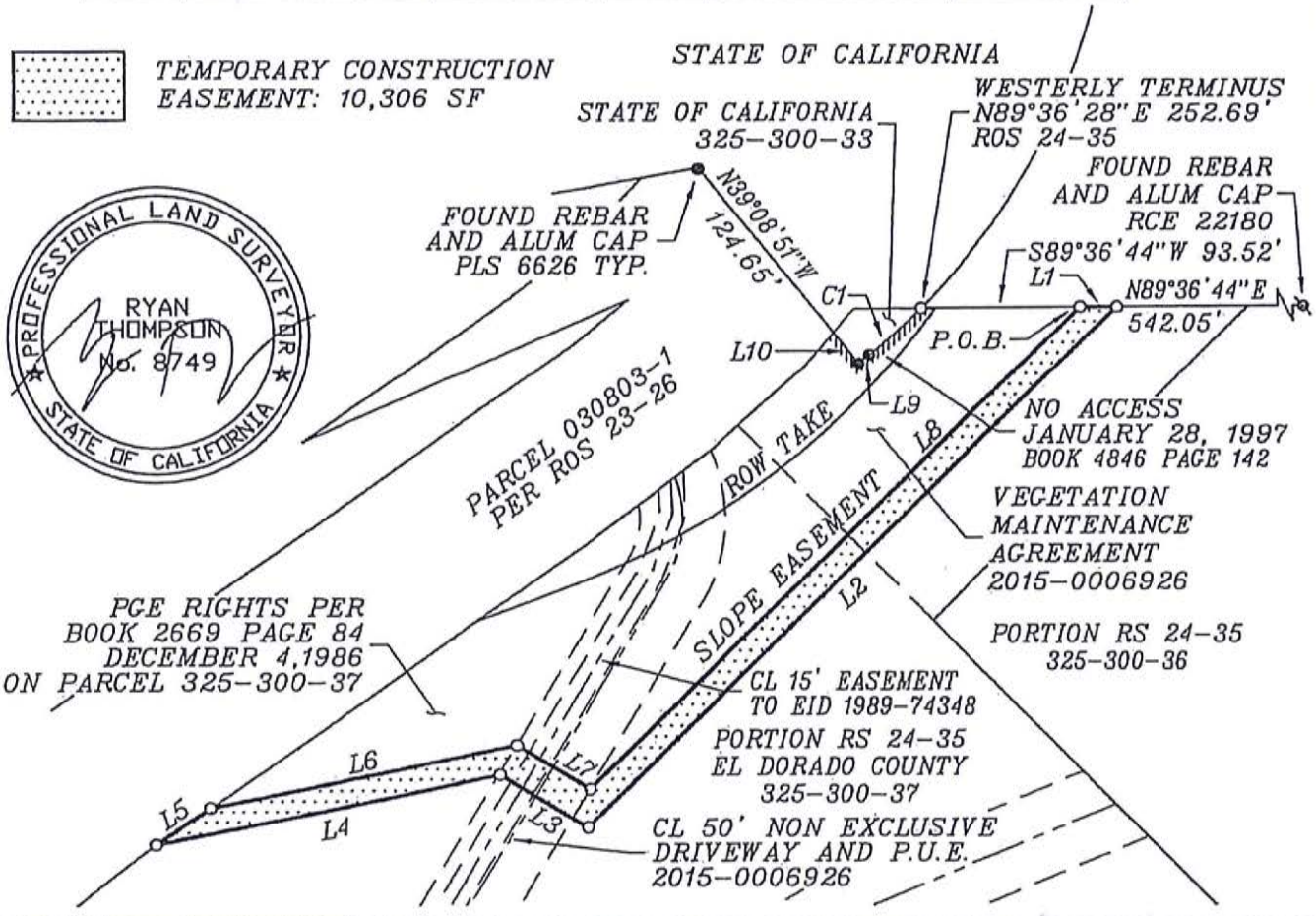
UNICO Engineering, Inc.
Folsom, CA

EXHIBIT B

CURVE TABLE					
CURVE	ARC LENGTH	RADIUS	DELTA	CHORD BEARING	CHORD LENGTH
C1	41.45'	392.00'	06°03'32"	S47° 51' 16"W	41.43'

LINE TABLE					
LINE	BEARING	DISTANCE	LINE	BEARING	DISTANCE
L1	N89° 36' 44"E	21.59'	L6	N78° 21' 12"E	182.35'
L2	S45° 37' 05"W	437.00'	L7	S58° 50' 53"E	50.00'
L3	N58° 50' 53"W	59.85'	L8	N45° 37' 05"E	404.68'
L4	S78° 21' 12"W	203.87'	L9	S50° 58' 09"W	8.03'
L5	N55° 00' 46"E	37.86'	L10	N39° 08' 51"W	23.75'

1"=100'



APN 325-300-37	WESTERN PLACERVILLE INTERCHANGE PROJECT PHASE 2	UNICO ENGINEERING
SHEET 2 OF 2	TEMPORARY CONSTRUCTION EASEMENT CITY OF PLACERVILLE CALIFORNIA	110 BLUE RAVINE RD SUITE 101 | FOLSOM, CA 95630 PHONE: 800.277.6623 | unicoengineering.com

ATTACHMENT 8

CITY OF PLACERVILLE
RIGHT OF WAY CERTIFICATION
(Form #)

EXHIBIT
17-EX-18 (REV 4/2014)

City of Placerville
3101 Center Street
Placerville, CA 95667

Date: July 25, 2017

Dist.-Co.-Rte.-P.M.: 03-ED-50 PM 16.0 to 16.6
EA (Design Phase No.): 37281
Const. Fed.-Aid No.: DEM05LN-5015(023)
Right of Way Fed.-Aid No.: DEM05LN-5015(023)

Right of Way Certification No. 2 for the project Western Placerville Interchanges Phase 2A, in the County of El Dorado in the City of Placerville. The Project constructs an eastbound off-ramp and park and ride at U.S. 50 and Ray Lawyer Drive and realigns Forni Road.

1. **STATUS OF REQUIRED RIGHT OF WAY:** Right of way has been acquired with applicable policy and procedure covering the acquisition of real property. City of Placerville has physical possession and right to enter on all lands as follows:

A. Total number of parcels required: **2**

1. Parcels acquired (escrow closed or Final Order of Condemnation recorded): 1

Parcel Number	Owner	Project R/W Required	Excess (Yes or No)	Close of Escrow Date
325-300-37	County of El Dorado	Fee	No	5/26/2017
		Slope Easement		
			Effective Date	**Expiration Date**
		Temporary Construction Easement	6/7/2017	6/1/2020

2. Parcels covered by Order for Possession: 0

Parcel Number	Owner	Project R/W Required	Effective Date

3. Parcels covered by Right of Entry: 0

Parcel Number	Owner	Project R/W Required	Type	Effective Date	Date Funds Made Available to Owner

4. Parcels covered by Right of Entry executed prior to appraisal: 0

Parcel Number	Owner	Project R/W Required	Effective Date

5. Parcels covered by Resolution of Necessity Only: 0

Parcel Number	Owner	Project R/W Required	Resolution Date	OP Service Date (All Parties)	Anticipated OP Effective Date

6. Parcels covered by other acquisition documents as follows: 1

Parcel Number.	Owner	Project R/W Required	Type Document	Effective Date	Expiration Date
325-290-31	Briggs	Slope Easement	PC – RW Contract	6/7/2017	N/A
		Temporary Construction Easement		6/7/2017	6/1/2020

B. Construction Permits, other required permits: 0

Location (P.M.)	Owner	Type Document	Effective Date	Expiration Date

2. STATUS OF AFFECTED RAILROAD OPERATING FACILITIES:

None Affected

3. MATERIAL SITE(S) -

None required

4. DISPOSAL SITE(S) -

None required

5. STATUS OF REQUIRED UTILITY RELOCATIONS:

Check appropriate statement:
__X__ Project specific utility agreements are fully executed and include the Buy America language.

(AND)

All necessary arrangements have been made for the completion of all remaining utility work in accordance with applicable policy and procedure covering the adjustment of utility facilities required to be coordinated with project construction. The special provisions in the contract provide for the coordination (see schedule below).

(AND)

Arrangements have been made with the owners of all conflicting utility encroachments, which will remain within the right of way of the project so that adequate control of the right of way will be achieved.

(AND)

Utility notices have been issued.
Federal participation has been authorized.

The following utilities are in conflict with the project and require relocations as follows:

R/W Notice No. and Date	Company	Type of Facility	Liability % (Owner = O) (State = S)	Utility Agreement Date	Federal Participation (Yes/No)	Relocation Schedule Start & End Dates (or) Concurrent with Construction (or) Bid Item/s. List bid item information below
2707.3L, 07/11/2017	AT&T	Telephone	50/50	7/19/2017	Yes	Concurrent with construction 06/01/2018 – 08/15/2018
2707.5L 06/20/2017	Comcast	CATV	100% O	N/A	No	Concurrent with construction 06/01/2018 – 06/30/2018
2707.1L 06/08/2017	PG&E	Electric	35.7% O, 64.3% S	7/19/2017	Yes	Concurrent with construction 04/01/2018 – 05/31/2018
2707.6L 06/08/2017	EID	Water	100% O	6/19/2017	No	Bid Items

List each (applicable) bid item here:

Bid Item Number	Owner & Facility Type	Liability % (Owner = O) (Local Public Agency = LPA)	Federal Participation (Yes/No)
770201A – 770212A	EID, Water	100% O	No

6. RIGHT OF WAY CLEARANCE

There were no improvements or obstructions located within the limits of this project.

7. AIRSPACE AGREEMENTS

There are no airspace lease properties within the limits of this project.

8. COMPLIANCE WITH RELOCATION ASSISTANCE PROGRAM REQUIREMENTS

Compliance was not required as there are no displacements on this project.

9. COOPERATIVE AGREEMENTS:

Agency	Agreement Number or Document Number
City of Placerville	Construction Cooperative Agreement 03-0624 Relinquishment Agreement 03-0602 Freeway Maintenance Agreement - ED 50 PM 15.70-16.70

10. ENVIRONMENTAL MITIGATION

Acquisition of environmental parcels is ongoing.

All avoidance and minimization measures identified in the project's Environmental Commitment record will be implemented as part of the project construction contract. Mitigation for impacts to Waters of the U.S. is required by the Section 404 Fill Permit and mitigation for impacts to oak trees is required by the project's Environmental Impact Report. The City of Placerville anticipates that it will mitigate for 0.61 acres of impacts to Waters of the U.S. through the National Fish and Wildlife Foundation in-lieu fee program, approved by the Army Corps of Engineers Sacramento District. Mitigation is expected to be assessed at a 2:1 ratio for impacts at $150,000/acre. Total project mitigation cost for Waters of the U.S. is estimated at 0.61 acres x 2 (ratio) x $150,000 = $183,000 - $74,250 in previously paid mitigation during Phase 1A = $108,750. The permit will require payment prior to breaking ground. This fee is typically paid after award of construction contract but prior to Notice to Proceed so payment isn't made if the project does not go forward.

Oak Tree mitigation is required for direct permanent impacts to all oak trees larger than six inches in diameter. The City of Placerville intends to use Westervelt Ecological Services to perform off-site mitigation for oak tree replanting. Pursuant to the mitigation measure provided in the City's Environmental Impact Report/Environmental Assessment, trees shall be replanted at a 3:1 ratio for each tree impacted during construction. The current estimate of trees to be impacted is approximately 400 oaks requiring 1200 trees to be replanted. Westervelt has provided a quote of $85,000/acre of oak woodland habitat restoration and an estimate of 400 trees can be replanted per acre. This would result in a total oak tree mitigation cost to the City of $255,000. The mitigation measure requires the mitigation to be completed prior to completion of construction based on the total number of trees actually removed. Payment will be documented in the environmental commitment record.

Total Compensatory Mitigation Costs for Phase 2 (outside of the construction contract) are estimated to be $363,750 and are included in the project budget.

11. The City of Placerville agrees to indemnify, defend, and hold harmless the Department of Transportation (Caltrans) from any and all liability which may result in the event the right of way for this project is not clear as certified. The City of Placerville shall pay, from its own non-matching funds, any costs which arise out of delays to the construction of the project because utility facilities have not been removed or relocated, or because rights of way have not been made available to City of Placerville for the orderly performance of the project work.

12. CERTIFICATION

I hereby certify the right of way on this project as conforming to 23 CFR 635.309(b) and (c)(2). The project may be advertised with contract award being made at any time.

CITY OF PLACERVILLE AUTHORIZED SIGNATURE

By: Rebecca Neves
REBECCA NEVES

Title: City Engineer

Date: 7/25/17

NOTE: Certification must be signed by person authorized by current resolution of City or County Board of Supervisors.

Approved by:

CALTRANS AUTHORIZED SIGNATURE

By: John Ballantyne
JOHN BALLANTYNE

Title: Chief, North Region Right of Way

Date: 7/26/17

ATTACHMENT 9

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

NOTICE TO OWNER

RW 13-04 (REV 1/2014)

NOTICE TO OWNER

District	County	Route	Post Mile	Proj. ID	E.A.
03	ED	50	16.0-16.6	314000301	37281

FEDERAL AID NUMBER: 5015(023)

OWNER'S FILE NUMBER: 16039

DATE: 06/08/2017

FREEWAY: ☒ YES ☐ NO

Number 2707.6L

To:
EID
Attn: Mike Brink
2890 Mosquito Rd.
Placerville CA 95667

Because of the State Highway construction project:
Western Placerville Interchanges Project Phase 2 in El Dorado County in the City of Placerville. Project constructs an eastbound off-ramp and park and ride at U.S. 50 and Ray Lawyer Drive and realigns Forni Road.

Which affects your facilities:
Water Facilities

You are hereby ordered to:
Relocate your facilities in accordance with the State's plans, sheet W-1 thru W-4, dated 06/19/2017.

Your work schedule shall be as follows:
04/01/2018 thru 09/30/2018

Notify Rebecca Neves **at telephone number** (530) 642-5250 , 48 **hours prior to initial start of work, and** 24 **hours prior to subsequent restart when your work schedule is interrupted.**

Liability for the cost of the work is:

100% Owner (EID) pursuant to Section 702/ 703 of the Streets and Highways Code.

DISTRICT DIRECTOR

DISTRICT DIVISION CHIEF

By _____
DISTRICT UTILITY COORDINATOR

CC: Resident Engineer
Permits
R/W

THIS NOTICE DOES NOT CONSTITUTE A PERMIT. OBTAIN AN ENCROACHMENT PERMIT BEFORE STARTING WORK.

ADA Notice For individuals with sensory disabilities, this document is available in alternate formats. For alternate format information, contact the Forms Management Unit at (916) 445-1233, TTY 711, or write to Records and Forms Management, 1120 N Street, MS-89, Sacramento, CA 95814.

ATTACHMENT 10

UTILITY AGREEMENT

RW 13-05 (REV 12/2016)

DISTRICT	COUNTY	ROUTE	POST MILE	PROJECT ID
03	ED	50	16.0-16.6	37281

FEDERAL AID NUMBER	OWNER'S FILE NUMBER
5015(023)	16039

FEDERAL PARTICIPATION/FEDERALLY ELIGIBLE/NEPA DOCUMENT

On the Project ☒ Yes ☐ No On the Utilities ☐ Yes ☒ No

Owner Payee Data No. _____ or Form STD 204 is attached. ☐

UTILITY AGREEMENT NO. 2707.6L **DATE** 06/08/2017

The State of California, acting by and through the Department of Transportation, hereinafter called "STATE," proposes to construct the Western Placerville Interchanges Project Phase 2 in El Dorado County in the City of Placerville. Project constructs an eastbound off-ramp and park and ride at U.S. 50 and Ray Lawyer Drive and realigns Forni Road.

and

NAME EID

ADDRESS 2890 Mosquito Rd., Placerville CA 95667

hereinafter called "OWNER," owns and maintains
A waterline located within Forni Rd, Ray Lawyer Dr and East Forni Rd, within the the limits of the STATE.

within the limits of STATE's project which requires
Relocation of existing waterlines.

to accommodate STATE's project.
It is hereby mutually agreed that:

I. WORK TO BE DONE

In accordance with Notice to Owner No. 2707.6L dated 06/08/2017, STATE shall relocate OWNER's existing 12" water line facilities as shown on OWNER's Plan No. Sheets W-1 thru W-4, dated 06/19/2017, which plans are included in STATE's Contract Plans for the improvement of State Route 50, EA 37281 which, by this reference, are made a part hereof. Deviations from the OWNER's plan described above initiated by either the STATE or the OWNER, shall be agreed upon by both parties hereto under a Revised Notice to Owner. Such Revised Notices to Owner, approved by the STATE and agreed to acknowledged by the OWNER, will constitute an approved revision of the OWNER's plan described above and are hereby made a part hereof. No work under said deviation shall commence prior to written execution by the OWNER of the Revised Notice to Owner. Changes in the scope of the work will require an amendment to this Agreement in addition to the revised Notice to Owner. OWNER shall have the right to inspect the work by STATE's contractor during construction. Upon completion of the work by STATE, OWNER agrees to accept ownership and maintenance of the constructed facilities and relinquishes to STATE ownership of the replaced facilities, except in the case of liability determined pursuant to Water Code 7034 or 7035.

II. LIABILITY FOR WORK

The existing facilities are located within the STATE's right of way under permit and will be relocated at OWNER's expense under the provisions of Section 702/703 of the Streets and Highways Code.

III. PERFORMANCE OF WORK

OWNER shall have access to all phases of the relocation work to be performed by STATE, as described in Section I above, for the

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purpose of inspection to ensure that the work is in accordance with the specifications contained in the Highway Construction Contract; however, all questions regarding the work being performed will be directed to STATE's Resident Engineer for their evaluation and final disposition.

Use of out-of-state personnel, (or personnel requiring lodging and meal per diem expenses) will not be allowed without prior written authorization by state's representative. Requests for such authorization must be contained in OWNER's estimate of actual and necessary relocation costs. Accounting Form FA 1301 is to be completed and submitted for all non-State personnel travel per diem. OWNER shall include an explanation why local employee or contract labor is not considered adequate for the relocation work proposed. Per diem expenses shall not exceed the per diem expense amounts allowed under the State's Department of Personnel Administration travel expense guidelines.

IV. PAYMENT FOR WORK

The OWNER shall pay its share of the actual cost of said work included in the STATE's highway construction contract within 45 days after receipt of STATE's bill, compiled on the basis of the actual bid price of said contract. The estimated cost to OWNER for the work being performed by the STATE's highway contractor is $679,000.

In the event actual final relocation costs as established herein are less than the sum of money advanced by OWNER to STATE, STATE hereby agrees to refund to OWNER the difference between said actual cost and the sum of money so advanced. In the event that the actual cost of relocation exceeds the amount of money advanced to STATE, in accordance with the provisions of this Agreement, OWNER hereby agrees to reimburse STATE said deficient costs upon receipt of an itemized bill as set forth herein.

Not more frequently than once a month, but at least quarterly, OWNER will prepare and submit progress bills for costs incurred not to exceed OWNER's recorded costs as of the billing date less estimated credits applicable to completed work. Payment of progress bills not to exceed the amount of this Agreement may be made under the terms of this Agreement. Payment of progress bills which exceed the amount of this Agreement may be made after receipt and approval by STATE of documentation supporting the cost increase and after an Amendment to this Agreement has been executed by the parties to this Agreement.

The OWNER shall submit a final bill to the STATE within 360 days after the completion of the work described in Section I above. If the STATE has not received a final bill within 360 days after notification of completion of Owner's work described in Section I of this Agreement, and STATE has delivered to OWNER fully executed Director's Deeds, Consents to Common Use or Joint Use Agreements, if required for OWNER's facilities, STATE will provide written notification to OWNER of its intent to close its file within 30 days and OWNER hereby acknowledges, to the extent allowed by law, that all remaining costs will be deemed to have been abandoned. If the STATE processes a final bill for payment more than 360 days after notification of completion of OWNER's work, payment of the late bill may be subject to allocation and/or approval by the California Transportation Commission.

The final billing shall be in the form of an itemized statement of the total costs charged to the project, less the credits provided for in this Agreement, and less any amounts covered by progress billings. However, the STATE shall not pay final bills which exceed the estimated cost of this Agreement without documentation of the reason for the increase of said cost from the OWNER and approval of documentation by STATE. Except, if the final bill exceeds the OWNER's estimated costs solely as the result of a revised Notice to Owner as provided for in Section I, a copy of said revised Notice to Owner shall suffice as documentation. In either case, payment of the amount over the estimated cost of this Agreement may be subject to allocation and/or approval by the California Transportation Commission.

In any event if the final bill exceeds 125% of the estimated cost of this Agreement, an Amended Agreement shall be executed by the parties to this Agreement prior to the payment of the OWNER's final bill. Any and all increases in costs that are the direct result of deviations from the work described in Section I of this Agreement, shall have the prior concurrence of STATE.

Detailed records from which the billing is compiled shall be retained by the OWNER for a period of three years from the date of the final payment and will be available for audit by State and or Federal auditors. In performing work under this Agreement, OWNER agrees to comply with the Uniform System Accounts for Public Utilities found at 18 CFR, Parts 101, 201, et al., to the extent they are applicable to OWNER doing work on the project that is the subject of this agreement, the contract cost principles and procedures as set forth in 48CFR, Chapter 1, Part 31, et seq., 23 CFR, Chapter 1, Part 645 and 2CFR, Part 200, et al. If a subsequent State and/or Federal audit determines payments to be unallowable, OWNER agrees to reimburse AGENCY upon receipt of AGENCY billing. If OWNER is subject to repayment due to failure by State/Local Public Agency (LPA) to comply with applicable laws, regulations, and ordinances, then State/LPA will ensure that OWNER is compensated for actual cost in performing work under this agreement.

V. GENERAL CONDITIONS

All costs accrued by OWNER as a result of STATE's request of 06/01/2017 to review, study and/or prepare relocation plans and estimates for the project associated with this Agreement may be billed pursuant to the terms and conditions of this Agreement.

If STATE's project which precipitated this Agreement is canceled or modified so as to eliminate the necessity of work by OWNER, STATE will notify OWNER in writing and STATE reserves the right to terminate this Agreement by Amendment. The Amendment shall provide mutually acceptable terms and conditions for terminating the Agreement.

All obligations of STATE under the terms of this Agreement are subject to the passage of the annual Budget Act by the State Legislature and the allocation of those funds by the California Transportation Commission.

OWNER shall submit a Notice of Completion to the STATE within 30 days of the completion of the work described herein.

It is understood that said highway is a Federal aid highway and accordingly, 23 CFR, Chapter 1, Part 645 is hereby incorporated into this Agreement.

In addition, the provisions of 23 CFR 635.410, Buy America, are also incorporated into this agreement. The Buy America requirements are further specified in Moving Ahead for Progress in the 21st Century (MAP-21), section 1518; 23 CFR 635.410 requires that all manufacturing processes have occurred in the United States for steel and iron products (including the application of coatings) installed on a project receiving funding from the FHWA.

OWNER understands and acknowledges that this project is subject to the requirements of the Buy America law (23 U.S.C., Section 313) and applicable regulations, including 23 CFR 635.410 and FHWA guidance, and will demonstrate Buy America compliance by collecting written certification(s) from the vendor(s) or by collecting written certification(s) from the manufacturer(s) mill test report (MTR).

All documents obtained to demonstrate Buy America compliance will be held by the OWNER for a period of three (3) years from the date of final payment to the OWNER and will be made available to STATE or FHWA upon request.

One set of copies of all documents obtained to demonstrate Buy America compliance will be attached to, and submitted with, the final invoice.

This does not include products for which waivers have been granted under 23 CFR 635.410 or other applicable provisions or excluded material cited in the Department's guidelines for the implementation of Buy America requirements for utility relocations issued on December 3, 2013.

IN WITNESS WHEREOF, the above parties have executed this Agreement the day and year above written.

STATE:
By Rebecca Neves — Date 6/19/17
Name Rebecca Neves
Title City Engineer

OWNER:
By — Date 6/15/17
Name JIM ABERCROMBIE
Title GENERAL MANAGER

APPROVAL RECOMMENDED:

By _____ Date _____
Name _____
Title _____

By _____ Date _____
Name _____
Title _____

THIS AGREEMENT SHALL NOT BE EXECUTED BY THE STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION UNTIL FUNDS ARE CERTIFIED.

Reviewed & Approved as to Form on: 6/14/17
EID, Office of the General Counsel

UTILITY AGREEMENT
RW 13-05 (REV 11/2016)

UTILITY AGREEMENT NO.

CT DOCUMENT	EVENT TYPE	DEPT	UNIT	PROJECT ID	PHASE	REPORTING	OBJ CODE (N)		BFY	AMOUNT	
	C401	2660				9					
	C401	2660				9					
	C401	2660				9					

PROJECT ID FUNDING VERIFIED:	
Sign:	
Print:	
R/W Planning and Management	Date

REVIEW / REQUEST FUNDING:	
Sign:	
Print:	
Utility Coordinator	Date

THE ESTIMATED COST TO THE STATE FOR ITS SHARE OF THE ABOVE-DESCRIBED WORK IS _____

CERTIFICATION OF FUNDS				
I hereby certify upon my own personal knowledge that budgeted funds are available for the period and purpose of the expenditure shown here.				
R/W Planning and Management				Date
ITEM	CHAP	STAT	FY	AMOUNT

FUND TYPE	PROJECT ID	AMOUNT
Design Funds		$
Construction Funds		$
R/W Funds		$

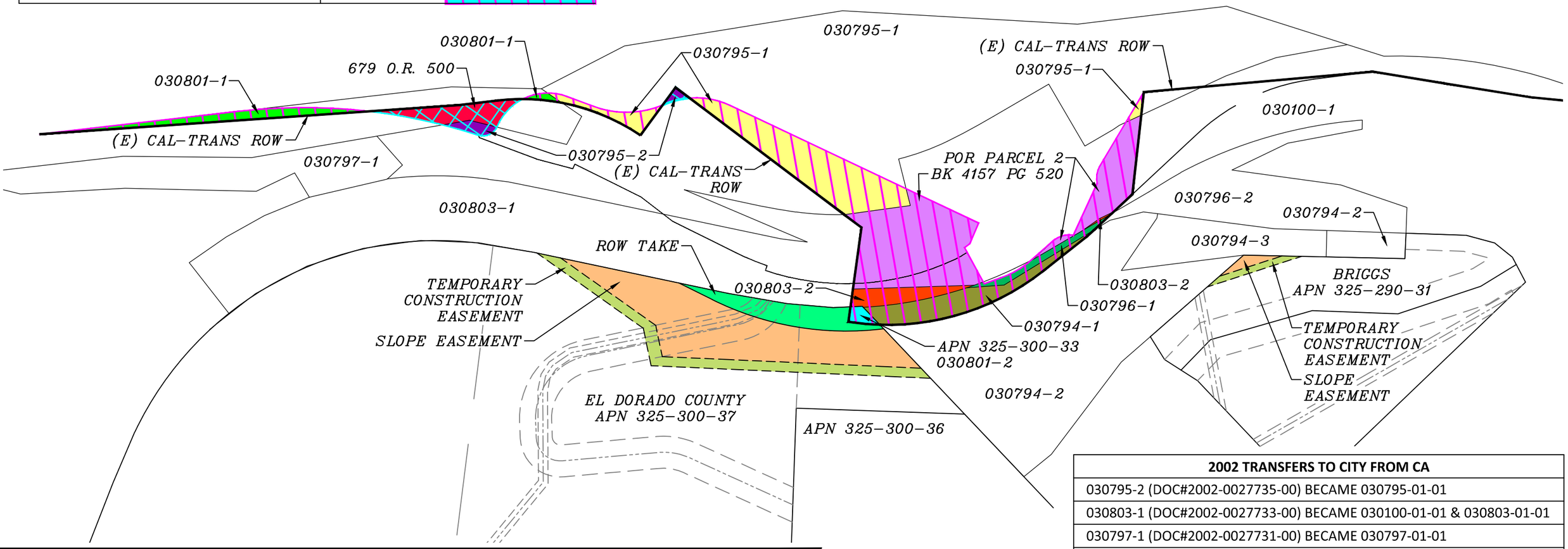
Distribution: 2 originals to R/W Accounting
1 original to Utility Owner
1 original to Utility File

ATTACHMENT 11

STATE OF CA TO CITY OF PLACERVILLE		
PARCEL/DIRECTOR'S DEED AFFECTED	**AREA (SF)**	**COLOR**
DIRECTOR'S DEED NUMBER PER EL DORADO COUNTY RS 23-26		
POR. 030801-1 NORTH	406	
POR. 030801-1 SOUTH	4,436	
POR. 030795-1 NORTH	413	
POR. 030795-1 MIDDLE	17,821	
POR. 030795-1 SOUTH	2,535	
POR. PARCEL 2 BK 4157 PG 520 NORTH	8,196	
POR. PARCEL 2 BK 4157 PG 520 SOUTH	22,965	
030803-2 NORTH	91	
030803-2 SOUTH	3,781	
POR. 030796-1	2,061	
POR. 030794-1	8,552	
030801-2 - APN 325-300-33	890	

CITY OF PLACERVILLE TO STATE OF CA		
PARCEL/DIRECTOR'S DEED AFFECTED	**AREA (SF)**	**COLOR**
POR. 679 O.R. 500	4,747	
POR. 030795-2 NORTH	413	
POR. 030795-2 SOUTH	1,077	
BRIGGS TO CITY OF PLACERVILLE		
DESCRIPTION	**AREA (SF)**	**COLOR**
SLOPE EASEMENT	1,012	
TEMPORARY CONSTRUCTION EASEMENT	1,286	
EL DORADO COUNTY TO CITY OF PLACERVILLE		
DESCRIPTION	**AREA (SF)**	**COLOR**
ROW TAKE	7,572	
SLOPE EASEMENT	33,417	
TEMPORARY CONSTRUCTION EASEMENT	10,306	

SCALE: 1"=150'



2002 TRANSFERS TO CITY FROM CA
030795-2 (DOC#2002-0027735-00) BECAME 030795-01-01
030803-1 (DOC#2002-0027733-00) BECAME 030100-01-01 & 030803-01-01
030797-1 (DOC#2002-0027731-00) BECAME 030797-01-01
030794-2 & 030794-3 (DOC#2002-0027736-00) BECAME 030794-01-01
030100-1 (DOC#2002-0027732-00) BECAME 030100-01-02
030796-2 (DOC#2002-0027734-00) BECAME 030796-01-01

RIGHT OF WAY KEY MAP

SHEET 1 OF 2

WESTERN PLACERVILLE INTERCHANGE PROJECT - PH 2

PRE CONSTRUCTION PARCEL TRANSFER

UNICO ENGINEERING
110 BLUE RAVINE RD SUITE 101 | FOLSOM, CA 95630
PHONE: 800.277.6623 | unicoengineering.com

STATE OF CA TO CITY OF PLACERVILLE		
PARCEL/DIRECTOR'S DEED AFFECTED	**AREA (SF)**	**COLOR**
DIRECTOR'S DEED NUMBER PER EL DORADO COUNTY RS 23-26		
POR. 030801-1 NORTH	406	
POR. 030801-1 SOUTH	4,436	
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CITY OF PLACERVILLE TO STATE OF CA		
PARCEL/DIRECTOR'S DEED AFFECTED	**AREA (SF)**	**COLOR**
POR. 679 O.R. 500	4,747	
POR. 030795-2 NORTH	413	
POR. 030795-2 SOUTH	1,077	
BRIGGS TO CITY OF PLACERVILLE		
DESCRIPTION	**AREA (SF)**	**COLOR**
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TEMPORARY CONSTRUCTION EASEMENT	1,286	
EL DORADO COUNTY TO CITY OF PLACERVILLE		
DESCRIPTION	**AREA (SF)**	**COLOR**
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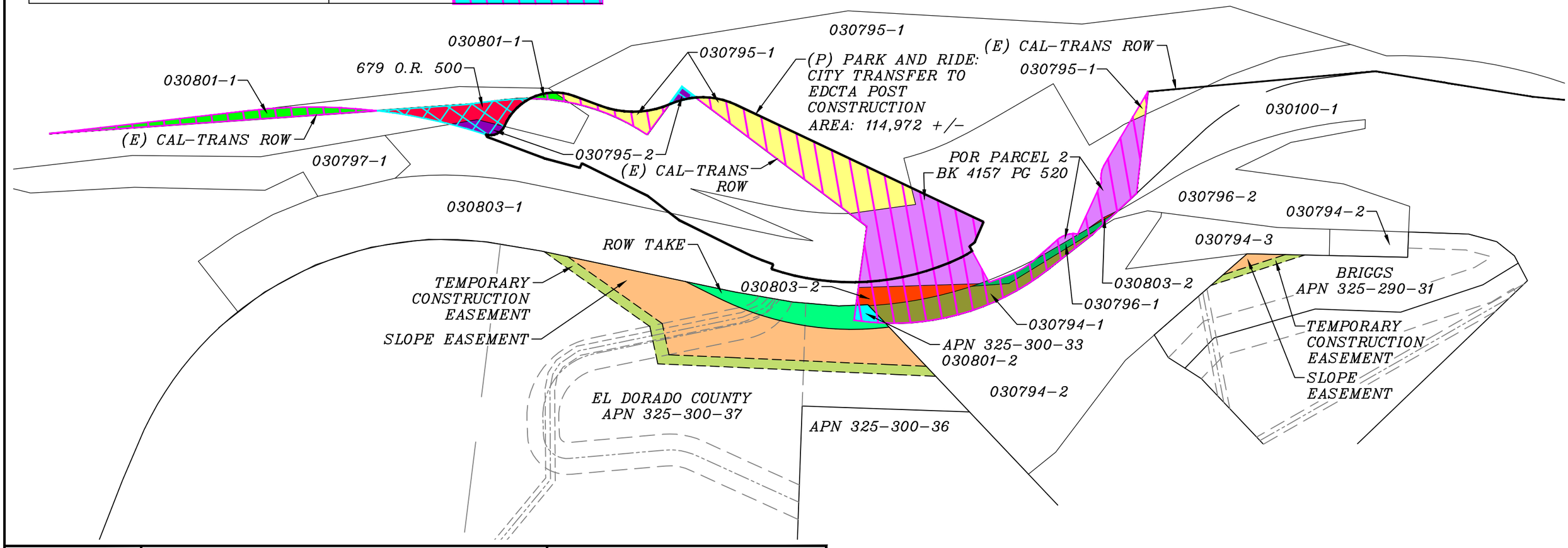
SLOPE EASEMENT	33,417	
TEMPORARY CONSTRUCTION EASEMENT	10,306	

SCALE: 1"=150'



RIGHT OF WAY KEY MAP

SHEET 2 OF 2

WESTERN PLACERVILLE INTERCHANGE PROJECT - PH 2

POST CONSTRUCTION PARCEL TRANSFER

UNICO ENGINEERING
110 BLUE RAVINE RD SUITE 101 | FOLSOM, CA 95630
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ATTACHMENT 12

GEOTECHNICAL DESIGN REPORT

Western Placerville Interchange
Phase 2 Project
Placerville, California

PREPARED FOR:

DOKKEN ENGINEERING
110 BLUE RAVINE ROAD, SUITE 200
FOLSOM, CALIFORNIA 95630

PREPARED BY:

GEOCON CONSULTANTS, INC.
3160 GOLD VALLEY DRIVE, SUITE 800
RANCHO CORDOVA, CALIFORNIA 95742

GEOCON PROJECT NO. S9420-05-04

NOVEMBER 2016

GEOCON
CONSULTANTS, INC.
GEOTECHNICAL ■ ENVIRONMENTAL ■ MATERIALS

Project No. S9420-05-04
November 28, 2016

VIA ELECTRONIC MAIL

Juann Ramos
Dokken Engineering
110 Blue Ravine Road, Suite 200
Folsom, California 95630

Subject: GEOTECHNICAL DESIGN REPORT
WESTERN PLACERVILLE INTERCHANGE PHASE 2 PROJECT
PLACERVILLE, CALIFORNIA

Dear Mr. Ramos:

In accordance with your authorization, we herein submit our Geotechnical Design Report (GDR) for the proposed Western Placerville Interchange Phase 2 Project in Placerville, California. This report evaluates the geotechnical conditions within the project area based on field exploration and laboratory test data and provides geotechnical recommendations for project design and construction.

Please contact the undersigned at your convenience if you have any questions regarding this report or if we may be of further service.

Sincerely,

GEOCON CONSULTANTS, INC.

Ronald E. Loutzenhiser, PE, GE
Senior Engineer

Jeremy J. Zorne, PE, GE
Senior Engineer

(4) Addressee

3160 Gold Valley Drive, Suite 800 ■ Rancho Cordova, CA 95742-7515 ■ Telephone 916.852.9118 ■ Fax 916.852.9132

TABLE OF CONTENTS

GEOTECHNICAL DESIGN REPORT PAGE

1.0 INTRODUCTION....1

2.0 EXISTING FACILITIES AND PROPOSED IMPROVEMENTS....2
- 2.1 Existing Facilities....2
- 2.2 Proposed Improvements....2

3.0 PROJECT PLANS....3

4.0 PHYSICAL SETTING....4
- 4.1 Climate....4
- 4.2 Topography and Drainage....4
- 4.3 Man-Made and Natural Features of Engineering and Construction Significance....5
- 4.4 Regional Geology and Seismicity....5
- 4.5 Soil Survey Mapping....6

5.0 FIELD EXPLORATION....7
- 5.1 Previous Investigation (Geocon, 2012)....7
- 5.2 Current Field Investigation (2016)....7
- 5.3 Drilling and Sampling....8
- 5.4 Site Geologic Mapping....8
- 5.5 Geophysical Studies....9
- 5.6 Instrumentation....9
- 5.7 Exploration Notes....9

6.0 GEOTECHNICAL TESTING....9
- 6.1 In-situ Testing....9
- 6.2 Laboratory Testing....9

7.0 GEOTECHNICAL CONDITIONS....10
- 7.1 Site Geology....10
  - 7.1.1 Lithology....10
  - 7.1.2 Structure....10
  - 7.1.3 Natural Slope Stability....10
- 7.2 Soil and Groundwater Conditions....10
  - 7.2.1 Soil Conditions....10
  - 7.2.2 Groundwater Conditions....12
- 7.3 Water....12
  - 7.3.1 Surface Water....12
  - 7.3.2 Regional Groundwater....13
- 7.4 Project Site Seismicity....14
  - 7.4.1 Ground Motions....14
  - 7.4.2 Ground Rupture....14

8.0 GEOTECHNICAL ANALYSES AND DESIGN....14
- 8.1 Dynamic Analysis....14
  - 8.1.1 Parameter Selection....14
  - 8.1.2 Analysis....15
- 8.2 Cuts and Excavations....15
  - 8.2.1 Stability....15
  - 8.2.2 Rippability/Excavatability....16
  - 8.2.3 Grading Factors....17

TABLE OF CONTENTS (Continued)

8.3 Embankments 17
8.3.1 Materials for Fill 17
8.3.2 Fill Area Preparation and Fill Placement 18
8.3.3 Embankment Stability 18
8.3.4 Fill Settlement 19
8.4 Caltrans Standard Type 5 Retaining Wall 19
8.5 Others 24
8.5.1 Corrosion Studies 24
8.5.2 Culverts 24
8.5.3 Drainage Design 25

9.0 PAVEMENT 25

10.0 MATERIAL SOURCES 27

11.0 MATERIAL DISPOSAL 27

12.0 CONSTRUCTION CONSIDERATIONS 27
12.1 Construction Advisories 27
12.2 Construction Considerations that Influence Specifications 27
12.3 Construction Monitoring and Instrumentation 28
12.4 Hazardous Waste Considerations 28
12.5 Differing Site Conditions 28
12.6 Groundwater 28

13.0 RECOMMENDATIONS AND SPECIFICATIONS 29

14.0 CLOSURE 29
14.1 Foundation and Grading Plan Review 29
14.2 Limitations and Uniformity of Conditions 29

15.0 REFERENCES 31

LIST OF TABLES

TABLE 2.2 DESIGN TRAFFIC INDICES 3
TABLE 4.1 MONTHLY CLIMATE SUMMARY 4
TABLE 4.4 FAULT INFORMATION 6
TABLE 5.2 SUMMARY OF EXPLORATIONS 7
TABLE 7.3 SUMMARY OFREGIONAL GROUNDWATER DEPTHS 13
TABLE 8.2.2 ANTICIPATED EXCAVATION CHARACTERISTICS 16
TABLE 8.4a STRENGTH LIMIT STATE FOUNDATION DATA TABLE 20
TABLE 8.4b EXTREME LIMIT STATE FOUNDATION DATA TABLE 21
TABLE 8.4c SERVICE LIMIT STATE FOUNDATION DATA TABLE 22
TABLE 8.4d SPREAD FOOTING DATA TABLE 23
TABLE 9.0 DESIGN TRAFFIC INDICES 25
TABLE 9.1 PAVEMENT STRUCTURAL SECTIONS 26
TABLE A-1 SUMMARY OF EXPLORATIONS A1

TABLE OF CONTENTS (Continued)

FIGURES
Figure 1, Vicinity Map
Figure 2, Site Plan
Figure 3, Geologic Map
Figure 4, Recommended Design Response Spectrum

APPENDIX A
FIELD INVESTIGATION
Table A-1, Summary of Explorations
Figure A1, Key to Logs
Figures A2 through A9, Exploration Logs
Figures A10 through A13, Exploration Logs (Geocon, 2012)

APPENDIX B
LABORATORY TESTING
Table B-1, Summary of R-Value Test Results
Table B-2, Summary of Soil Corrosion Parameters Test Results
Figure B1, Summary of Laboratory Results
Figure B2, Atterberg Limits
Figure B3, Grain Size Distribution
Figure B4, Moisture-Density Relationship

APPENDIX C
LOG OF TEST BORING SHEETS

APPENDIX D
CALTRANS COMMENTS AND RESPONSES

GEOTECHNICAL DESIGN REPORT

1.0 INTRODUCTION

This Geotechnical Design Report (GDR) presents the results of the geotechnical investigation for the proposed Western Placerville Interchange Phase 2 Project in Placerville, California. The approximate site location is depicted on the Vicinity Map, Figure 1.

The purpose of this report is to document subsurface geotechnical conditions, provide analyses of anticipated site conditions as they pertain to the project described herein, and to recommend geotechnical design and construction criteria for the project as presently proposed. This report also establishes a geotechnical baseline to aid in assessing the existence and scope of potential changed site conditions encountered during construction. This report has been prepared for the Plan Specification and Estimate (PS&E) phase of the project. A draft *Geotechnical Design Report* (Draft GDR) for the project (Western Placerville Interchange Phase 2 Project) was prepared by Geocon Consultants, Inc., dated March 2016. This GDR supersedes the Draft GDR for the project and addresses Caltrans comments received October 2016.

Major components of the project include adding a new eastbound off-ramp from US Highway 50 (US 50) at the Ray Lawyer Drive Overcrossing and associated US 50 mainline auxiliary lane improvements, widening/realignment of Forni Road near the new off-ramp location, and the addition of a Park and Ride lot. These improvements are being made to better serve the needs of local and regional traffic, including providing alternative travel routes and improving safety for vehicle, bicycle, and pedestrian travel.

In the project area, Forni Road generally parallels the south side of US 50 (aligned northeast/southwest) with Ray Lawyer Drive forming a "T" intersection with Forni Road approximately 350 feet southeast of the eastbound US 50 mainline. Within the project limits, the local roads (roadways except US 50) have one travel lane in each direction. The proposed project includes widening Forni Road to allow for widened shoulders, additional turn lanes at intersections and sidewalk, curb, and gutter improvements. The roadway widening/realignment will require significant earthwork (cuts and fills of varying heights) and a new retaining wall. The new alignment of Forni Road will provide for a smooth transition between Forni Road (southwest of the intersection with Ray Lawyer Drive) and Ray Lawyer Drive. The new US 50 off-ramp will intersect Forni Road near the location of the current "T" intersection and require construction of a new auxiliary lane along the eastbound US 50 mainline prior to the new off-ramp. A new 4-way intersection will have Forni Road/Ray Lawyer Drive as the through street with the new US 50 off-ramp and East Forni Road (to the northeast) forming the cross streets. The realignment of Forni Road will also require minor changes to the existing intersections with East Forni Road, the El Dorado County Jail driveway, and the El Dorado Trail access point. The new Park and Ride lot will require significant fill placement in

order to obtain desired finish grade elevations and will be accessed by a new driveway off Forni Road. The proposed improvements are depicted on the Site Plan, Figure 2.

2.0 EXISTING FACILITIES AND PROPOSED IMPROVEMENTS

2.1 Existing Facilities

The proposed project affects about 2,400 feet of existing Forni Road and Ray Lawyer Drive in Placerville, California. Forni Road and Ray Lawyer Drive are two-lane local roadways with paved and unpaved shoulders of various widths. Traffic control at the existing intersection of Forni Road with Ray Lawyer Drive is via stop signs in all directions. Traffic is controlled at the El Dorado County Jail driveway via a stop sign at the end of the driveway.

US 50 in the project area consists of two travel lanes in each direction with paved shoulders and center median and a concrete divider between the eastbound and westbound lanes. There is currently only one connecting ramp with US 50 from Ray Lawyer Drive (westbound US 50 on-ramp). This project will affect approximately 1,500 feet of the eastbound US 50 shoulder area.

The proposed eastbound US 50 off-ramp will require demolition of and filling in a temporary detention basin. This will require removal of the concrete basin lining around the southeast corner of the basin. There is an existing stockpile of soil at the southwest corner of the Ray Lawyer Drive Overcrossing of US 50. This material is from construction of the US 50 onramp on the north side of the freeway and it is anticipated to be used as fill for the Phase 2 project.

2.2 Proposed Improvements

The improvements discussed herein are based on preliminary project plans provided by Dokken Engineering. According to Dokken, all elevations shown on project plans (and referenced herein) are per the National Geodetic Vertical Datum of 1929 (NGVD 29). The following improvements are proposed:

- A new auxiliary lane along the eastbound US 50 mainline from station (Sta.) 542+25.22 to Sta. 557+19.91 (“ED-50”-Line). The auxiliary lane will require minor fills for roadway widening.
- A new westbound US 50 off-ramp for Ray Lawyer Drive / Forni Road from Sta. 554+50.00. to Sta. 567+59.38 (“RL-2”-Line) that intersects Forni Road at Sta. 39+03.68 (“F”-Line). The new ramp will require embankment fills up to approximately 18 feet in height along the proposed ramp (approximate Sta. 561+00). No retaining walls are proposed along the off-ramp.
- Realign and widen Forni Road throughout the project limits. Project improvements begin at Sta. 22+48.49 (“F”-Line) on the southwest end of the project and end at Sta. 42+27.60 on the northeast end of the project (“RL”-Line). Forni Road (“F”-Line) will changes name to Ray Lawyer Drive (“RL”-Line) at Sta. 39+23.38 after the improvements are completed. New cut

and fill slopes as well as construction of a new retaining wall will be necessary to accommodate the roadway widening. A maximum cut height of approximately 20 feet is indicated near Sta. 26+00 (shoulder area). A maximum fill height of approximately 19 feet is indicated near Sta. 28+50.

- Construction of a new retaining wall along Forni Road. The proposed retaining wall will be a Caltrans Type 5 cantilever wall approximately 412 feet in length and up to 8 feet high. The wall will be subject to Load Case 1 loading conditions (level backfill). Wall begin and end stations are Sta. 23+32.00 and Sta. 27+37.48, respectively ("F"-Line). The bottom of spread footing is stepped and varies from elevation 1,821.7 (west) to elevation 1,841.3 feet (east) along the wall alignment. The proposed wall footings are 1.5 feet thick.
- Construction of a new Park and Ride lot between realigned Forni Road and the new US 50 off-ramp. Construction of the lot will require placement of engineered fill of up to about 20 feet thick. The proposed Park and Ride lot driveway will be located near Sta. 29+50 along Forni Road ("F"-Line).
- Construction of a new detention basin to replace the existing temporary basin (to be filled in during off-ramp construction).
- Local road widening and intersection improvements at:
    - East Forni Road ("F-1"-Line),
    - El Dorado County Jail driveway ("CJ"-Line), and
    - El Dorado Trail access point.
- Construction of new hot mix asphalt (HMA) pavement along the existing roadways. Traffic indices for the project have been provided by Dokken Engineering and are as follows:

TABLE 2.2
DESIGN TRAFFIC INDICES

Portion of Project	Traffic Index
US 50 Auxiliary Lane (Mainline)	12, 14, and 16
US 50 Off-Ramp	8, 10, and 12
Forni Road / Ray Lawyer Drive	6, 8, and 10
Park and Ride	5, 6, and 7

- Construction of concrete gutters, curbs and sidewalks along Forni Road along the realigned section.

Configuration of proposed improvements is shown on the Site Plan, Figure 2.

3.0 PROJECT PLANS

We reviewed the following plans related to the project: *Contour Grading (Sheets G-1, G-2, and G-3), Layout (Sheets L-1, L-2, and L-3), and Survey Control (Sheet SC-1),* labeled "65% Plans Not For Construction" prepared by Dokken Engineering, dated April 1, 2016, as well as supplemental topographic and proposed improvement information provided electronically between March 3 and 11, 2016.

4.0 PHYSICAL SETTING

4.1 Climate

Table 4.1 presents monthly climate data near the project site. These data were obtained from information published by the Western Regional Climate Center (www.wrcc.dri.edu). The monthly data were recorded from 1900 to 2011, and the recording station used was located at Latitude 38.44°N; Longitude 120.48°W; elevation 1,890 feet (Placerville Station, #046960-2, California).

TABLE 4.1
MONTHLY CLIMATE SUMMARY

Climate Data	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Avg. Total Precipitation (inches)	6.92	6.65	5.76	3.19	1.51	0.44	0.07	0.09	0.54	2.13	4.40	6.47	38.16
Avg. High (°F)	53.4	56.9	60.5	66.3	74.8	83.9	92.7	91.4	85.7	74.8	61.3	53.8	71.3
Avg. Low (°F)	32.6	35.0	37.6	40.5	46.3	51.9	57.2	56.2	52.1	45.0	37.4	33.1	43.8

Based on the information obtained, the average precipitation for a calendar year is 38.16 inches. The majority of this precipitation (approximately 88 percent) falls between November and April. The warmest month is July with an average high of 92.7°F and average low of 57.2°F. The coolest month is January with an average high of 53.4°F and an average low of 32.6°F. Contractors should be aware of compaction and workability difficulties that can occur during earthwork in wetter months or periods of precipitation. In addition, grading operations conducted during warmer months may require significant addition of water to properly moisture-condition fill materials.

4.2 Topography and Drainage

The project is located in mountainous terrain with diverse topography. Based on the topographic information provided by Dokken, the highest elevation within the project limits is approximately 1,905 feet at the top of the soil stockpile south of the Ray Lawyer Drive overcrossing of US 50. The lowest elevation is approximately 1,786 feet along the shoulder of US 50 at the southwestern extent of the proposed auxiliary lane improvements. The surface elevations of Forni Road range from approximately 1,820 feet at the southwest end of the project to approximately 1,888 feet near the northeast end of the project. Existing elevations along the proposed off-ramp alignment vary from about 1,823 feet near Sta. 558+00 (“RL-2”-Line) to 1,888 feet at the proposed intersection with realigned Forni Road. The topography along the project alignment includes numerous manmade and natural slopes of various inclinations. The manmade slopes are typically cut and fill slopes associated with past grading of Forni Road, US 50, and adjacent areas. Documentation relative to past site grading or characteristics of the soil stockpile was not available for our review.

Thickness of existing embankment fills likely range from a few feet up to approximately 8 to 10 feet and at general inclinations of 2:1 horizontal to vertical. The tallest existing cut slopes along Forni Road appear to be near Sta. 25+50 near the southwest end of the project. The cut slopes appear to be about 15 feet tall and are at general inclinations up to approximately 1:1.

Site drainage generally occurs via sheet flow with runoff directed to intermittent natural and man-made drainages along Forni Road. Drainage across much of the northern portion of the project site flows into a detention basin between US 50 and Forni Road (at approximate Sta. 560+00 of the proposed US 50 off-ramp, "RL-2"-Line) and then continues southwest in a drainage ditch between US 50 and Forni Road. Site topography is depicted on the Site Plan, Figure 2.

4.3 Man-Made and Natural Features of Engineering and Construction Significance

Earthwork in the project area will accommodate the proposed roadway realignment/widening, new off-ramp, Park and Ride facility, and associated improvements. The man-made features that will be impacted by the project include the existing roadways, embankments, driveways to businesses and residences, drainage basin and culverts, and overhead and underground utilities. We understand that the soil stockpile is to be used as borrow material for engineered fill placement on this project. Given that the project area has already been altered by the existing roadways/improvements, the potential for impact on natural features by the project is considered low. Most of the proposed improvements will be in areas that have been previously graded or altered (existing roadways, cut and fill slopes/graded areas, drainage basin, and soil stockpile).

4.4 Regional Geology and Seismicity

Site geologic information was obtained from the *Geologic Map of the Sacramento Quadrangle,* (CGS, 1981). The site is located within the western foothills area of the Sierra Nevada Geomorphic Province, or what is more commonly referred to as the Mother Lode Region. The western foothills area is bounded by the Sierra Nevada to the east and the Central Valley to the west.

The site is generally underlain by Jurassic metamorphic rocks of the Logtown Ridge Formation (map symbol Jlr) and Mariposa Formation (map symbol Jm) (CGS, 1981). A portion of the geologic map covering the site vicinity is presented as Figure 3. Published mapping of the site geology is consistent with the conditions encountered in our explorations; the site is generally underlain by completely to highly weathered metamorphic bedrock within the depths explored for this investigaiton. Previous borings by Geocon (2012) in the detention basin area encountered decomposed to fresh bedrock conditions.

The site is not located within an Alquist-Priolo Earthquake Fault Zone as established by the State Geologist around known active faults. Review of available literature and field reconnaissance revealed no indication of an active fault trace through or near the site.

Regional seismicity was analyzed based on Caltrans' *2012 "Methodology for Developing Design Response Spectrum for Use in Seismic Design Recommendations"*. This procedure is based on current Caltrans *Seismic Design Criteria (Appendix B), Deterministic PGA Map, ARS Online Report, Geotechnical Manual,* and USGS probabilistic seismic hazard analysis and tools. Based on Caltrans' web-based *ARS Online* application (V2.3.06, accessed March 3, 2016) and associated reports, key information for the controlling faults is summarized in Table 4.4 below.

TABLE 4.4
FAULT INFORMATION

Fault Name	Foothills Fault System-North Central Reach Section (DeWitt Fault)	Carson Range (Genoa)	West Tahoe
Fault ID#	423	83	77
M_{Max}	6.3	7.2	7.0
Fault Type	N	N	N
Fault Dip	50°	50°	50°
Dip Direction	West	E	East
Bottom of Rupture	10 km	15.0 km	13 km
Top of Rupture	0 km	0 km	0 km
Distance to Fault (R_{RUP})	30.84 km	87.32 km	68.87 km
$Z_{1.0}$	n/a	n/a	n/a
$Z_{2.5}$	n/a	n/a	n/a

4.5 Soil Survey Mapping

We reviewed soil survey mapping from the United States Department of Agriculture (USDA). The online soil data are provided by the USDA National Resources Conservation Service (NRCS) at their website (http://websoilsurvey.nrcs.usda.gov) as accessed on March 4, 2016.

Based on the information obtained from USDA mapping, soils within the project area include (followed by the map unit symbol):

- Boomer gravelly loam with 3 to 15 percent slopes (BhC),
- Boomer gravelly loam with 15 to 30 percent slopes (BhD), and
- Boomer very rocky loam with 30 to 50 percent slopes (BkE).

Soil erosion is typically associated with high-intensity precipitation, steep slopes, and degree of weathering of surficial exposed rock. Based on the site topographic features, climate data, and the surficial materials encountered during our investigation, the proposed project may be impacted by soil erosion. To reduce impacts related to erosion, surface drainage flow should be appropriately collected

and drained by appropriate drainage systems. All slope areas should be appropriately protected by appropriate erosion control measures.

5.0 FIELD EXPLORATION

5.1 Previous Investigation (Geocon, 2012)

Previous field investigation at the project site by Geocon consists of two borings (A-12-001 and A-12-002) and two test pits (O-12-003 and O-12-004) performed in the existing detention basin location on August 15, 2012. The borings were drilled using a track-mounted Speedstar 25 drill rig equipped with 4-inch-diameter solid-stem augers. Borings were advanced to depths of approximately 10 and 20 feet. Test pits were excavated by a backhoe to depths of approximately 7½ and 10 feet. The locations of these explorations are shown on the Site Plan, Figure 2. Copies of the exploration logs are included in Appendix A (Figures A9 through A12).

5.2 Current Field Investigation (2016)

The field investigation for this Geotechnical Design Report was performed between February 17 and March 5, 2016, and consisted of a site reconnaissance, drilling 7 borings (including 2 hand-auger borings), and obtaining a bulk sample of soil from the stockpile for laboratory testing. The explorations were located based on preliminary project plans and information from Dokken Engineering. Table 5.2 summarizes the exploration locations, approximate surface elevations, and depths.

TABLE 5.2
SUMMARY OF EXPLORATIONS

Exploration No.	Approximate Exploration Location				Exploration Depth (feet)
	Station No.	Line	Offset (feet)	Elevation (feet)	
A-16-001	24+28	"F"-Line	18 Left	1834	25.2
A-16-002	26+11	"F"-Line	15 Left	1844	25.2
A-16-003	564+53	"RL-2"-Line	70 Right	1849	11.4
A-16-004	38+57	"F"-Line	51 Left	1880	11.5
A-16-005	12+45	"F-1"-Line	26 Right	1900	10.2
HA-16-006	563+07	"RL-2"-Line	77 Right	1839	2.0
HA-16-007	561+29	"RL-2"-Line	130 Right	1838	2.5
O-16-008	40+40	"F"-Line	104 Left	1894	1.5

5.3 Drilling and Sampling

Borings A-16-001 through A-16-005 were drilled using a truck-mounted Mobile B-57 drill rig equipped with 8-inch-diameter hollow-stem augers. Borings were advanced to depths ranging from approximately 10 to 25 feet. Borings HA-16-006 and HA-16-007 were advanced using a hand-auger. Surficial bulk soil sample O-16-008 was obtained using a shovel in the side of the soil stockpile present at the project site.

Sampling during drilling was performed in general accordance with the current Caltrans' *Soil and Rock Logging, Classification and Presentation Manual* (2010). Soil samples were typically collected at approximately 2.5- to 5-foot intervals. Relatively undisturbed soil samples were obtained by driving an approximately 3-inch outside-diameter (OD) split-spoon sampler (Modified California Sampler) and an approximately 2.5-inch OD split-spoon sampler (Standard California Sampler) into the "undisturbed" soil mass with blows from a 140-pound hammer falling 30 inches. The samplers were equipped with 6-inch-long brass sample tubes to facilitate sample removal and laboratory testing. Standard Penetration Tests (SPTs) were performed by driving a 2-inch OD split-spoon sampler 18 inches in general accordance with American Society for Testing and Materials (ASTM) D-1586. The number of blows required to drive the samplers (blow counts) the last 12 inches of the 18-inch sample drive (or portion thereof) are reported on the logs of borings and Logs of Test Boring (LOTB) sheets included in Appendices A and C, respectively. Bulk samples of soil cuttings were also collected during the field exploration.

The exploratory borings were sampled and logged by a registered civil engineer during drilling operations. The soils encountered in the exploratory borings were classified in accordance with the Caltrans' *Soil and Rock Logging, Classification, and Presentation Manual* (2010). Upon completion of the field exploration program, the exploratory borings were backfilled with cement grout. Borings in paved areas were capped with quick set concrete.

Samples were placed in sealed containers and transported to our laboratory for testing and further classification. Boring logs are included in Appendix A. The LOTB sheets in Caltrans format are presented in Appendix C.

5.4 Site Geologic Mapping

Regional geology is discussed in Section 4.4. Site geology encountered during our field investigation generally includes previously placed fill, residual soil, and intensely to completely weathered (decomposed) metamorphic rock. Fill and weathered metamorphic rock are present at or near the existing ground surface along the Forni Road alignment. Fills of variable thickness exist along Forni Road and Ray Lawyer Drive. Residual soil was noted to approximate 4.5-foot depth in Boring B3 near the proposed US 50 off-ramp and Park and Ride facility.

5.5 Geophysical Studies

The exploration program did not include geophysical studies.

5.6 Instrumentation

The exploration program did not include the installation of geotechnical instrumentation.

5.7 Exploration Notes

Borings A-16-001 and A-16-002 were advanced for the purpose of evaluating subsurface conditions for the proposed retaining wall, improvements to the south end of Forni Road, and the new auxiliary lane for US 50. Borings A-16-003 through A-16-005 were advanced for the purpose of evaluating subgrade conditions for the purpose of embankment/pavement design. Hand-auger borings HA-16-006 and HA-16-007 were advanced within the proposed Park and Ride facility location to evaluate earthwork preparation stripping depths. Sample O-16-008 was taken to evaluate the stockpiled material for use as engineered fill. Borings A-12-001 and A-12-002 and test pits O-12-003 and O-12-004 were used to evaluate the subsurface conditions for the proposed US 50 off-ramp.

6.0 GEOTECHNICAL TESTING

6.1 In-situ Testing

Relatively undisturbed soil samples were obtained by driving an approximately 3-inch OD split-spoon sampler (Modified California Sampler) and an approximately 2.5-inch OD split-spoon sampler (Standard California Sampler) into the "undisturbed" soil mass with blows from a 140-pound hammer falling 30 inches. The samplers were equipped with 6-inch-long brass sample tubes to facilitate sample removal and laboratory testing. Standard Penetration Tests (SPTs) were performed by driving a 2-inch OD split-spoon sampler 18 inches in general accordance with American Society for Testing and Materials (ASTM) D-1586. The number of blows required to drive the samplers (blow counts) the last 12 inches of the 18-inch sample drive (or portion thereof) are reported on the logs of borings and Logs of Test Boring (LOTB) sheets included in Appendices A and C, respectively.

6.2 Laboratory Testing

Laboratory tests were performed in accordance with California Test Methods (CTM) or generally accepted test methods of the ASTM. The types of the tests performed are listed below:

- In-Place Dry Density and Moisture Content: ASTM D2937
- Grain Size Distribution: ASTM D422
- Atterberg Limits: ASTM D4318
- pH and Resistivity: CTM 643

- Sulfate Content: CTM 417
- Chloride Content: CTM 422
- Moisture-Density Relationship: ASTM D1557C
- R-Value: CTM 301

Test results and related information are provided in Appendix B. The results of dry density and moisture content testing are presented on the boring logs (Appendix A) and LOTB sheets (Appendix C).

7.0 GEOTECHNICAL CONDITIONS

7.1 Site Geology

Site geologic mapping and soil conditions are discussed in Sections 5.4 and 7.2, respectively. The foundation for the proposed retaining wall will extend into weathered metamorphic rock.

7.1.1 Lithology

Detailed descriptions of subsurface conditions are presented in Section 7.2 of this report.

7.1.2 Structure

Detailed descriptions of subsurface conditions are presented in Section 7.2 of this report.

7.1.3 Natural Slope Stability

Natural slopes steeper than 2:1 (horizontal:vertical) were not observed within the project limits. Cut slopes with inclinations of approximately 1:1 or flatter exist at various locations, with the most significant cuts being on the east side of Forni Road. The existing embankments are composed of fill presumably placed during the original construction for Forni Road and Ray Lawyer Drive. No obvious signs of slope instability were noted in the cut or fill slopes; the slopes generally appear to be in good condition.

7.2 Soil and Groundwater Conditions

7.2.1 Soil Conditions

The soil and groundwater conditions encountered are described in detail below and on the exploration logs and LOTB sheets presented in Appendices A and C, respectively.

7.2.1.1 Fill

Approximately 3 feet of existing fill was noted in A-12-001 and O-12-003. This fill consisted of hard clayey silt with varied sand and gravel content likely derived from native residual soil. No significant amounts of existing fill were encountered in our current borings for this investigation. Existing fill observed at the project site appears to be performing well and is generally considered suitable for support of grading/pavement improvements (minor cuts/fills, pavement, concrete flatwork, etc.) provided near-surface soils are processed and replaced as engineered fill. However, any existing fill encountered below proposed retaining wall footings (not anticipated) will require removal and recompaction. Specific recommendations are provided herein.

A large stockpile of material excavated for the westbound US 50 on-ramp construction north of the freeway is present south of the Ray Lawyer Drive Overcrossing of US 50. The stockpile is up to 40 feet high and is approximately 200 feet long across the top. The soil sample taken from this stockpile consisted of clayey gravel with sand. We understand this material is to be used as engineered embankment fill for construction of the proposed US 50 off-ramp and new Park and Ride facility. No documentation of fill placement at the stockpile location has been provided for review and the composition of the stockpile may vary significantly from the sample tested, including the possible presence of significantly oversized materials or debris.

For excavation purposes, existing fill soils are considered a Cal/OSHA Type C soil. All excavations and trenches should be properly maintained and/or shored in accordance with applicable Cal/OSHA rules and regulations for the safety of construction personnel and stability of the excavation slope and any adjacent existing improvements.

7.2.1.2 Residual Soil

Residual soil was encountered in Boring A-16-003, hand auger Borings HA-16-006 and HA-16-007, and in Boring A-12-002 and Test Pit O-12-004. The residual soil encountered generally consisted of soft to very stiff clay. Residual soil is defined as decomposed (completely weathered) bedrock materials. Undisturbed residual soil is genrally considered suitable for support of additional fill or structural/pavement improvements after near-surface soils are processed and recompacted as engineered fill.

For excavation purposes, existing soft residual soils are considered a Cal/OSHA Type C soil. Medium stiff to very stiff clay soils (unless submerged or subject to seepage) are considered a Cal/OSHA Type B soil.

7.2.1.3 Metamorphic Rock

Below the paved surface in Borings A-16-001, A-16-002, A-16-004, and A-16-005 and below the residual soil in Boring A-16-003, metamorphic rock of the Logtown Ridge Formation was encountered to the maximum depths explored. The Logtown Ridge Formation material encountered in our investigation generally consisted of intensely to completely weathered, weak metavolcanic rock. These materials are suitable for foundation support for the proposed retaining walls and may exhibit locally difficult excavation characteristics using conventional heavy-duty grading equipment. Anticipated excavation characteristics are discussed in section 8.2.2.

Below the fill and residual soil encountered in our explorations in 2012, metamorphic rock of the Mariposa Formation was encountered to the maximum depths explored. The Mariposa Formation material encountered in our investigation generally consisted of highly weathered to fresh/unweathered argillite. The degree of weathering and fracturing decreased somewhat with depth. Anticipated excavation characteristics are discussed in section 8.2.2.

Intact/undisturbed weathered rock is considered suitable for direct support of the proposed retaining wall or embankment fill without additional processing.

For excavation purposes, existing decomposed/weathered rock materials (unless submerged or subject to seepage) are considered a Cal/OSHA Type B soil.

7.2.2 Groundwater Conditions

Groundwater was not encountered in the test borings performed for this project. Groundwater was encountered in Test Pit O-12-004 at a depth of 7 feet and in Boring A-12-002 at a depth of 13 feet. Based on our experience in the area, we expect perched groundwater/seepage may develop at variable depths generally near the contacts between surficial soils and formational materials (bedrock), especially during winter and spring. Seepage can also occur within formational material based on the degree of weathering, fracturing, and bedding. Fluctuations of groundwater levels may occur due to variations in precipitation, temperature, and other factors. Depth to groundwater can also vary significantly due to localized pumping, irrigation practices, and seasonal fluctuations. Therefore, it is possible that future groundwater may be higher or lower than the levels observed during our investigation.

7.3 Water

7.3.1 Surface Water

The site is not located in the immediate vicinity of any large bodies of water. There are no creeks or streams located within the project limits. Drainage features direct ephemeral flows to the existing

detention basin. Project grading plans show the existing detention basin will be relocated to the northeast (immediately adjacent to the existing stockpile location) and the site regraded to direct surface water to the new basin location. As such, surface water is not expected to significantly affect the proposed improvements.

7.3.1.1 Scour

No active year-round watercourses exist within the project limits; therefore, scour is not expected to affect the proposed improvements.

7.3.1.2 Erosion

Soil erosion is typically associated with high-intensity precipitation, steep slopes, and nature of surficial soil or type and degree of weathering of exposed rock. Based on the site topographic features, climate data, and the surficial materials encountered during our investigation, the proposed project may be impacted by soil erosion. To reduce impacts related to erosion, surface drainage flow should be appropriately collected and drained by appropriate drainage systems. All slope areas should be appropriately protected by appropriate erosion control measures.

We recommend using surface treatments to minimize surficial erosion until adequate erosion-resistant vegetation can become established. All roadway drainage should be directed to appropriate collection and discharge facilities to prevent run-off from flowing over the tops of slopes.

7.3.2 Regional Groundwater

Groundwater was not encountered in our current explorations for this project. Groundwater was encountered in Test Pit O-12-004 at a depth of 7 feet and in Boring A-12-002 at a depth of 13 feet. Groundwater elevation information available through the California State Water Resources Control Board GeoTracker website (http://geotracker.waterboards.ca.gov) indicates the following groundwater depths measured in monitoring wells at two nearby sites:

TABLE 7.3
SUMMARY OFREGIONAL GROUNDWATER DEPTHS

Location	Well Numbers	Dates	Depths to Groundwater Range, feet
701 Forni Road	MW-1 through MW-3	2007 to 2008	2.5 to 12.1
150 Placerville Drive	MW-1 through MW-11	2011	7.2 to 18.4

It should be noted that fluctuations in the level of groundwater may occur due to variations in rainfall, temperature, and other factors. Depth to groundwater can also vary significantly due to localized

pumping, irrigation practices, and seasonal fluctuations. Therefore, it is possible that groundwater may be higher or lower than the levels observed during our investigation.

7.4 Project Site Seismicity

Seismic design of project structures should be developed in accordance with Caltrans' *2012 "Methodology for Developing Design Response Spectrum for Use in Seismic Design Recommendations"*. This procedure is based on current Caltrans *Seismic Design Criteria (Appendix B), Deterministic PGA Map, ARS Online Report, Geotechnical Services Design Manual,* and USGS probabilistic seismic hazard analysis and tools. The recommended design response spectrum for structures is discussed in Section 8.1.1.

7.4.1 Ground Motions

Regional faults that may cause ground motions at the site are listed in Section 4.4. It is our opinion that the site could be subject to ground shaking in the event of an earthquake along faults in Northern California. However, we do not consider the site to possess any greater risk than that of the surrounding developments. The maximum earthquake event along the controlling faults may generate a horizontal peak ground acceleration (PGAs) of approximately 0.22g at the project site, where "g" represents the acceleration due to gravity.

7.4.2 Ground Rupture

There are no known or suspected faults that cross the project alignment or near vicinity; therefore, ground rupture due to active faulting is not considered a hazard to the project.

8.0 GEOTECHNICAL ANALYSES AND DESIGN

Geotechnical analyses were performed to evaluate site seismicity, parameters for retaining wall design, and pavement support characteristics. These analyses were performed based on the results of in-situ and laboratory testing as well as our experience with similar soils. These results are incorporated within the recommendations in this report.

8.1 Dynamic Analysis

8.1.1 Parameter Selection

Site seismicity for structures was analyzed based on Caltrans *2012 "Methodology for Developing Design Response Spectrum for Use in Seismic Design Recommendations"*. Both the deterministic and probabilistic response spectrums for the site were estimated using Caltrans' *Deterministic Response Spectrum Spreadsheet, Probabilistic Response Spectrum Spreadsheet* (after USGS), *USGS 2008 Interactive Deaggregations,* and the *Caltrans ARS Online* web tools. The design response spectrum for

structure is the upper envelope of the spectral values of deterministic response spectrum and the probabilistic response spectrum. Based on our analysis, California minimum and USGS results control the design response spectrum for the project. The recommended design response spectrum is presented as Figure 4 (Recommended Design Response Spectrum).

8.1.2 Analysis

Liquefaction is a phenomenon in which loose, saturated and relatively cohesionless soil deposits located beneath the groundwater table lose strength during strong ground motions. Primary factors controlling liquefaction include intensity and duration of ground accelerations, characteristics of the subsurface soil, in-situ stress conditions, and depth to groundwater. Based on the subsurface conditions and anticipated seismic conditions, the potential for liquefaction at the site is considered low.

The existing slopes and proposed slopes, constructed in accordance with the recommendations of this report, should have an adequate factor of safety against deep-seated and shallow failures under static loading and pseudo-static (seismic) loading.

8.2 Cuts and Excavations

Based on the preliminary project cross sections provided by Dokken, a maximum cut on the order of up to about 20 feet deep will be required at a roadway shoulder area to widen/realign existing Forni Road. Cuts of about 5 foot depth or less will be required at/near the location of the proposed 4-way intersection and other locations in order to meet proposed grades. Where necessary, these cuts will be laid back at maximum 2H:1V slopes during excavation. There are no retaining walls proposed in cut areas.

8.2.1 Stability

Permanent cut slopes should be constructed no steeper than 2H:1V. Temporary construction slopes may be constructed at a maximum gradient of 1.5H:1V. The stability of cut slopes is generally governed by the composition and competency of the excavated soils/weathered rock materials. We recommend that all cut slopes be observed by our engineering geologist during grading to determine if adversely oriented bedding planes or other features that may impact stability exist. Mitigation recommendations can be provided, if necessary. To mitigate potential erosion, slopes should be vegetated as soon as possible and surface drainage should be directed away from the tops of slopes. Placing V-ditches across tops of slopes will aid in reducing the potential for surficial erosion.

Provided slopes are constructed at a maximum gradient of 2H:1V and do not include irregular geometry, they should perform satisfactorily under anticipated long-term and seismic conditions. This conclusion is based on our experience with similar soil and rock types and slope configurations. If steeper slopes are planned, we should be consulted for additional recommendations and potential stability analyses, if necessary.

The existing weathered bedrock (generally excavates as clayey sand with gravel) and existing stockpiled fill materials (clayey gravel with sand) are considered Cal/OSHA Type C soils. Temporary excavations must conform to Cal/OSHA requirements.

It is the Contractor's responsibility to provide sufficient and safe support for excavation, as well as nearby utilities, structures and other improvements that could be damaged by earth movements. Temporary excavations should be in compliance with applicable governing agency regulations. The Contractor should also execute a monitoring program for structures in proximity to deep excavations so that appropriate modifications to the excavation/shoring system can be implemented to minimize the surface deflection or structure damage in a timely manner, if warranted. The Contractor should also provide a temporary dewatering system if excavations extend below the groundwater elevation or where seepage is encountered.

8.2.2 Rippability/Excavatability

Based on the subsurface conditions encountered in our investigation, anticipated excavation characteristics are summarized in Table 8.2.2.

TABLE 8.2.2
ANTICIPATED EXCAVATION CHARACTERISTICS

Geologic Unit	Anticipated Excavation Characteristics
Fill / Residual Soil	These soils generally consist of variable consistency clayey gravel with sand and clays with variable amounts of sand and gravel. We anticipate standard excavation effort with conventional, heavy-duty grading equipment. We anticipate excavations will generate material predominantly 6 inches and smaller. Stockpiled soil materials may contain oversize rock fragments or debris. We would expect that oversized decomposed to intensely weathered bedrock materials encountered in existing fills could be broken down to 6-inch minus material.
Weathered Metamorphic Bedrock	Bedrock within exploration depths across much of the site consists of weathered metamorphic rock, excavating as very dense clayey sand with gravel. We anticipate standard excavation effort with conventional, heavy-duty grading equipment. We anticipate excavations will generate material predominantly 6 inches and smaller. Bedrock within exploration depths at the existing detention basin location consists of decomposed to fresh metamorphic rock, excavating as clayey silt with sand and gravel. We anticipate that excavation of bedrock below elevation 1,828 feet in the vicinity of the Boring A-12-002 and Test Pit O-12-004 may potentially require a greater level of effort and/or larger excavating/grading equipment. Similar conditions may be encountered at other locations in the project site. We anticipate excavations will generate material predominantly 6 inches and smaller. Larger particle sizes may be encountered in more resistant rock excavations. We would expect that oversized materials encountered in decomposed to intensely weathered bedrock could be broken down to 6-inch minus material.

8.2.3 Grading Factors

Excavated soil and weathered rock may be re-used as engineered fill provided it meets the project specifications. Based on laboratory test results and our engineering judgment and experience, we anticipate that existing residual soil and completely weathered (decomposed) rock will experience approximately 5% volume shrinkage to 5% volume bulking when re-compacted as engineered fill.

Stockpiled soil materials may be re-used as engineered fill provided it meets the project specifications and/or Section 8.3.1 of this report. Based on laboratory test results and our engineering judgment and experience, we anticipate that the stockpiled soil materials will experience approximately 10 to 20% volume shrinkage when re-compacted as engineered fill.

The volume shrinkage/bulking estimates presented above are estimates only. Actual volume changes can vary from our estimates due to variations in soil density, moisture content, and the degree of compaction achieved during grading.

8.3 Embankments

New embankment fills are proposed along the realigned Forni Road and new US 50 off-ramp locations. Maximum heights of engineered fill of approximately 18 to 20 feet are proposed along these alignments. New embankment fill should be benched into existing embankment material in accordance with Caltrans' *Standard Specifications*.

8.3.1 Materials for Fill

Excavated soil and rock generated from cut operations at the site and the existing stockpiled material from previous US 50 on-ramp construction activities are suitable for use as general fill in structural areas provided they are examined and selectively placed during grading in accordance with the following recommendations:

- Deleterious material, material with greater than 3% organics, and debris should be exported from the site and not incorporated into structural fill. We anticipate limited quantities of these materials (primarily organics).
- Soil, rock, cobble, and boulders may be selectively incorporated into structural fill provided this material is less than 2 feet in maximum dimension. Rock or cementations greater than 2 feet in maximum dimension should not be used.
- Rock or cementations larger than 6 inches but less than 2 feet in maximum dimension may be incorporated into structural fill, but shall be limited to areas outside of planned underground utility excavations, and at least 5 feet from slope faces. Nesting of rock should be avoided.
- Fill material in areas with underground utilities, proposed foundations, and areas within 5 feet of slope faces should consist of 6-inch-minus material.

Backfill placed behind retaining walls should consist of "structure backfill" meeting Section 19-3.02C of Caltrans' *Standard Specifications*. In addition to the criteria shown in Section 19.3.02C, structure backfill should have a "very low" to "low" expansion potential (Expansion Index of 50 or less).

Import fill material should be primarily granular with a "very low" to "low" expansion potential (Expansion Index less than 50), a Plasticity Index less than 15, a minimum R-value of 40, be free of organic material and construction debris, and not contain rock larger than 6 inches in greatest dimension.

Environmental characteristics and corrosion potential of import soil materials should also be considered. Proposed import materials should be sampled, tested, and approved by Geocon prior to transportation to the site.

8.3.2 Fill Area Preparation and Fill Placement

Areas to be developed should be cleared and stripped of obstructions, trees, bushes, grass, roots, and the upper few inches of soil containing organic debris. Soils/organics removed by stripping can be transported offsite or stockpiled for use in landscaping. Existing drainage and utility lines or other existing subsurface structures that are not to be utilized, if any, should be removed, destroyed or abandoned in compliance with applicable regulations.

In general, all loose, soft, or wet surficial soil in the areas planned to receive new improvements or fill materials should be removed to expose competent materials. We estimate removal depths will range from about ½ to 3 feet. The actual removal depth is dependent upon the depth to competent materials and depth/extent of tree root systems or any other other deleterious materials.

Relative compaction for new fill should conform per Caltrans' *Standard Specifications*, Sections 19-3, 19-5, and 19-6. New embankment fill placed on sloping ground and adjacent to existing embankments/slopes should be keyed and benched in accordance with Caltrans' *Standard Specifications*.

All earthwork, grading, and engineered fill placement should be performed in conformance with Sections 6-3, 19-3, 19-5, and 19-6 of Caltrans' *Standard Specifications*. Ponding or jetting of backfill should not be permitted.

8.3.3 Embankment Stability

Proposed embankment fills will be constructed with slope inclinations of 2H:1V or flatter. Embankments constructed in accordance with Caltrans requirements should possess adequate factor of safety against slope instability.

8.3.4 Fill Settlement

Due to the dense nature of the materials underlying proposed embankment fills, a settlement period is not considered necessary assuming the new fill is properly placed and compacted.

8.4 Caltrans Standard Type 5 Retaining Wall

A retaining wall is proposed along Forni Road as described in Section 2.2. The wall will be used for a fill application for the proposed roadway widening/realignment. The proposed retaining wall details are listed below.

- Caltrans Standard Plans, Retaining Wall Type 5 (Case 1), Plan No. B3-4A
- Load Case 1 (level backfill)
- Fill application
- Wall is up to 8 feet high
- Approximate wall begin and end stations of Sta. 23+25 and Sta. 27+37 ("F" Line) [Sta. 10+00 and Sta. 14+12 ("RW1" Line)]
- Bottom of stepped footing elevation will be between 1,821.7 and 1,841.3 feet.

Based on the subsurface conditions encountered in our investigation and the currently proposed location and dimensions of this wall, we anticipate that the wall foundations will be located within weathered metamorphic rock. Localized removals of disturbed or loose materials may be necessary to provide more uniform foundation support.

Retaining wall loads provided by Dokken are the design loading conditions provided in Caltrans 2015 Standard Plan B3-4A, *Retaining Wall Type 5 (Case 1)*.

The geotechnical analysis results, wall configuration, and factored load demands are presented in Tables 8.4a through 8.4c. Table 8.4d is the summary *Spread Footing Data Table*.

TABLE 8.4A
STRENGTH LIMIT STATE FOUNDATION DATA TABLE

Earth Retaining System (ERS) Stationing (ft)	Design Height (ft)	Bottom of Footing Elevation (ft)	Footing Width (ft)	Minimum Footing Embedment Depth (ft)	Effective Footing Width for Strength Limit State (ft)	Strength Limit State Gross Uniform Bearing Stress $q_{g,u}$ (ksf)	Strength Limit State Factored Bearing Resistance (ksf) $q_R = \varphi_b * q_n$ $\varphi_b = 0.45$
10+00 to 10+24	4	1821.70	7.25	3	6.2	2.4	29.1
10+24 to 10+48	6	1821.70	7.75	3	6.1	2.9	28.8
10+48 to 10+72	6	1823.75	7.75	3	6.1	2.9	28.8
10+72 to 11+04	6	1825.50	7.75	3	6.1	2.9	28.4
11+04 to 11+28	6	1827.00	7.75	3	6.1	2.9	28.8
11+28 to 11+52	6	1828.50	7.75	3	6.1	2.9	28.8
11+52 to 11+76	6	1830.00	7.75	3	6.1	2.9	28.8
11+76 to 12+08	8	1830.00	8.50	3	5.3	3.0	26.1
12+08 to 12+40	8	1831.50	8.50	3	5.3	3.0	26.1
12+40 to 12+80	8	1833.30	8.50	3	5.3	3.0	26.1
12+80 to 13+20	8	1834.70	8.50	3	5.3	3.0	26.1
13+20 to 13+60	8	1836.00	8.50	3	5.3	3.0	26.1
13+60 to 13+96	6	1838.90	7.75	3	6.1	2.9	28.4
13+96 to 14+12	4	1841.30	7.25	3	6.2	2.4	29.3

TABLE 8.4B
EXTREME LIMIT STATE FOUNDATION DATA TABLE

ERS Stationing (ft)	Design Height (ft)	Bottom of Footing Elevation (ft)	Footing Width (ft)	Minimum Footing Embedment Depth (ft)	Effective Footing Width for Extreme I Limit State (ft)	Extreme I Limit State Gross Uniform Bearing Stress $q_{g,u}$ (ksf)	Extreme I Limit State Factored Bearing Resistance (ksf) $q_R = \varphi_b * q_n$ $\varphi_b = 1.0$	Effective Footing Width for Extreme II Limit State (ft)	Extreme II Limit State Gross Uniform Bearing Stress $q_{g,u}$ (ksf)	Extreme II Limit State Factored Bearing Resistance (ksf) $q_R = \varphi_b * q_n$ $\varphi_b = 1.0$
10+00 to 10+24	4	1821.70	7.25	3	4.4	1.5	52.0	2.5	2.7	39.5
10+24 to 10+48	6	1821.70	7.75	3	4.1	2.2	50.0	3.1	3.0	43.5
10+48 to 10+72	6	1823.75	7.75	3	4.1	2.2	50.0	3.1	3.0	43.5
10+72 to 11+04	6	1825.50	7.75	3	4.1	2.2	50.0	3.1	3.0	43.5
11+04 to 11+28	6	1827.00	7.75	3	4.1	2.2	50.0	3.1	3.0	43.5
11+28 to 11+52	6	1828.50	7.75	3	4.1	2.2	50.0	3.1	3.0	43.5
11+52 to 11+76	6	1830.00	7.75	3	4.1	2.2	50.0	3.1	3.0	43.5
11+76 to 12+08	8	1830.00	8.50	3	4.0	3.1	49.4	3.8	3.2	48.1
12+08 to 12+40	8	1831.50	8.50	3	4.0	3.1	49.4	3.8	3.2	48.1
12+40 to 12+80	8	1833.30	8.50	3	4.0	3.1	49.4	3.8	3.2	48.1
12+80 to 13+20	8	1834.70	8.50	3	4.0	3.1	49.4	3.8	3.2	48.1
13+20 to 13+60	8	1836.00	8.50	3	4.0	3.1	49.4	3.8	3.2	48.1
13+60 to 13+96	6	1838.90	7.75	3	4.1	2.2	50.0	3.1	3.0	43.5
13+96 to 14+12	4	1841.30	7.25	3	4.4	1.5	54.2	2.5	2.7	39.5

TABLE 8.4C
SERVICE LIMIT STATE FOUNDATION DATA TABLE

ERS Stationing (ft)	Design Height (ft)	Bottom of Footing Elevation (ft)	Footing Width (ft)	Minimum Footing Embedment Depth (ft)	Effective Footing Width for Service Limit State (ft)	Service Limit State Net Bearing Stress $q_{n,\,u}$ (ksf)	Calculated Settlement at Net Bearing Pressure (inches)	Total Permissible Settlement (inches)
10+00 to 10+24	4	1821.70	7.25	3	6.2	1.0	0.03	1.0
10+24 to 10+48	6	1821.70	7.75	3	6.1	1.4	0.05	1.0
10+48 to 10+72	6	1823.75	7.75	3	6.1	1.4	0.05	1.0
10+72 to 11+04	6	1825.50	7.75	3	6.1	1.4	0.05	1.0
11+04 to 11+28	6	1827.00	7.75	3	6.1	1.4	0.05	1.0
11+28 to 11+52	6	1828.50	7.75	3	6.1	1.4	0.05	1.0
11+52 to 11+76	6	1830.00	7.75	3	6.1	1.4	0.05	1.0
11+76 to 12+08	8	1830.00	8.50	3	5.3	1.7	0.06	1.0
12+08 to 12+40	8	1831.50	8.50	3	5.3	1.7	0.06	1.0
12+40 to 12+80	8	1833.30	8.50	3	5.3	1.7	0.06	1.0
12+80 to 13+20	8	1834.70	8.50	3	5.3	1.7	0.06	1.0
13+20 to 13+60	8	1836.00	8.50	3	5.3	1.7	0.06	1.0
13+60 to 13+96	6	1838.90	7.75	3	6.1	1.4	0.05	1.0
13+96 to 14+12	4	1841.30	7.25	3	6.2	1.0	0.03	1.0

TABLE 8.4D
SPREAD FOOTING DATA TABLE

ERS Stationing (ft)	Design Height (ft)	Service Limit State Permissible Net Contact Stress q_{pn} (ksf)	Strength Limit State Factored Gross Nominal Bearing Resistance for Controlling Load Case q_n $\varphi_b = 0.45$ (ksf)	Extreme Event Limit State Factored Gross Nominal Bearing Resistance for Controlling Load Case (ksf) $q_R = \varphi_b * q_n$ $\varphi_b = 1.0$
10+00 to 10+24	4	17.0	64.6	39.5
10+24 to 10+48	6	17.0	64.1	43.5
10+48 to 10+72	6	17.0	64.1	43.5
10+72 to 11+04	6	17.0	63.2	43.5
11+04 to 11+28	6	17.0	64.1	43.5
11+28 to 11+52	6	17.0	64.1	43.5
11+52 to 11+76	6	17.0	64.1	43.5
11+76 to 12+08	8	18.0	57.9	48.1
12+08 to 12+40	8	18.0	57.9	48.1
12+40 to 12+80	8	17.0	57.9	48.1
12+80 to 13+20	8	17.0	57.9	48.1
13+20 to 13+60	8	17.0	57.9	48.1
13+60 to 13+96	6	16.0	63.2	43.5
13+96 to 14+12	4	18.0	65.0	39.5

If disturbed or loose soil is encountered at bottom of footing elevations, we recommend that the footings be supported on structural fill founded on competent intact weathered bedrock. This will require remedial grading in the form of removal and re-compaction below footings and where applicable, extending at an inclination of 2H:1V away from the footing toe. The fill below the footings and the outer portion of the embankment fill should consist of structural fill compacted to a minimum of 95 percent of the maximum density. The weathered/decomposed metamorphic rock at the proposed wall location generally consisted of very dense clayey sand with gravel.

Assuming that all foundations are underlain by undisturbed weathered metamorphic rock and/or new, engineered fill founded thereon, Caltrans Standard Plan shallow foundations (as detailed on Caltrans 2015 Standard Plan B3-4A) are considered appropriate for the support of proposed Type 5 retaining walls with respect to settlement, bearing capacity, and slope stability considerations.

Foundations designed in accordance with the recommendations above should experience total settlements of approximately 1 inch or less and differential settlements of approximately ½ inch or less over a horizontal distance of approximately 50 feet. The majority of the settlement will be immediate and will occur as loads are applied during construction.

Soil placed for retaining wall backfill should meet the requirements outlined in Section 8.3.1 of this report, including meeting the requirements for Caltrans "structure backfill" (Section 19.3.02C of Caltrans *Standard Plans*) and have a "very low" to "low" expansion potential (Expansion Index of 50 or less). The retaining wall should be provided with a drainage system adequate to prevent the buildup of hydrostatic forces. The drainage system should consist of weepholes or backdrains.

8.5 Others

8.5.1 Corrosion Studies

According to Caltrans' *Corrosion Guidelines* (Version 2.1, January 2015), soils are considered corrosive to foundation elements if one or more of the following conditions exist: chloride concentration is 500 parts per million (ppm) or greater, sulfate concentration is 2,000 ppm or greater, or the potential of hydrogen (pH) is 5.5 or less. Resistivity serves as an indicator parameter for the possible presence of soluble salts and is not included as a parameter to define a corrosive area for structures. A minimum resistivity value for soil and/or water less than 1,000 ohm-centimeters may indicate the presence of high quantities of soluble salts and a higher propensity for corrosion.

Resistivity, pH, chlorides, and sulfates tests were performed on a sample selected from the proposed wall location to evaluate the corrosion potential to subsurface structures. These tests were performed in accordance with CTM Nos. 417, 643, and 422. The results are presented in Appendix B and should be considered for design of underground structures. Based on the laboratory test results, the site would not be considered corrosive according to Caltrans' *Corrosion Guidelines.*

Proposed improvements in contact with the ground should be designed and constructed in accordance with Caltrans' *Standard Specifications* and good construction practices. Geocon does not practice in the field of corrosion engineering. If corrosion sensitive improvements are planned, it is recommended that further evaluations by a corrosion engineer be performed to incorporate the necessary precautions to avoid premature corrosion on buried metal pipes and concrete structures in direct contact with the soils.

8.5.2 Culverts

Laboratory test results discussed in the preceding section indicate that native onsite soils are unlikely to be corrosive to buried culverts or other subsurface improvements. If culverts are installed in import fill soils or the stockpiled soils on site, these materials should also be evaluated for corrosion potential.

Locations of proposed culverts have not been identified at this time; therefore, additional soil sampling and corrosion testing may need to be performed once any proposed culvert locations are identified.

8.5.3 Drainage Design

A site drainage system for storm management should include pollution prevention best management practices (BMPs) and/or treatment BMPs in accordance with Caltrans' *Storm Water Quality Handbook* (2010). The site topographic features, groundwater condition, anticipated amounts of rainfall and runoff, and the infiltration characteristics of on-site materials should be considered during the design of site drainage systems.

9.0 PAVEMENT

Based on laboratory testing, Resistance Values (R-Values) of 11, 21 and 47 were obtained from representative samples as presented on Table B2 in Appendix B. To account for subgrade variability and to allow greater flexibility with potential import soils, our pavement design recommendations are based on design R-values of 10 and 20 for native subgrade and an R-Value of 40 for subgrade constructed with material currently stockpiled at the site. The top 18 inches of pavement subgrade should consist of the stockpiled fill in order to use the higher design R-Value.

El Dorado County Standard Plans recommend the use of a subgrade enhancement geotextile (SEG) between the AB and subgrade soil in areas in areas with and R-Value of less than 20. An R-Value of 25 can be assumed for design when an SEG is used.

Table 9.0 summarizes our recommended pavement structural sections using HMA and Class 2 AB based on a range of Traffic Indices (TI) and were developed in accordance with Chapter 630 of the Caltrans *Highway Design Manual* (HDM) and a 20-year design life. Traffic Index values for the various proposed roadway sections provided by Dokken are shown below.

TABLE 9.0
DESIGN TRAFFIC INDICES

Portion of Project	Traffic Index
US 50 Auxiliary Lane (Mainline)	12, 14, and 16
US 50 Off-Ramp	8, 10, and 12
Forni Road / Ray Lawyer Drive	6, 8, and 10
Park and Ride	5, 6, and 7

Pavement structural sections provided below correspond to the subgrade soils encountered in the improvement location and/or anticipated soils to be used for fill below the proposed improvement.

TABLE 9.1
PAVEMENT STRUCTURAL SECTIONS

Traffic Index	Design R-Value = 10[1]		Design R-Value = 20[2]		Design R-Value = 25[3]		Design R-Value = 40[4]	
	HMA[5] (ft.)	AB[6] (ft.)	HMA[5] (ft.)	AB[6] (ft.)	HMA[5] (ft.)	AB[6] (ft.)	HMA[5] (ft.)	AB[6] (ft.)
5.0	--	--	0.25	0.60	0.25	0.55	0.25	0.35
6.0	0.30	0.95	0.30	0.80	0.30	0.70	0.30	0.50
7.0	--	--	0.35	1.00	0.35	0.85	0.35	0.55
8.0	0.40	1.40	0.40	1.15	0.40	1.05	0.40	0.70
10.0	0.55	1.75	0.55	1.45	0.55	1.30	0.55	0.85
12.0	--	--	0.65	1.80	0.65	1.60	0.65	1.10
14.0	--	--	0.80	2.00	0.80	1.80	--	--
16.0	--	--	0.95	2.25	0.95	2.05	--	--

Notes:
1. Native subgrade: Ray Lawyer Dr. and Forni Rd. NE of Sta. 37+00
2. Native subgrade: Forni Rd. SW of Sta. 37+00, US 50 off-ramp, US 50 mainline.
3. Using a SEG between native subgrade and AB.
4. Stockpiled fill. Top 18 inches of subgrade to consist of stockpiled material or import material with an R-Value of 40 or greater.
5. HMA = Hot-mix Asphalt
6. AB = Aggregate Base (Class 2)

Use of Rubberized Hot Mix Asphalt (RHMA, a non-structural wearing course) can be implemented in this project by subtracting 0.1 feet of HMA in the above table and adding 0.2 feet of RHMA as the surficial layer of asphalt. This RHMA section consists of 0.1 feet as the sacrificial layer and 0.1 feet as the top of the surface layer (which reduces the HMA layer by 0.1 feet).

The recommended alternative pavement sections are based on the following assumptions:

1. The top 12 inches of subgrade is compacted to 95% or higher relative compaction at or near optimum moisture content
2. Prior to placing AB or SEG (if used), subgrade soil should be proof-rolled with a loaded water truck to verify stability.
3. Class 2 AB has a minimum R-Value of 78 and meets the requirements of Section 26 of Caltrans' latest *Standard Specifications*.
4. Class 2 AB is compacted to 95% or higher relative compaction at or near optimum moisture content. Prior to placing HMA, the AB should be proof-rolled with a loaded water truck to verify stability.

10.0 MATERIAL SOURCES

This study did not include the evaluation of potential sources of import materials. We understand that material stockpiled on site is desired to be used as engineered embankment fill. Initial screening tests (Grain Size Distribution, Atterberg Limits, Moisture-Density Relationship [compaction curve] and R-Value) were performed on a sample of this material (Bulk E from sample location O-16-008) for preliminary evaluation of soil suitability as engineered fill and pavement subgrade support characteristics.

Based on the results of our initial laboratory testing, the stockpiled soils classify as a clayey gravel with sand. Plasticity Index testing indicates low plasticity and corresponding low expansion potential for these materials. The gradation of the material meets the criterial for Caltrans structure backfill per Section 19-3.02C of the Caltrans 2015 *Standard Specifications*. We recommend that a design R-Value of 40 be used for this material based on our testing of sample Bulk E.

Based on the test results of the bulk sample obtained at sample location O-16-008, the stockpiled materials are suitable for use as structure backfill providing the sand equivalent criteria is also met. Periodic testing of the stockpiled materials will be required during construction to verify that the excavated and blended materials meet the project specifications for use as structure backfill.

11.0 MATERIAL DISPOSAL

Cuts and fills are anticipated along the project alignment. If required, information regarding disposal of potentially unsuitable and/or surplus materials should be provided by the Resident Engineer and District Materials Engineer.

12.0 CONSTRUCTION CONSIDERATIONS

12.1 Construction Advisories

The proposed improvements are located along existing US 50, Forni Road and Ray Lawyer Drive and include portions of East Forni Road, the El Dorado County Jail driveway, and the El Dorado Trail access point. Traffic control with lane and shoulder closures and detours are anticipated during construction. In addition, there are a significant number of underground and overhead utilities along the proposed widening alignment. The Contractor should verify these utility conditions and plan the construction activities accordingly.

12.2 Construction Considerations that Influence Specifications

All grading should be performed in conformance with Section 19 of Caltrans' *Standard Specifications* or equivalent. Backfill placed behind retaining walls should have a very low to low expansion potential. The

extent and placement of the low-expansive soils should conform to Caltrans' *Standard Specifications* Section 19-5.03.

The Contractor should verify the existing utility line conditions. These areas should not to be used for stockpiling of construction materials. Any conflicts should be reviewed prior to construction.

12.3 Construction Monitoring and Instrumentation

Site grading, footing excavation, removal of any unsuitable soils or oversize material, and replacement and compaction of backfill and subgrade should be observed by the Geotechnical Engineer of Record. Faces of cut slopes in native materials should be observed by an engineering geologist for indications of instability. Appropriate field tests should be conducted to provide quality control, quality assurance for structural fills and related earthwork elements.

The Contractor should execute the monitoring program for structures in proximity to any deep excavations so that appropriate modifications to the excavation/shoring system and/or foundation type are implemented to minimize the surface deflection or structure damage in a timely manner.

12.4 Hazardous Waste Considerations

This geotechnical study did not include the determination of the existence of possible hazardous materials. If any hazardous materials are identified during construction, regulatory officials should be notified immediately.

12.5 Differing Site Conditions

Differing site conditions are conditions unusual to the site or are conditions that were not encountered during the field investigation. The subsurface conditions described in this report are based on available exploration data. These explorations depict subsurface conditions only at the locations explored. Because of the variability from place to place within soils in general, and the nature of geologic depositions, subsurface conditions could change between and/or beyond the explored locations. It is imperative that the designers, the resident engineer, and the Contractor notify the geotechnical engineer immediately upon recognition of any condition that differs from that described in this report. Additional recommendations could be provided if such conditions arise.

12.6 Groundwater

Groundwater encountered during grading activities would likely be locally perched and, during dry season construction, controllable with sump pumps or similar dewatering methods.

13.0 RECOMMENDATIONS AND SPECIFICATIONS

If the designers have questions or issues regarding any of the recommendations in this report, or if conditions are found to be different during construction, the geotechnical staff who prepared this report should be contacted. Additional fieldwork, analysis, or changes in recommendations may be required.

This report provides the following geotechnical design and construction recommendations for the proposed improvements:

- Seismic design parameters are presented in Section 8.1.
- Cuts and excavations including stability, rippability, and grading factors are presented in Section 8.2.
- Embankments including the embankment fill area preparation and fill placement, embankment stability, and the embankment settlement are presented in Section 8.3.
- Retaining wall design parameters are presented in Section 8.4.
- Corrosion information is presented in Section 8.5.
- Pavement recommendations are presented in Section 9.
- Construction considerations are presented in Section 12.
- Unless otherwise stated in the special provisions, all specifications should conform to Caltrans' *Standard Specifications*, latest edition.

14.0 CLOSURE

14.1 Foundation and Grading Plan Review

Geocon should review the grading plans and foundation plans prior to final design submittal to determine if additional analysis and/or recommendations are required.

14.2 Limitations and Uniformity of Conditions

The recommendations of this report pertain only to the site investigated and are based upon the assumption that the soil conditions do not deviate from those disclosed in the investigation. If any variations or undesirable conditions are encountered during construction, or if the proposed construction will differ from that anticipated herein, we should be notified so that supplemental recommendations can be given. The evaluation or identification of the potential presence of hazardous materials or environmental contamination was not part of our scope of services.

This report is issued with the understanding that it is the responsibility of the owner or their representative to ensure that the information and recommendations contained herein are brought to the attention of the design team for the project and incorporated into the plans and specifications and the necessary steps are taken to see that the Contractor and subcontractors carry out such recommendations in the field.

The recommendations contained in this report are preliminary until verified during construction by representatives of our firm. Changes in the conditions of a property can occur with the passage of time, whether they are due to natural processes or the works of man on this or adjacent properties. Additionally, changes in applicable or appropriate standards may occur, whether they result from legislation or the broadening of knowledge. Accordingly, the findings of this report may be invalidated partially or wholly by changes outside our control. Therefore, this report is subject to review and should not be relied upon after a period of three years.

Our professional services were performed, our findings obtained, and our recommendations prepared in accordance with generally accepted geotechnical engineering principles and practices used in the site area at this time. No warranty is provided, express or implied.

15.0 REFERENCES

1. California Department of Transportation, *ARS Online Version 2.3.06,* http://dap3.dot.ca.gov/shake_stable/, accessed March 3, 2016.

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4. California Department of Transportation, *Guidelines for Preparing Geotechnical Design Reports,* April, 2013.

5. California Department of Transportation, *Highway Design Manual,* 2015.

6. California Department of Transportation, *Memo to Designers 5-20, Foundation Report / Geotechnical Design Report Checklist for Earth Retaining Systems*, August 2004.

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13. *Department of Naval Facilities Engineering Command (NAVFAC) Manual, DM 7.1*, September 1996.

14. Dokken Engineering, *Contour Grading (Sheets G-1, G-2, and G-3), Layout (Sheets L-1, L-2, and L-3), and Survey Control (Sheet SC-1),* labeled "65% Plans Not For Construction", undated.

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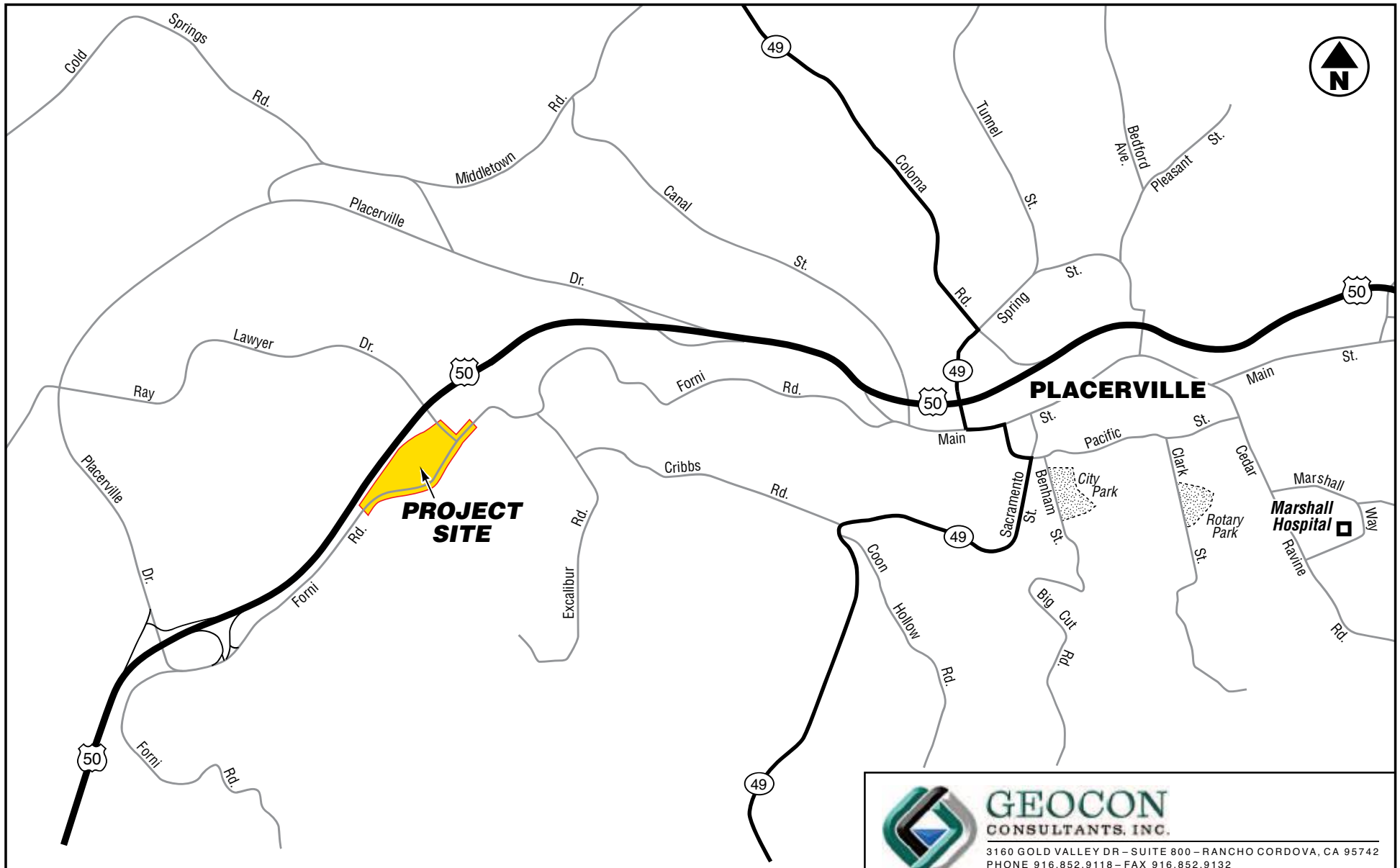

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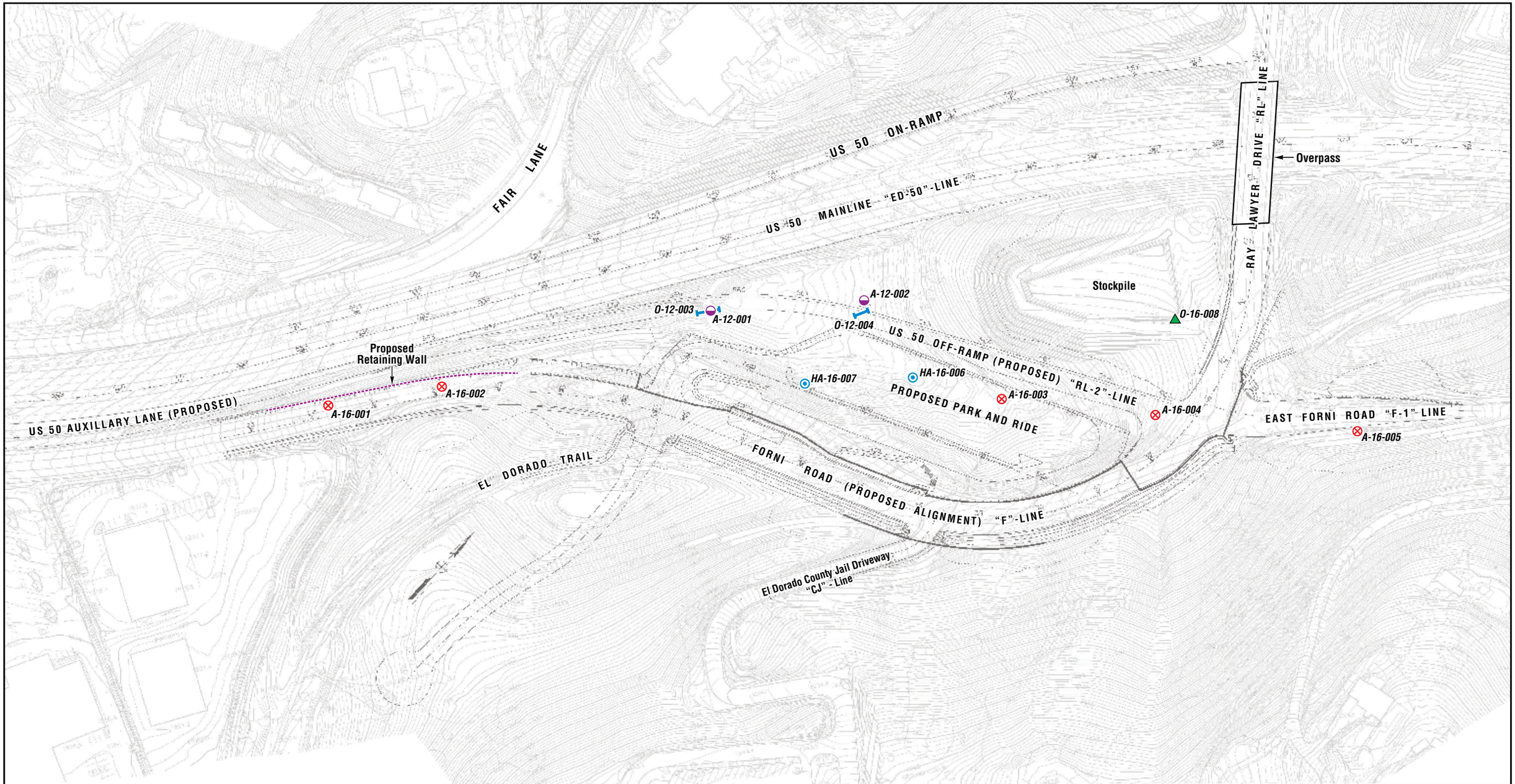
Western Placerville Interchange Phase 2

Placerville,
California

VICINITY MAP

S9420-05-04	November 2016	Figure 1



LEGEND:

- A-16-001 ⊗ Approximate Boring Location
- HA-16-006 ⊙ Approximate Hand-Auger Boring Location
- O-16-008 ▲ Approximate Bulk Sample Location
- A-12-002 ◒ Approximate Boring Location (2012)
- O-12-004 Approximate Test Pit Location (2012)

0 150
Scale in Feet

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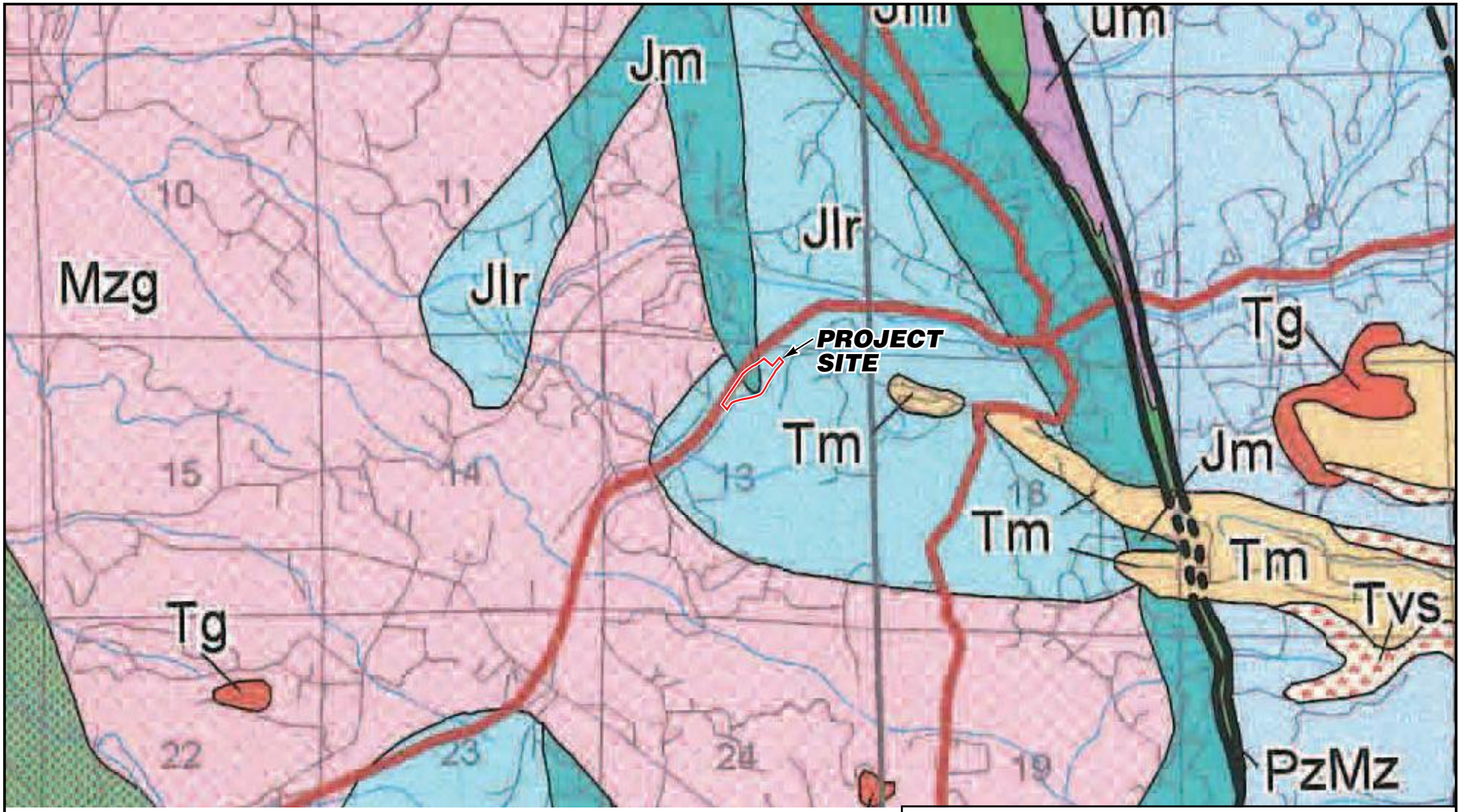
Placerville,
California

SITE PLAN

S9420-05-04	November 2016	Figure 2



Tm	Mehrten Formation
Tvs	Valley Springs Formation
Tg	River Channel Deposits (Auriferous Gravel)
Mzg	Granitic Intrusive Rock, Chiefly Granodiorite
Jm	Mariposa Formation
Jmb	Mariposa Formation, Bower Creek Member
Jlr	Logtown Ridge Formation
PzMz	Paleozoic-Mesozoic Metamorphic Rocks

Ref: *Generalized Geologic Map of El Dorado County, California*, Lawrence L. Busch, June, 2001

N

0 1

Scale in Miles

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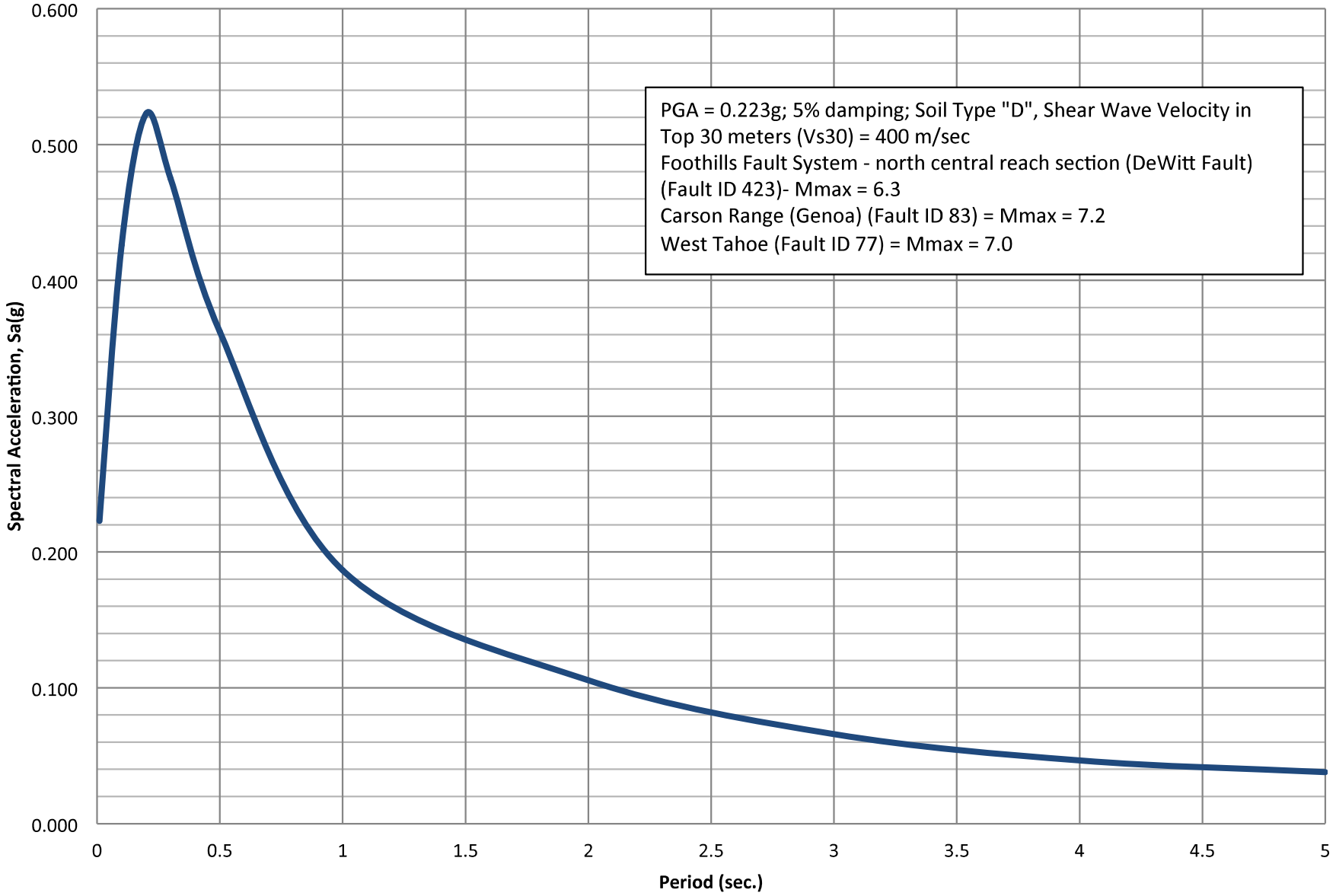
Western Placerville Interchange Phase 2

Placerville, California

GEOLOGIC MAP

S9420-05-04	November 2016	Figure 3



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Recommended Design Response Spectrum

Western Placerville Interchange Phase 2

Placerville, California

S9420-05-04	November 2016	Figure 4

APPENDIX A

APPENDIX A

FIELD INVESTIGATION

The field investigation for this Geotechnical Design Report was performed between February 17 and March 5, 2016, and consisted of a site reconnaissance, drilling 7 borings (including 2 hand-auger borings), and obtaining a bulk sample of soil from the stockpile for laboratory testing. The explorations were located based on preliminary project plans and information from Dokken Engineering. Table A-1 summarizes the exploration locations, approximate surface elevations, and depths.

TABLE A-1
SUMMARY OF EXPLORATIONS

Exploration No.	Approximate Exploration Location				Exploration Depth (feet)
	Station No.	Line	Offset (feet)	Elevation (feet)	
A-16-001	24+28	"F"-Line	18 Left	1834	25.2
A-16-002	26+11	"F"-Line	15 Left	1844	25.2
A-16-003	564+53	"RL-2"-Line	70 Right	1849	11.4
A-16-004	38+57	"F"-Line	51 Left	1880	11.5
A-16-005	12+45	"F-1"-Line	26 Right	1900	10.2
HA-16-006	563+07	"RL-2"-Line	77 Right	1839	2.0
HA-16-007	561+29	"RL-2"-Line	130 Right	1838	2.5
O-16-008	40+40	"F"-Line	104 Left	1894	1.5

Borings A-16-001 through A-16-005 were drilled using a truck-mounted Mobile B-57 drill rig equipped with 8-inch-diameter hollow-stem augers. Borings were advanced to depths ranging from approximately 10 to 25 feet. Borings HA-16-006 and HA-16-007 were advanced using a hand-auger. Surficial bulk soil sample O-16-008 was obtained using a shovel in the side of the soil stockpile present at the project site.

Sampling during drilling was performed in general accordance with the current Caltrans' *Soil and Rock Logging, Classification and Presentation Manual* (2010). Soil samples were typically collected at approximately 2.5- to 5-foot intervals. Relatively undisturbed soil samples were obtained by driving an approximately 3-inch outside-diameter (OD) split-spoon sampler (California modified sampler) into the "undisturbed" soil mass with blows from a 140-pound hammer falling 30 inches. The sampler was equipped with 6-inch-long by 2½-inch-diameter brass sample tubes to facilitate sample removal and laboratory testing. Standard Penetration Tests (SPTs) were performed by driving a 2-inch OD split-spoon sampler 18 inches in general accordance with American Society for Testing and Materials (ASTM) D-1586. The number of blows required to drive the samplers (blow counts) the last 12 inches of the 18-inch sample drive (or portion thereof) are reported on the logs of borings and Logs of Test Boring (LOTB) sheets included in Appendices A and C, respectively. Bulk samples of soil cuttings were also collected during the field exploration.

The exploratory borings were sampled and logged by a registered civil engineer during drilling and trenching operations. The soils encountered in the exploratory borings were classified in accordance with the Caltrans' *Soil and Rock Logging, Classification, and Presentation Manual* (2010). Upon completion of the field exploration program, the exploratory borings were backfilled with cement grout. Borings in paved areas were capped with quick set concrete.

Samples were placed in sealed containers and transported to our laboratory for testing and further classification. Boring logs are included in Appendix A. The LOTB sheets in Caltrans format are presented in Appendix C.

UNIFIED SOIL CLASSIFICATION

MAJOR DIVISIONS				TYPICAL NAMES
COARSE-GRAINED SOILS, MORE THAN HALF IS COARSER THAN NO. 200 SIEVE	GRAVELS, MORE THAN HALF COARSE FRACTION IS LARGER THAN NO.4 SIEVE SIZE	CLEAN GRAVELS WITH LITTLE OR NO FINES	GW	WELL GRADED GRAVELS WITH OR WITHOUT SAND, LITTLE OR NO FINES
			GP	POORLY GRADED GRAVELS WITH OR WITHOUT SAND, LITTLE OR NO FINES
		GRAVELS WITH OVER 12% FINES	GM	SILTY GRAVELS, SILTY GRAVELS WITH SAND
			GC	CLAYEY GRAVELS, CLAYEY GRAVELS WITH SAND
	SANDS, MORE THAN HALF COARSE FRACTION IS SMALLER THAN NO.4 SIEVE SIZE	CLEAN SANDS WITH LITTLE OR NO FINES	SW	WELL GRADED SANDS WITH OR WITHOUT GRAVEL, LITTLE OR NO FINES
			SP	POORLY GRADED SANDS WITH OR WITHOUT GRAVEL, LITTLE OR NO FINES
		SANDS WITH OVER 12% FINES	SM	SILTY SANDS WITH OR WITHOUT GRAVEL
			SC	CLAYEY SANDS WITH OR WITHOUT GRAVEL
FINE-GRAINED SOILS, MORE THAN HALF IS FINER THAN NO. 200 SIEVE	SILTS AND CLAYS, LIQUID LIMIT 50% OR LESS		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTS WITH SANDS AND GRAVELS
			CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, CLAYS WITH SANDS AND GRAVELS, LEAN CLAYS
			OL	ORGANIC SILTS OR CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS, LIQUID LIMIT GREATER THAN 50%		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS, FINE SANDY OR SILTY SOILS, ELASTIC SILTS
			CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
			OH	ORGANIC CLAYS OR CLAYS OF MEDIUM TO HIGH PLASTICITY
	HIGHLY ORGANIC SOILS		PT	PEAT AND OTHER HIGHLY ORGANIC SOILS

BORING/TRENCH LOG LEGEND

- No Recovery
- Shelby Tube Sample 3" O.D.
- Bulk Sample
- SPT Sample 2" O.D., 1.4" I.D.
- Modified California Sample 3" O.D., 2.4" I.D.
- Groundwater Level (At Completion)
- Groundwater Level (Seepage)

PENETRATION RESISTANCE

SAND AND GRAVEL			SILT AND CLAY			
RELATIVE DENSITY	BLOWS PER FOOT (SPT)*	BLOWS PER FOOT (MOD-CAL)*	CONSISTENCY	BLOWS PER FOOT (SPT)*	BLOWS PER FOOT (MOD-CAL)*	COMPRESSIVE STRENGTH (tsf)
VERY LOOSE	0 - 4	0 - 6	VERY SOFT	0 - 2	0 - 3	0 - 0.25
LOOSE	5 - 9	7 - 14	SOFT	3 - 4	4 - 6	0.25 - 0.50
MEDIUM DENSE	10 - 29	15 - 45	MEDIUM STIFF	5 - 8	7 - 12	0.50 - 1.0
DENSE	30 - 49	46 - 75	STIFF	9 - 15	13 - 23	1.0 - 2.0
VERY DENSE	OVER 49	OVER 75	VERY STIFF	16 - 30	24 - 46	2.0 - 4.0
			HARD	OVER 30	OVER 46	OVER 4.0

*NUMBER OF BLOWS OF 140 LB HAMMER FALLING 30 INCHES TO DRIVE LAST 12 INCHES OF AN 18-INCH DRIVE

MOISTURE DESCRIPTIONS

DESCRIPTION	CRITERIA
DRY	NO DISCERNABLE MOISTURE
MOIST	MOISTURE PRESENT, BUT NO FREE WATER
WET	VISIBLE FREE WATER

QUANTITY DESCRIPTIONS

APPROX. ESTIMATED PERCENT	DESCRIPTION
<5%	TRACE
5 - 10%	FEW
15 - 25%	LITTLE
30 - 50%	SOME
>50%	MOSTLY

GRAVEL/COBBLE/BOULDER DESCRIPTIONS

CRITERIA	DESCRIPTION
PASS THROUGH A 3-INCH SIEVE AND BE RETAINED ON A NO. 4 SIEVE (#4 TO 3")	GRAVEL
PASS A 12-INCH SQUARE OPENING AND BE RETAINED ON A 3-INCH SIEVE (3"-12")	COBBLE
WILL NOT PASS A 12-INCH SQUARE OPENING (>12")	BOULDER

CP – COMPACTION CURVE (ASTM D1557)
CR – CORROSION ANALYSIS (CTM 422, 643, 417)
DS – DIRECT SHEAR (ASTM D3080)
EI – EXPANSION INDEX (ASTM D4829)
PA – GRAIN SIZE ANALYSIS (ASTM D422)
M – MOISTURE CONTENT (ASTM D2216)
PI - PLASTICITY INDEX (ASTM D4318)
R – R-VALUE (CTM 301)
SE – SAND EQUIVALENT (CTM 217)
CU – CONSOLIDATED UNDRAINED TRIXIAL (ASTM D4767)
UU – UNCONSOLIDATED UNDRAINED TRIXIAL (ASTM D2850)
UC – UNCONFINED COMPRESSIVE STRENGTH (ASTM D2166)

BEDDING SPACING DESCRIPTIONS

THICKNESS/SPACING	DESCRIPTOR
GREATER THAN 10 FEET	MASSIVE
3 TO 10 FEET	VERY THICKLY BEDDED
1 TO 3 FEET	THICKLY BEDDED
4-INCH TO 1 FOOT	MODERATELY BEDDED
1-INCH TO 4-INCH	THINLY BEDDED
¼-INCH TO 1-INCH	VERY THINLY BEDDED
LESS THAN ¼-INCH	LAMINATED

STRUCTURE DESCRIPTIONS

CRITERIA	DESCRIPTION
ALTERNATING LAYERS OF VARYING MATERIAL OR COLOR WITH LAYERS AT LEAST ¼-INCH THICK	STRATIFIED
ALTERNATING LAYERS OF VARYING MATERIAL OR COLOR WITH LAYERS LESS THAN ¼-INCH THICK	LAMINATED
BREAKS ALONG DEFINITE PLANES OF FRACTURE WITH LITTLE RESISTANCE TO FRACTURING	FISSURED
FRACTURE PLANES APPEAR POLISHED OR GLOSSY, SOMETIMES STRIATED	SLICKENSIDED
COHESIVE SOIL THAT CAN BE BROKEN DOWN INTO SMALLER ANGULAR LUMPS WHICH RESIST FURTHER BREAKDOWN	BLOCKY
INCLUSION OF SMALL POCKETS OF DIFFERENT SOIL, SUCH AS SMALL LENSES OF SAND SCATTERED THROUGH A MASS OF CLAY	LENSED
SAME COLOR AND MATERIAL THROUGHOUT	HOMOGENOUS

CEMENTATION/INDURATION DESCRIPTIONS

FIELD TEST	DESCRIPTION
CRUMBLES OR BREAKS WITH HANDLING OR LITTLE FINGER PRESSURE	WEAKLY CEMENTED/INDURATED
CRUMBLES OR BREAKS WITH CONSIDERABLE FINGER PRESSURE	MODERATELY CEMENTED/INDURATED
WILL NOT CRUMBLE OR BREAK WITH FINGER PRESSURE	STRONGLY CEMENTED/INDURATED

IGNEOUS/METAMORPHIC ROCK STRENGTH DESCRIPTIONS

DESCRIPTION	CRITERIA
EXTREMELY HARD	CAN ONLY BE CHIPPED WITH REPEATED HEAVY HAMMER BLOWS
VERY HARD	BREAKS WITH REPEATED HEAVY HAMMER BLOWS
HARD	BREAKS WITH HEAVY HAMMER BLOWS
MODERATELY HARD	BREAKS WITH MODERATE HAMMER BLOWS
MODERATELY SOFT	BREAKS WITH LIGHT HAMMER BLOW OR HEAVY MANUAL PRESSURE
SOFT	BREAKS WITH LIGHT TO MODERATE MANUAL PRESSURE
VERY SOFT	BREAKS WITH LIGHT MANUAL PRESSURE

IGNEOUS/METAMORPHIC ROCK WEATHERING DESCRIPTIONS

DEGREE OF DECOMPOSITION	FIELD RECOGNITION	ENGINEERING PROPERTIES
SOIL	DISCOLORED, CHANGED TO SOIL, FABRIC DESTROYED	EASY TO DIG
DECOMPOSED	DISCOLORED, CHANGED TO SOIL, FABRIC MAINLY PRESERVED	EXCAVATED BY HAND OR RIPPING (Saprolite)
INTENSELY WEATHERED	DISCOLORED, HIGHLY FRACTURED, FABRIC ALTERED AROUND FRACTURES	EXCAVATED BY HAND OR RIPPING, WITH SLIGHT DIFFICULTY
MODERATELY WEATHERED	DISCOLORED, FRACTURES, INTACT ROCK-NOTICEABLY WEAKER THAN FRESH ROCK	EXCAVATED WITH DIFFICULTY WITHOUT EXPLOSIVES
SLIGHTLY WEATHERED	MAY BE DISCOLORED, SOME FRACTURES, INTACT ROCK-NOT NOTICEABLY WEAKER THAN FRESH ROCK	REQUIRES EXPLOSIVES FOR EXCAVATION, WITH PERMEABLE JOINTS AND FRACTURES
FRESH	NO DISCOLORATION, OR LOSS OF STRENGTH	REQUIRES EXPLOSIVES

IGNEOUS/METAMORPHIC ROCK JOINT/FRACTURE DESCRIPTIONS

FIELD TEST	DESCRIPTION
NO OBSERVED FRACTURES	UNFRACTURED/UNJOINTED
MAJORITY OF JOINTS/FRACTURES SPACED AT GREATER THAN 3-FOOT INTERVALS	VERY SLIGHTLY FRACTURED/JOINTED
MAJORITY OF JOINTS/FRACTURES SPACED AT 1 TO 3 FOOT INTERVALS	SLIGHTLY FRACTURED/JOINTED
MAJORITY OF JOINTS/FRACTURES SPACED AT 4-INCH TO 1 FOOT INTERVALS	MODERATELY FRACTURED/JOINTED
MAJORITY OF JOINTS/FRACTURES SPACED AT 1-INCH TO 4-INCH INTERVALS WITH SCATTERED FRAGMENTED INTERVALS	INTENSELY FRACTURED/JOINTED
MAJORITY OF JOINTS/FRACTURES SPACED AT LESS THAN 1-INCH INTERVALS; MOSTLY RECOVERED AS CHIPS AND FRAGMENTS	VERY INTENSELY FRACTURED/JOINTED

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KEY TO LOGS

Figure A1

LOGGED BY	BEGIN DATE	COMPLETION DATE	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	HOLE ID
R. Church	2-17-16	2-17-16	38° 43' 27.6276" / -120° 49' 37.9266"	A-16-001
DRILLING CONTRACTOR			BOREHOLE LOCATION (Offset, Station, Line)	SURFACE ELEVATION
Woodward Drilling			18.00' Lt Sta 24+28 F-Line	1834.0 ft
DRILLING METHOD			DRILL RIG	BOREHOLE DIAMETER
Hollow-Stem Auger			Mobile B-57	8 in
SAMPLER TYPE(S) AND SIZE(S) (ID)			SPT HAMMER TYPE	HAMMER EFFICIENCY, ERi
Bulk, Std Cal (2"), SPT (1.4")			Downhole Hammer 140# 30"	80%
BORE HOLE BACKFILL AND COMPLETION			GROUNDWATER READINGS DURING DRILLING	AFTER DRILLING (DATE)	TOTAL DEPTH OF BORING
Neat Cement Grout			N/A	N/A	25.2 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	0		ASPHALT (AC) 9 inches.												
	1		Poorly graded GRAVEL (GP); AGGREGATE BASE (AB) 12 inches.												
1832.00	2		METAVOLCANIC ROCK; dark brown; decomposed; (CLAYEY SAND with GRAVEL (SC); very dense; moist).		Bulk A			100							
	3														
1830.00	4														
	5		Becomes intensely weathered, moist to wet.		5.0	50/5"	50/5"	100		6					PA
1828.00	6														
	7														
1826.00	8				7.5	50/5"	50/5"	100							
	9														
1824.00	10				10.0	50/3"	50/3"	100		10					PA, PI
	11														
1822.00	12														
	13														
1820.00	14														
	15				15.0	50/3"	50/3"	100		4					
1818.00	16														
	17		Difficult drilling.												
1816.00	18														
	19														
1814.00	20				20.0	50/2"	50/2"	100		3					
	21														
1812.00	22														
	23														
1810.00	24														
	25				25.0	50/2"	50/2"	100							
1808.00	26		Bottom of borehole at 25.2 ft bgs Boring Terminated at planned depth.												
	27														
1806.00	28		This Boring Record was prepared in accordance with the Caltrans Soil & Rock Logging, Classification, and Presentation Manual (June 2010) except as noted on the Soil or Rock Legend or below.												
	29														
	30														

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REPORT TITLE				HOLE ID
BORING RECORD				A-16-001
DIST.	COUNTY	ROUTE	POSTMILE	PROJECT NO.
03	ED			S94200504
PROJECT OR BRIDGE NAME				
Western Placerville Interchange Phase 2				
BRIDGE NUMBER	PREPARED BY		DATE	SHEET
	B. Perez		3-7-16	1 of 1

5 BR - STANDARD S9420-05-04 WESTERN PLACERVILLE INTERCHANGE PH 2 - CALTRANS FORMAT.GPJ CALTRANS LIBRARY DEC09-UNLOCK.GLB 11/4/16

Figure A2

LOGGED BY	BEGIN DATE	COMPLETION DATE	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	HOLE ID
R. Church	2-17-16	2-17-16	38° 43' 29.121" / -120° 49' 36.3576"	A-16-002
DRILLING CONTRACTOR			BOREHOLE LOCATION (Offset, Station, Line)	SURFACE ELEVATION
Woodward Drilling			15.00' Lt Sta 26+11 F-Line	1844.0 ft
DRILLING METHOD			DRILL RIG	BOREHOLE DIAMETER
Hollow-Stem Auger			Mobile B-57	8 in
SAMPLER TYPE(S) AND SIZE(S) (ID)			SPT HAMMER TYPE	HAMMER EFFICIENCY, ERi
Std Cal (2"), SPT (1.4")			Downhole Hammer 140# 30"	80%
BOREHOLE BACKFILL AND COMPLETION			GROUNDWATER READINGS DURING DRILLING / AFTER DRILLING (DATE)	TOTAL DEPTH OF BORING
Neat Cement Grout			N/A / N/A	25.2 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	0		ASPHALT (AC) 7.5 inches.												
	1		Poorly graded GRAVEL (GP); AGGREGATE BASE (AB) 12 inches.												
1842.00	2		METAVOLCANIC ROCK; dark brown; intensely weathered to decomposed; (CLAYEY SAND with GRAVEL (SC); very dense; moist to wet).		1.5	50/5"	50/5"	100							
	3					43	89/10"	100							
					3.0	39				4	117				
1840.00	4				3.5	50/4"				8	109				
	5				5.0	27	50/6"	100		8					
1838.00	6					50/6"									
	7														
1836.00	8														
	9														
1834.00	10				10.0	35	83	100		7					
	11					37									
1832.00	12					46									
	13														
1830.00	14														
	15		Becomes intensely weathered.		15.0	50/5"	50/5"	100							
1828.00	16														
	17														
1826.00	18														
	19														
1824.00	20				20.0	50/4"	50/4"	100							
	21														
1822.00	22														
	23														
1820.00	24														
	25				25.0	50/2"	50/2"	100							
1818.00	26		Bottom of borehole at 25.2 ft bgs Boring Terminated at planned depth.												
	27														
1816.00	28		This Boring Record was prepared in accordance with the Caltrans Soil & Rock Logging, Classification, and Presentation Manual (June 2010) except as noted on the Soil or Rock Legend or below.												
	29														
	30														

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REPORT TITLE				HOLE ID
BORING RECORD				A-16-002
DIST.	COUNTY	ROUTE	POSTMILE	PROJECT NO.
03	ED			S94200504
PROJECT OR BRIDGE NAME				
Western Placerville Interchange Phase 2				
BRIDGE NUMBER	PREPARED BY		DATE	SHEET
	B. Perez		3-7-16	1 of 1

5 BR - STANDARD S9420-05-04 WESTERN PLACERVILLE INTERCHANGE PH 2 - CALTRANS FORMAT.GPJ CALTRANS LIBRARY DEC09-UNLOCK.GLB 11/4/16

Figure A3

LOGGED BY	BEGIN DATE	COMPLETION DATE	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	HOLE ID
R. Church	2-17-16	2-17-16	38° 43' 34.8162" / -120° 49' 27.7386"	A-16-003
DRILLING CONTRACTOR			BOREHOLE LOCATION (Offset, Station, Line)	SURFACE ELEVATION
Woodward Drilling			70.00' Rt Sta 564+53 RL-2-Line	1849.0 ft
DRILLING METHOD			DRILL RIG	BOREHOLE DIAMETER
Hollow-Stem Auger			Mobile B-57	8 in
SAMPLER TYPE(S) AND SIZE(S) (ID)			SPT HAMMER TYPE	HAMMER EFFICIENCY, ERi
Bulk, Std Cal (2"), SPT (1.4")			Downhole Hammer 140# 30"	80%
BORehole BACKFILL AND COMPLETION			GROUNDWATER READINGS DURING DRILLING	AFTER DRILLING (DATE)	TOTAL DEPTH OF BORING
Neat Cement Grout			N/A	N/A	11.4 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	0		SANDY lean CLAY (CL); very stiff; red; moist.												
	1				Bulk B			100							
1847.00	2														
	3					12	42	100							
					3.0	18				22	90				PA
1845.00	4				3.5	24									
	5														
						12	50	100							
1843.00	6				5.5	24									
			METAVOLCANIC ROCK; olive brown; decomposed; (SANDY lean CLAY (CL); hard; moist).		6.0	26									
1841.00	8														
	9														
1839.00	10				10.0	11	88/11"	100							
	11					38									
						50/5"									
1837.00	12		Bottom of borehole at 11.4 ft bgs												
	13		Boring Terminated at planned depth.												
1835.00	14		This Boring Record was prepared in accordance with the Caltrans Soil & Rock Logging, Classification, and Presentation Manual (June 2010) except as noted on the Soil or Rock Legend or below.												
	15														
1833.00	16														
	17														
1831.00	18														
	19														
1829.00	20														
	21														
1827.00	22														
	23														
1825.00	24														
	25														
1823.00	26														
	27														
1821.00	28														
	29														
	30														

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REPORT TITLE				HOLE ID
BORING RECORD				A-16-003
DIST.	COUNTY	ROUTE	POSTMILE	PROJECT NO.
03	ED			S94200504
PROJECT OR BRIDGE NAME				
Western Placerville Interchange Phase 2				
BRIDGE NUMBER	PREPARED BY		DATE	SHEET
	B. Perez		3-7-16	1 of 1

5 BR - STANDARD S9420-05-04 WESTERN PLACERVILLE INTERCHANGE PH 2 - CALTRANS FORMAT.GPJ CALTRANS LIBRARY DEC09-UNLOCK.GLB 11/4/16

Figure A4

LOGGED BY	BEGIN DATE	COMPLETION DATE	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	HOLE ID
R. Church	2-17-16	2-17-16	38° 43' 36.195" / -120° 49' 25.32"	A-16-004
DRILLING CONTRACTOR			BOREHOLE LOCATION (Offset, Station, Line)	SURFACE ELEVATION
Woodward Drilling			51.00' Lt Sta 38+57 F-Line	1880.0 ft
DRILLING METHOD			DRILL RIG	BOREHOLE DIAMETER
Hollow-Stem Auger			Mobile B-57	8 in
SAMPLER TYPE(S) AND SIZE(S) (ID)			SPT HAMMER TYPE	HAMMER EFFICIENCY, ERi
Bulk, Std Cal (2"), SPT (1.4")			Downhole Hammer 140# 30"	80%
BOREHOLE BACKFILL AND COMPLETION			GROUNDWATER READINGS DURING DRILLING	AFTER DRILLING (DATE)	TOTAL DEPTH OF BORING
Neat Cement Grout			N/A	N/A	11.5 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	0		Poorly graded GRAVEL (GP); with COBBLES and asphalt debris.												
	1		METAVOLCANIC ROCK; olive brown; decomposed; (CLAYEY SAND with GRAVEL (SC); medium to very dense; moist).		Bulk C			100							
1878.00	2					3	44	100							
	3				2.5 3.0	19 25				18	107				
1876.00	4														
	5					12	81	100							
1874.00	6				5.5 6.0	38 43				14	113				PI
	7														
1872.00	8														
	9														
1870.00	10				10.0	25 25 50	75	100							
	11														
1868.00	12		Bottom of borehole at 11.5 ft bgs Boring Terminated at planned depth. This Boring Record was prepared in accordance with the Caltrans Soil & Rock Logging, Classification, and Presentation Manual (June 2010) except as noted on the Soil or Rock Legend or below.												
	13														
1866.00	14														
	15														
1864.00	16														
	17														
1862.00	18														
	19														
1860.00	20														
	21														
1858.00	22														
	23														
1856.00	24														
	25														
1854.00	26														
	27														
1852.00	28														
	29														
	30														

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REPORT TITLE				HOLE ID
BORING RECORD				A-16-004
DIST.	COUNTY	ROUTE	POSTMILE	PROJECT NO.
03	ED			S94200504
PROJECT OR BRIDGE NAME				
Western Placerville Interchange Phase 2				
BRIDGE NUMBER	PREPARED BY		DATE	SHEET
	B. Perez		3-7-16	1 of 1

5 BR - STANDARD S9420-05-04 WESTERN PLACERVILLE INTERCHANGE PH 2 - CALTRANS FORMAT.GPJ CALTRANS LIBRARY DEC09-UNLOCK.GLB 11/4/16

Figure A5

LOGGED BY	BEGIN DATE	COMPLETION DATE	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	HOLE ID
R. Church	2-17-16	2-17-16	38° 43' 38.0994" / -120° 49' 22.1412"	A-16-005
DRILLING CONTRACTOR			BOREHOLE LOCATION (Offset, Station, Line)	SURFACE ELEVATION
Woodward Drilling			26.00' Rt Sta 12+45 F-1-Line	1900.0 ft
DRILLING METHOD			DRILL RIG	BOREHOLE DIAMETER
Hollow-Stem Auger			Mobile B-57	8 in
SAMPLER TYPE(S) AND SIZE(S) (ID)			SPT HAMMER TYPE	HAMMER EFFICIENCY, ERi
Bulk, Mod Cal (2.4"), SPT (1.4")			Downhole Hammer 140# 30"	80%
BOREHOLE BACKFILL AND COMPLETION			GROUNDWATER READINGS DURING DRILLING	AFTER DRILLING (DATE)	TOTAL DEPTH OF BORING
Neat Cement Grout			N/A	N/A	10.2 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	0		ASPHALT (AC) 8 inches.												
	1		Poorly graded GRAVEL (GP); AGGREGATE BASE (AB) 10 inches.												
1898.00	2		METAVOLCANIC ROCK; olive brown; decomposed; (CLAYEY SAND with GRAVEL (SC); very dense; moist).		Bulk D			100							
	3				3.0	6 29	79/9"	100		11					PA
1896.00	4				3.5	50/3"				12	113				
	5		Becomes intensely weathered; moist to wet.		5.0	50/6"	50/6'	100							
1894.00	6														
	7														
1892.00	8														
	9														
1890.00	10				10.0	50/2"	50/2"	100							
	11		Bottom of borehole at 10.2 ft bgs												
	12		Boring Terminated at planned depth.												
1888.00	13		This Boring Record was prepared in accordance with the Caltrans Soil & Rock Logging, Classification, and Presentation Manual (June 2010) except as noted on the Soil or Rock Legend or below.												
1886.00	14														
	15														
1884.00	16														
	17														
1882.00	18														
	19														
1880.00	20														
	21														
1878.00	22														
	23														
1876.00	24														
	25														
1874.00	26														
	27														
1872.00	28														
	29														
	30														

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REPORT TITLE				HOLE ID
BORING RECORD				A-16-005
DIST.	COUNTY	ROUTE	POSTMILE	PROJECT NO.
03	ED			S94200504
PROJECT OR BRIDGE NAME				
Western Placerville Interchange Phase 2				
BRIDGE NUMBER	PREPARED BY		DATE	SHEET
	B. Perez		3-7-16	1 of 1

5 BR - STANDARD S9420-05-04 WESTERN PLACERVILLE INTERCHANGE PH 2 - CALTRANS FORMAT.GPJ CALTRANS LIBRARY DEC09-UNLOCK.GLB 11/4/16

Figure A6

LOGGED BY	BEGIN DATE	COMPLETION DATE	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	HOLE ID
R. Church	3-5-16	3-5-16	38° 43' 34.1148" / -120° 49' 29.3802"	HA-16-006
DRILLING CONTRACTOR			BOREHOLE LOCATION (Offset, Station, Line)	SURFACE ELEVATION
Geocon Consultants, Inc.			77.00' Rt Sta 563+07 RL-2-Line	1839.0 ft
DRILLING METHOD			DRILL RIG	BOREHOLE DIAMETER
Hand Auger			N/A	4 in
SAMPLER TYPE(S) AND SIZE(S) (ID)			SPT HAMMER TYPE	HAMMER EFFICIENCY, ERi
Mod Cal (2.4")			N/A	N/A
BOREHOLE BACKFILL AND COMPLETION			GROUNDWATER READINGS DURING DRILLING	AFTER DRILLING (DATE)	TOTAL DEPTH OF BORING
Soil Cuttings			N/A	N/A	2.0 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	0														
	1		SANDY lean CLAY with GRAVEL (CL); soft; reddish brown; wet; fine GRAVEL.		1.0			100							PA, PI
1837.00	2		Becomes medium stiff.												
	3		Bottom of borehole at 2.0 ft bgs												
1835.00	4		Boring Terminated at planned depth.												
	5		This Boring Record was prepared in accordance with the Caltrans Soil & Rock Logging, Classification, and Presentation Manual (June 2010) except as noted on the Soil or Rock Legend or below.												
1833.00	6														
	7														
1831.00	8														
	9														
1829.00	10														
	11														
1827.00	12														
	13														
1825.00	14														
	15														
1823.00	16														
	17														
1821.00	18														
	19														
1819.00	20														
	21														
1817.00	22														
	23														
1815.00	24														
	25														
1813.00	26														
	27														
1811.00	28														
	29														
	30														

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REPORT TITLE				HOLE ID
BORING RECORD				HA-16-006
DIST.	COUNTY	ROUTE	POSTMILE	PROJECT NO.
03	ED			S94200504
PROJECT OR BRIDGE NAME				
Western Placerville Interchange Phase 2				
BRIDGE NUMBER	PREPARED BY		DATE	SHEET
	B. Perez		3-8-16	1 of 1

5 BR - STANDARD S9420-05-04 WESTERN PLACERVILLE INTERCHANGE PH 2 - CALTRANS FORMAT.GPJ CALTRANS LIBRARY DEC09-UNLOCK.GLB 11/4/16

Figure A7

LOGGED BY	BEGIN DATE	COMPLETION DATE	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	HOLE ID
R. Church	3-5-16	3-5-16	38° 43' 32.6964" / -120° 49' 30.9786"	HA-16-007
DRILLING CONTRACTOR			BOREHOLE LOCATION (Offset, Station, Line)	SURFACE ELEVATION
Geocon Consultants, Inc.			130.00' Rt Sta 561+29 RL-2-Line	1840.0 ft
DRILLING METHOD			DRILL RIG	BOREHOLE DIAMETER
Hand Auger			N/A	4 in
SAMPLER TYPE(S) AND SIZE(S) (ID)			SPT HAMMER TYPE	HAMMER EFFICIENCY, ERi
Mod Cal (2.4")			N/A	N/A
BOREHOLE BACKFILL AND COMPLETION			GROUNDWATER READINGS DURING DRILLING	AFTER DRILLING (DATE) / TOTAL DEPTH OF BORING
Soil Cuttings			N/A	N/A / 2.5 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	0		SANDY lean CLAY with GRAVEL (CL); soft; reddish brown; moist; fine GRAVEL.												
1838.00	2		Becomes stiff.		1.5			100							
	3		Bottom of borehole at 2.5 ft bgs												
1836.00	4		Boring Terminated at planned depth.												
	5		This Boring Record was prepared in accordance with the Caltrans Soil & Rock Logging, Classification, and Presentation Manual (June 2010) except as noted on the Soil or Rock Legend or below.												
1834.00	6														
	7														
1832.00	8														
	9														
1830.00	10														
	11														
1828.00	12														
	13														
1826.00	14														
	15														
1824.00	16														
	17														
1822.00	18														
	19														
1820.00	20														
	21														
1818.00	22														
	23														
1816.00	24														
	25														
1814.00	26														
	27														
1812.00	28														
	29														
	30														

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REPORT TITLE				HOLE ID
BORING RECORD				HA-16-007
DIST.	COUNTY	ROUTE	POSTMILE	PROJECT NO.
03	ED			S94200504
PROJECT OR BRIDGE NAME				
Western Placerville Interchange Phase 2				
BRIDGE NUMBER	PREPARED BY		DATE	SHEET
	B. Perez		3-8-16	1 of 1

5 BR - STANDARD S9420-05-04 WESTERN PLACERVILLE INTERCHANGE PH 2 - CALTRANS FORMAT.GPJ CALTRANS LIBRARY DEC09-UNLOCK.GLB 11/4/16

Figure A8

LOGGED BY	BEGIN DATE	COMPLETION DATE	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	HOLE ID
R. Church	3-5-16	3-5-16	38° 43' 37.5168" / -120° 49' 26.3064"	O-16-008
DRILLING CONTRACTOR			BOREHOLE LOCATION (Offset, Station, Line)	SURFACE ELEVATION
Geocon Consultants, Inc.			104.00' Lt Sta 40+40 F-Line	1895.0 ft
DRILLING METHOD			DRILL RIG	BOREHOLE DIAMETER
Hand Auger			N/A	4 in
SAMPLER TYPE(S) AND SIZE(S) (ID)			SPT HAMMER TYPE	HAMMER EFFICIENCY, ERi
Bulk			N/A	N/A
BOREHOLE BACKFILL AND COMPLETION			GROUNDWATER READINGS DURING DRILLING	AFTER DRILLING (DATE)	TOTAL DEPTH OF BORING
Soil Cuttings			N/A	N/A	1.5 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	0		CLAYEY GRAVEL with SAND (GC); loose; yellowish brown; moist.		Bulk E			100							PA, PI
	1														
1893.00	2		Bottom of borehole at 1.5 ft bgs												
	3		Boring Terminated at planned depth.												
1891.00	4		This Boring Record was prepared in accordance with the Caltrans Soil & Rock Logging, Classification, and Presentation Manual (June 2010) except as noted on the Soil or Rock Legend or below.												
	5														
1889.00	6														
	7														
1887.00	8														
	9														
1885.00	10														
	11														
1883.00	12														
	13														
1881.00	14														
	15														
1879.00	16														
	17														
1877.00	18														
	19														
1875.00	20														
	21														
1873.00	22														
	23														
1871.00	24														
	25														
1869.00	26														
	27														
1867.00	28														
	29														
	30														

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REPORT TITLE				HOLE ID
BORING RECORD				O-16-008
DIST.	COUNTY	ROUTE	POSTMILE	PROJECT NO.
03	ED			S94200504
PROJECT OR BRIDGE NAME				
Western Placerville Interchange Phase 2				
BRIDGE NUMBER	PREPARED BY		DATE	SHEET
	B. Perez		3-8-16	1 of 1

5 BR - STANDARD S9420-05-04 WESTERN PLACERVILLE INTERCHANGE PH 2 - CALTRANS FORMAT.GPJ CALTRANS LIBRARY DEC09-UNLOCK.GLB 11/4/16

Figure A9

LOGGED BY	BEGIN DATE	COMPLETION DATE	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	HOLE ID
J. Pfieffer	8-15-12	8-15-12	38° 43' 32.7606" / -120° 49' 33.4302"	A-12-001
DRILLING CONTRACTOR			BOREHOLE LOCATION (Offset, Station, Line)	SURFACE ELEVATION
PC Exploration			19.50' Rt Sta 529+54 RL-2-Line	1834.0 ft
DRILLING METHOD			DRILL RIG	BOREHOLE DIAMETER
Solid-Stem Auger			Speedstar 25	4 in
SAMPLER TYPE(S) AND SIZE(S) (ID)			SPT HAMMER TYPE	HAMMER EFFICIENCY, ERi
Mod Cal (2.4")			Downhole Hammer 140# 30"	80%
BOREHOLE BACKFILL AND COMPLETION			GROUNDWATER READINGS DURING DRILLING	AFTER DRILLING (DATE)	TOTAL DEPTH OF BORING
Soil Cuttings			N/A	N/A	10.0 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	0		CLAYEY SILT (ML/CL); hard; brown; dry; trace fine GRAVEL; medium to fine SAND; (Fill).												
1832.00	2				1.5 2.0		74	100							
1830.00	4		METAMORPHIC ROCK (SHALE), Argillite, very dark gray, yellowish red fracture coatings, moderately weathered, strong, intensely fractured, (Mariposa Formation).												
	5				5.0		56/6"	100							
1828.00	6														
1826.00	8						50/5"	100							
	9		- becomes wet in fractures, red brown fracture coatings.												
1824.00	10						50/4"	100							
			Bottom of borehole at 10.0 ft bgs Boring Terminated at planned depth. This Boring Record was prepared in accordance with the Caltrans Soil & Rock Logging, Classification, and Presentation Manual (June 2010) except as noted on the Soil or Rock Legend or below.												

5 BR - STANDARD S9420-05-03 WESTERN PLACERVILLE DETENTION BASIN - CALTRANS FORMAT.GPJ CALTRANS LIBRARY DEC09-UNLOCK.GLB 11/4/16

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REPORT TITLE				HOLE ID
BORING RECORD				A-12-001
DIST.	COUNTY	ROUTE	POSTMILE	PROJECT NO.
03	ED			S94200503
PROJECT OR BRIDGE NAME				
Western Placerville Detention Basin				
BRIDGE NUMBER	PREPARED BY		DATE	SHEET
	B. Perez		11-4-16	1 of 1

Figure A10

LOGGED BY	BEGIN DATE	COMPLETION DATE	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	HOLE ID
J. Pfieffer	8-15-12	8-15-12	38° 43' 34.521" / -120° 49' 31.2198"	A-12-002
DRILLING CONTRACTOR			BOREHOLE LOCATION (Offset, Station, Line)	SURFACE ELEVATION
PC Exploration			19.60' Lt Sta 561+97 RL-2-Line	1836.0 ft
DRILLING METHOD			DRILL RIG	BOREHOLE DIAMETER
Hollow-Stem Auger			Speedstar 25	6 in
SAMPLER TYPE(S) AND SIZE(S) (ID)			SPT HAMMER TYPE	HAMMER EFFICIENCY, ERi
Mod Cal (2.4")			Downhole Hammer 140# 30"	80%
BOREHOLE BACKFILL AND COMPLETION			GROUNDWATER READINGS DURING DRILLING	AFTER DRILLING (DATE)	TOTAL DEPTH OF BORING
Soil Cuttings			13.5 ft	13.5 ft on	20.2 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	0		SANDY SILT (ML); stiff; yellowish red; dry; trace fine GRAVEL; medium to fine SAND; (Residual Soil).				20	100							
	1				1.0										
1834.00	2				1.5										
	3														
1832.00	4		- becomes multicolored yellowish brown, brown and gray, CLAYEY SILT with SAND and GRAVEL.												
	5		METAMORPHIC ROCK (SHALE), Argillite, gray, trace yellowish brown fracture coatings, intensely weathered, strong, very intensely fractured, (Mariposa Formation).				70	100							
1830.00	6				6.0										
	7		- becomes moderately weatehred; intensely fractured.												
1828.00	8														
	9		- becomes slightly weathered, dark gray, wet in fractures.												
1826.00	10						86/11"	100							
	11		- hard drilling.												
1824.00	12														
	13														
1822.00	14		- becomes fresh (unweathered), dark greenish gray.												
	15						50/3"	100							
1820.00	16														
	17														
1818.00	18														
	19														
1816.00	20		- becomes very strong.				50/2"	100							
	21		Bottom of borehole at 20.2 ft bgs												
1814.00	22		Boring Terminated at planned depth.												
	23		This Boring Record was prepared in accordance with the Caltrans Soil & Rock Logging, Classification, and Presentation Manual (June 2010) except as noted on the Soil or Rock Legend or below.												
1812.00	24														
	25														
1810.00	26														
	27														
1808.00	28														
	29														
	30														

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REPORT TITLE				HOLE ID
BORING RECORD				A-12-002
DIST.	COUNTY	ROUTE	POSTMILE	PROJECT NO.
03	ED			S94200503
PROJECT OR BRIDGE NAME				
Western Placerville Detention Basin				
BRIDGE NUMBER	PREPARED BY		DATE	SHEET
	B. Perez		11-4-16	1 of 1

5 BR - STANDARD S9420-05-03 WESTERN PLACERVILLE DETENTION BASIN - CALTRANS FORMAT.GPJ CALTRANS LIBRARY DEC09-UNLOCK.GLB 11/4/16

Figure A11

LOGGED BY	BEGIN DATE	COMPLETION DATE	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	HOLE ID
N. Bieniek/J. Pfieffe	8-15-12	8-15-12	38° 43' 32.7318" / -120° 49' 33.4668"	O-12-003
DRILLING CONTRACTOR			BOREHOLE LOCATION (Offset, Station, Line)	SURFACE ELEVATION
Geocon Consultants, Inc.			20.50' Rt Sta 559+50 RL-2-Line	1834.0 ft
DRILLING METHOD			DRILL RIG	BOREHOLE DIAMETER
36" Bucket			JD 310 Extendahoe	N/A
SAMPLER TYPE(S) AND SIZE(S) (ID)			SPT HAMMER TYPE	HAMMER EFFICIENCY, ERi
			N/A	N/A
BOREHOLE BACKFILL AND COMPLETION			GROUNDWATER READINGS DURING DRILLING / AFTER DRILLING (DATE)	TOTAL DEPTH OF BORING
Soil Cuttings			N/A / N/A	10.0 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	0		CLAYEY SILT (ML/CL); hard; brown; dry; trace fine GRAVEL; medium to fine SAND; (Fill).												
1832.00	2														
	3														
1830.00	4		METAMORPHIC ROCK (SHALE), Argillite, very dark gray, moderately to slightly weathered, strong, intensely to moderately fractured, (Mariposa Formation).												
	5														
1828.00	6														
	7														
1826.00	8														
	9		- becomes wet in fractures, reddish brown fracture coatings.												
1824.00	10		Bottom of borehole at 10.0 ft bgs												
	11		Test Pit Terminated at planned depth.												
1822.00	12		This Boring Record was prepared in accordance with the Caltrans Soil & Rock Logging, Classification, and Presentation Manual (June 2010) except as noted on the Soil or Rock Legend or below.												
	13														
1820.00	14														
	15														
1818.00	16														
	17														
1816.00	18														
	19														
1814.00	20														
	21														
1812.00	22														
	23														
1810.00	24														
	25														
1808.00	26														
	27														
1806.00	28														
	29														
	30														

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REPORT TITLE				HOLE ID
BORING RECORD				O-12-003
DIST.	COUNTY	ROUTE	POSTMILE	PROJECT NO.
03	ED			S94200503
PROJECT OR BRIDGE NAME				
Western Placerville Detention Basin				
BRIDGE NUMBER	PREPARED BY		DATE	SHEET
	B. Perez		11-4-16	1 of 1

5 BR - STANDARD S9420-05-03 WESTERN PLACERVILLE DETENTION BASIN - CALTRANS FORMAT.GPJ CALTRANS LIBRARY DEC09-UNLOCK.GLB 11/4/16

Figure A12

LOGGED BY	BEGIN DATE	COMPLETION DATE	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	HOLE ID
N. Bieniek/J. Pfieffe	8-15-12	8-15-12	38° 43' 34.3344" / -120° 49' 31.101"	O-12-004
DRILLING CONTRACTOR			BOREHOLE LOCATION (Offset, Station, Line)	SURFACE ELEVATION
Geocon Consultants, Inc.			2.00' Rt Sta 561+97 RL-2-Line	1836.0 ft
DRILLING METHOD			DRILL RIG	BOREHOLE DIAMETER
36" Bucket			JD 310 Extendahoe	N/A
SAMPLER TYPE(S) AND SIZE(S) (ID)			SPT HAMMER TYPE	HAMMER EFFICIENCY, ERi
			N/A	N/A
BOREHOLE BACKFILL AND COMPLETION			GROUNDWATER READINGS DURING DRILLING	AFTER DRILLING (DATE) / TOTAL DEPTH OF BORING
Soil Cuttings			7.0 ft	7.0 ft on / 7.5 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	0		SANDY SILT (ML); stiff; yellowish red; dry; trace fine, subangular GRAVEL; coarse to fine SAND; (Residual Soil).												
1834.00	2														
	3														
1832.00	4		METAMORPHIC ROCK (SANDSTONE/CONGLOMERATE), gray, multicolored fracture coatings, intensely weathered, strong to very strong, intensely to moderately fractured, (Mariposa Formation).												
	5														
1830.00	6														
	7		- becomes wet, very strong, moderately weathered, difficult excavating.												
1828.00	8		Bottom of borehole at 7.5 ft bgs												
	9		Test Pit Terminated due to groundwater at 7 feet.												
1826.00	10		This Boring Record was prepared in accordance with the Caltrans Soil & Rock Logging, Classification, and Presentation Manual (June 2010) except as noted on the Soil or Rock Legend or below.												
	11														
1824.00	12														
	13														
1822.00	14														
	15														
1820.00	16														
	17														
1818.00	18														
	19														
1816.00	20														
	21														
1814.00	22														
	23														
1812.00	24														
	25														
1810.00	26														
	27														
1808.00	28														
	29														
	30														

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REPORT TITLE				HOLE ID
BORING RECORD				O-12-004
DIST.	COUNTY	ROUTE	POSTMILE	PROJECT NO.
03	ED			S94200503
PROJECT OR BRIDGE NAME				
Western Placerville Detention Basin				
BRIDGE NUMBER	PREPARED BY		DATE	SHEET
	B. Perez		11-4-16	1 of 1

5 BR - STANDARD S9420-05-03 WESTERN PLACERVILLE DETENTION BASIN - CALTRANS FORMAT.GPJ CALTRANS LIBRARY DEC09-UNLOCK.GLB 11/4/16

Figure A13

APPENDIX B

APPENDIX B

LABORATORY TESTING

Laboratory tests were performed in accordance with California Test Methods or generally accepted test methods of the American Society for Testing and Materials (ASTM). The types of the tests performed are listed below:

- In-Place Dry Density and Moisture Content: ASTM D2937 (CTM 226)
- Grain Size Distribution: ASTM D422
- Atterberg Limits: ASTM D 4318
- pH and Resistivity: CTM 643
- Sulfate Content: CTM 417
- Chloride Content: CTM 422
- R-value: CTM 301

TABLE B-1
SUMMARY OF R-VALUE TEST RESULTS
ASTM D 2844

Boring No. (sample depth in feet)	Soil Type (USCS Classification)	R-Value
A-16-001 (2-4.5)	Clayey Sand with Gravel (SC)	21
A-16-005 (2-5)	Clayey Sand with Gravel (SC)	11
O-16-008 (0.5-1.5)	Clayey Gravel with Sand (GC)	47

TABLE B-2
SUMMARY OF SOIL CORROSION PARAMETERS
(CTM 643, CTM 417, CTM 422)

Boring No. (sample depth in feet)	Soil Type (USCS Classification)	Resistivity (ohm-cm)	pH	Chloride (ppm)	Sulfate (ppm)
A-16-001 (7.5)	Clayey Sand with Gravel (SC)	3,400	7.3	61	80

Sample ID	Depth (feet)	Liquid Limit	Plastic Limit	Plasticity Index	Maximum Size (mm)	%<#200 Sieve	Water Content (%)	Dry Density (pcf)
A-16-001-5.0	5				0.075	35.9	6.0	
A-16-001-10.0	10	33	23	10	0.075	38.7	10.0	
A-16-001-15.0	15						4.4	
A-16-001-20.0	20						2.5	
A-16-002-3.0	3						4.3	117.2
A-16-002-3.5	3.5						8.2	109.3
A-16-002-5.0	5						7.9	
A-16-002-10.0	10						7.4	
A-16-003-3	3				0.075	82.8	21.9	89.9
A-16-004-3.0	3						17.5	107.2
A-16-004-5.5	5.5	37	22	15				
A-16-004-6.0	6						13.7	112.9
A-16-005-3.0	3				0.075	41.9	10.7	
A-16-005-3.5	3.5						12.3	112.8
HA-16-006-1.0	1	33	23	10	12.5	63.0		
O-16-008-Bulk E	0	38	23	15	50	38.3		

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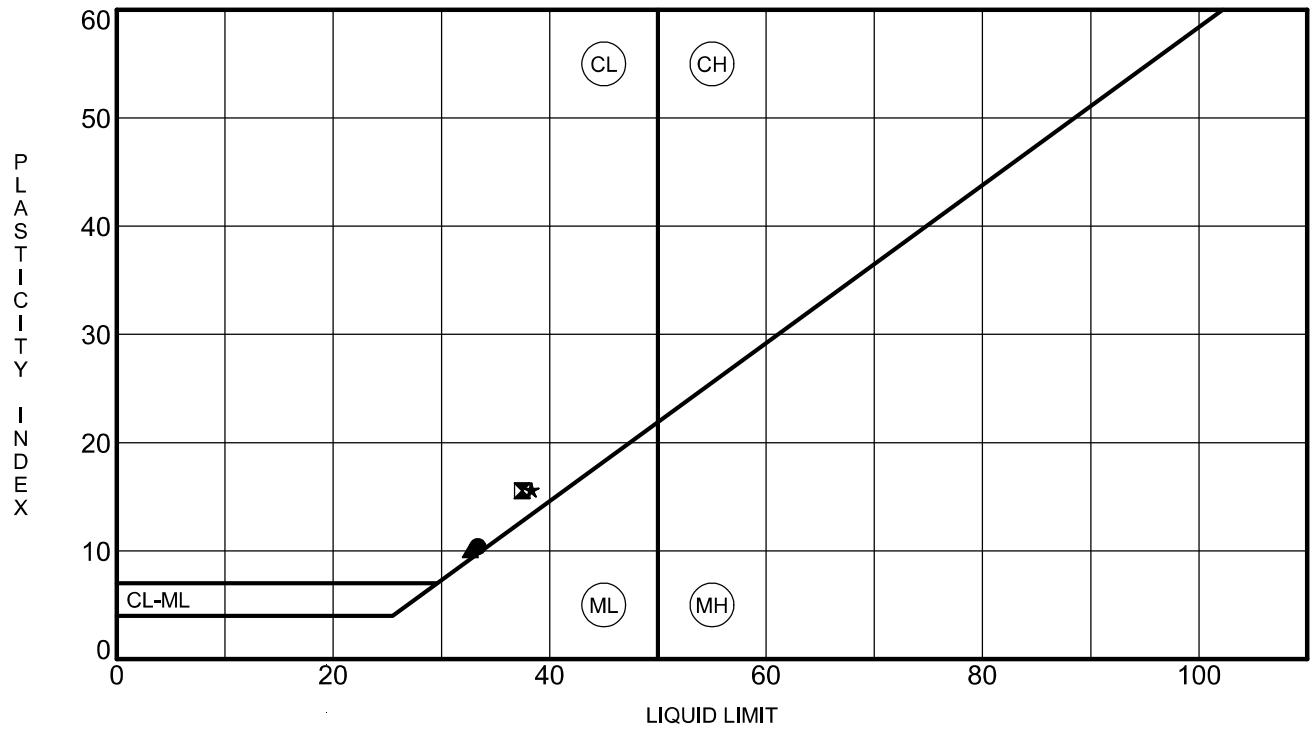
Summary of Laboratory Results

Project Name: Western Placerville Interchange Phase 2

Project Number: S94200504

Figure: B1

US LAB SUMMARY GEOTECH REPORTS (CALTRANS) S9420-05-04 WESTERN PLACERVILLE INTERCHANGE PH 2 - CALTRANS FORMAT.GPJ US_LAB.GDT 11/4/16



	Sample No.	Liquid Limit	Plastic Limit	Plasticity Index	% Pass #200 Sieve	Unified Soil Classification Description	Preparation Method
●	**A-16-001-10.0**	**33**	**23**	**10**	**38.7**	**Sandy CLAY**	
⊠	**A-16-004-5.5**	**37**	**22**	**15**		**Lean CLAY**	
▲	**HA-16-006-1.0**	**33**	**23**	**10**	**63.0**	**SANDY LEAN CLAY(CL)**	
★	**O-16-008-Bulk E**	**38**	**23**	**15**	**38.3**	**CLAYEY GRAVEL with SAND(GC)**	

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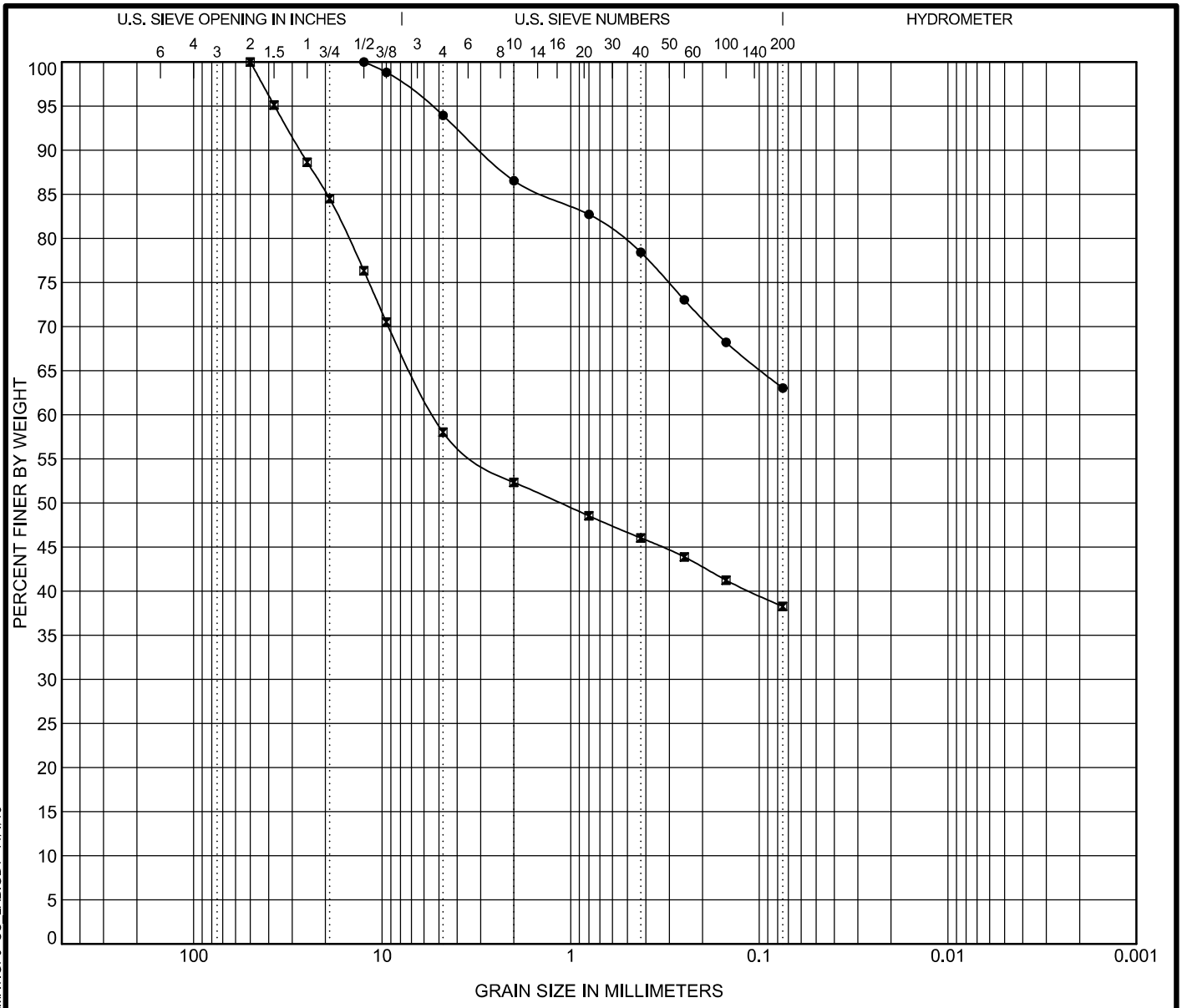
ATTERBERG LIMITS (ASTM D4318)

Project Name: Western Placerville Interchange Phase 2
Location: Placerville, California
Project Number: S94200504
Figure: B2

PI COPY 2 S9420-05-04 WESTERN PLACERVILLE INTERCHANGE PH 2 - CALTRANS FORMAT.GPJ US_LAB.GDT 11/4/16



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Sample No.	Classification	LL	PL	PI	Cc	Cu
●	HA-16-006-1.0	SANDY LEAN CLAY(CL)	33	23	10		
⊠	O-16-008-Bulk E	CLAYEY GRAVEL with SAND(GC)	38	23	15		

	Sample No.	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	HA-16-006-1.0	12.5				6.0	30.9	63.0	
⊠	O-16-008-Bulk E	50	5.303			42.0	19.7	38.3	

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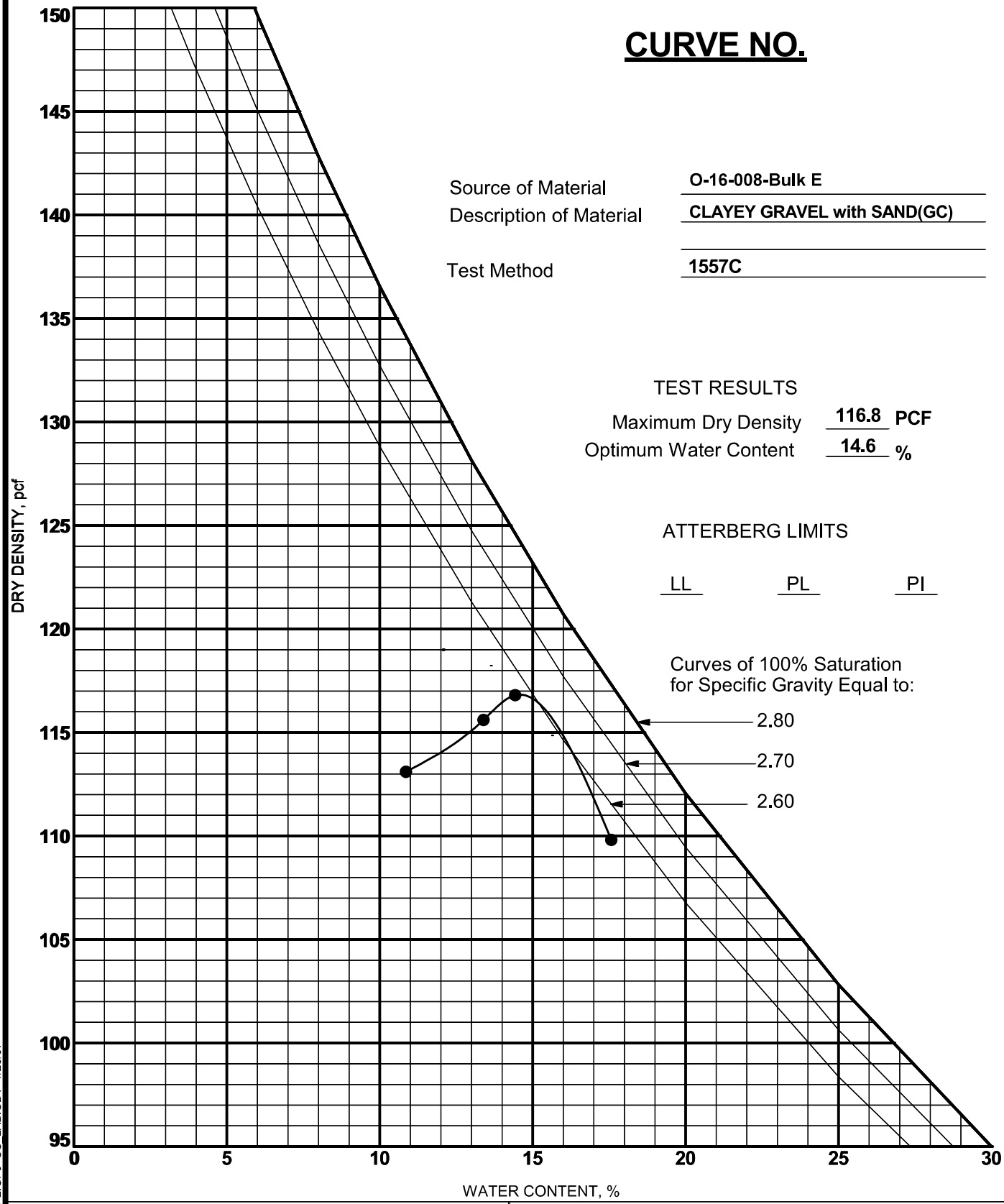
GRAIN SIZE DISTRIBUTION (ASTM D422, D6913)

Project Name: Western Placerville Interchange Phase 2
Location: Placerville, California
Project Number: S94200504
Figure: B3

GRAIN SIZE COPY 2 S9420-05-04 WESTERN PLACERVILLE INTERCHANGE PH 2 - CALTRANS FORMAT.GPJ US_LAB.GDT 11/4/16

CURVE NO.



Source of Material: O-16-008-Bulk E

Description of Material: CLAYEY GRAVEL with SAND(GC)

Test Method: 1557C

TEST RESULTS

Maximum Dry Density: 116.8 PCF

Optimum Water Content: 14.6 %

ATTERBERG LIMITS

LL PL PI

Curves of 100% Saturation for Specific Gravity Equal to:

2.80

2.70

2.60

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MOISTURE-DENSITY RELATIONSHIP

Project Name: Western Placerville Interchange Phase 2

Location: Placerville, California

Project Number: S94200504

Figure: B4

US_COMPACTION_COPY 2.GPJ US_LAB.GDT 1/26/07

APPENDIX C

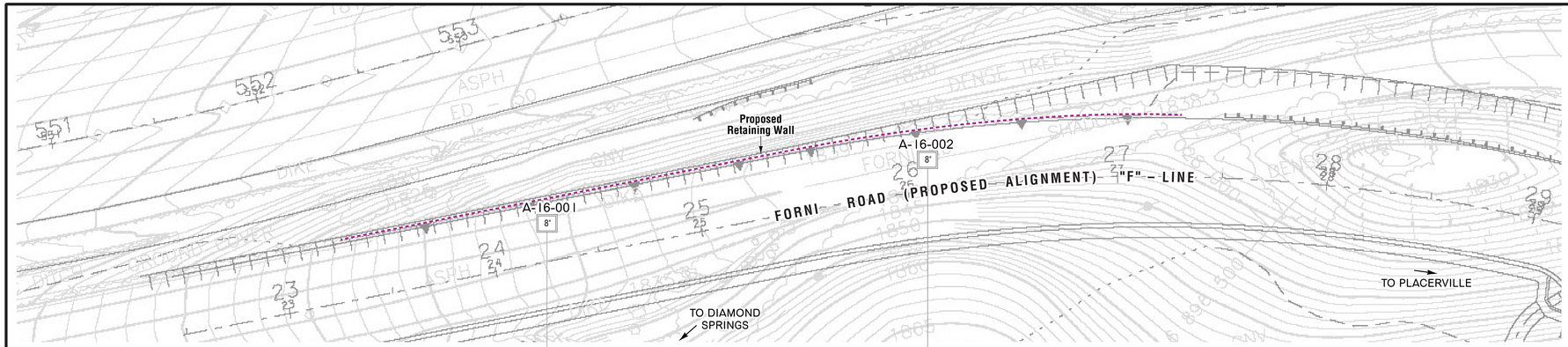
APPENDIX C

LOG OF TEST BORING (LOTB) SHEETS

FOR

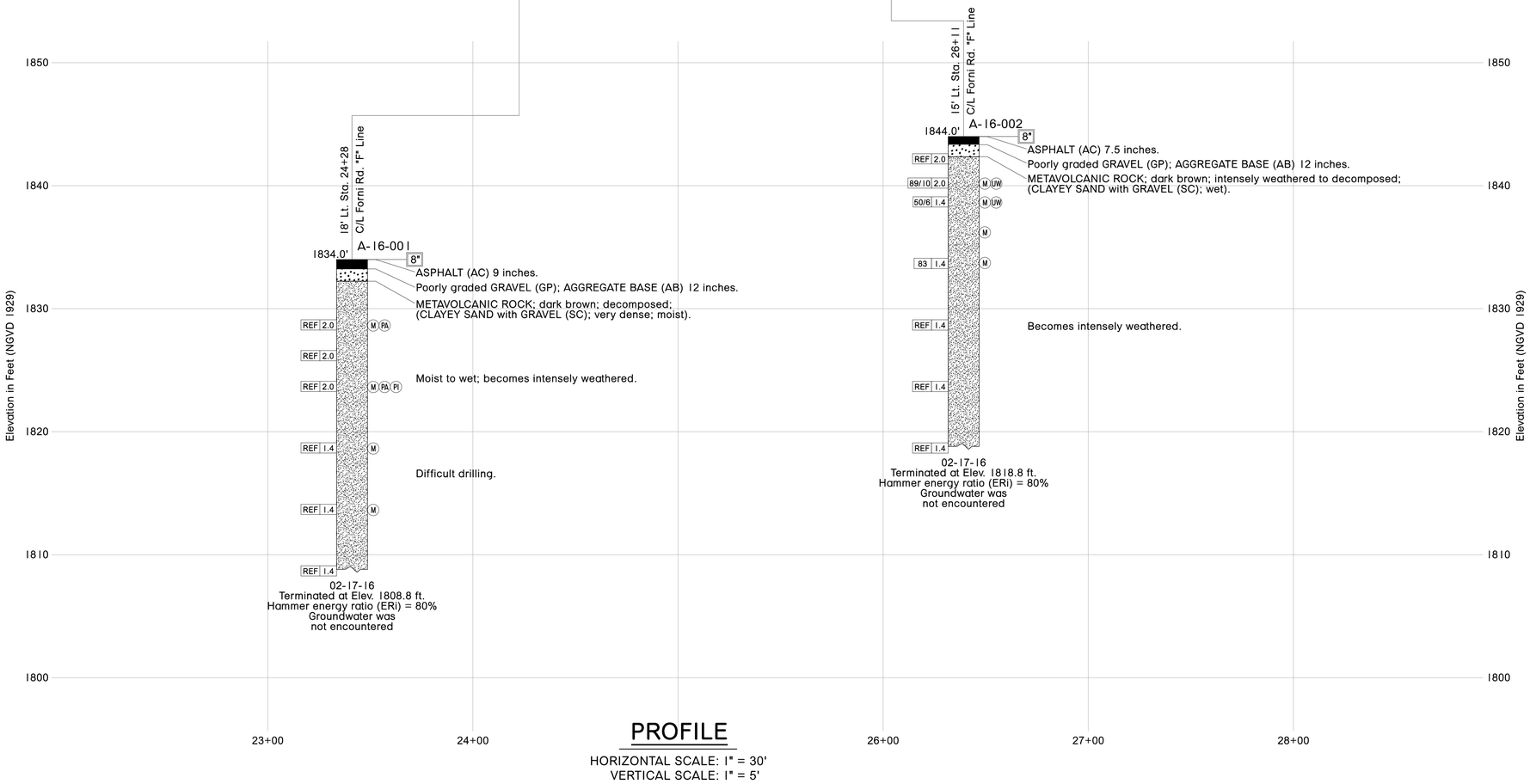
WESTERN PLACERVILLE INTERCHANGE PHASE 2 PROJECT
PLACERVILLE, CALIFORNIA

PROJECT NO. S9420-05-04



PLAN

1" = 30'



PROFILE

HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 5'

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
03	ED	50	16.0 - 16.6		

REGISTERED PROFESSIONAL ENGINEER

JEREMY JACOB ZORNE
No. GE2636
GEOTECHNICAL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

11/2/16
PLANS APPROVAL DATE

The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

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PHONE 916.852.9118 - FAX 916.852.9132

Geocon Project No. S9420-05-04

This LOTB sheet was prepared in accordance with the Caltrans Soil & Rock Logging, Classification, and Presentation Manual (2010).

BENCH MARK

DESCRIPTION

Set Berntsen Spike V205 located at N2027792.376 E6896099.564, elevation 1,816.42 feet, NGVD 1929, per sheet SC-1 of undated "Survey Control" 65% plan provided by Dokken Engineering.

NOTES:

1. The consistency/apparent density descriptions are from Figures 2-9 and 2-10 of the Caltrans "Soil and Rock Logging, Classification, and Presentation Manual". These descriptors are based upon the Standard Penetration Test (ASTM D 1586) and split spoon sampling method (ASTM D 3550). The descriptors based on the split-spoon method have been modified by the utilization of the Burmister's (1948) input energy correction equation and NAVFAC DM 7.1.

2. Relatively undisturbed soil samples were obtained by driving a 2.5-inch outside diameter, with a 2-inch inside diameter (Standard California) split-spoon sampler for split-spoon sampling methods and a 2-inch outside diameter split-spoon sampler for Standard Penetration Test Sampling Methods.

3. The boring logs and related information represent the opinion of the professional engineer as to the character of the material at the locations shown. Soil and groundwater conditions between adjacent test holes and at other locations may differ from those shown. Groundwater conditions may change with passage of time.

4. Test boring locations were determined in the field based on staking and pacing from mapped site features. The locations of the explorations should be considered accurate only to the degree implied by the measuring methods used.

5. A downhole 140-pound automatic hammer falling 30 inches was used to drive samplers.

6. Visual classification of earth materials was based on field inspection and was confirmed or revised with laboratory test results.

ENGINEERING SERVICES		GEOTECHNICAL SERVICES	PREPARED FOR THE	DIVISION OF ENGINEERING SERVICES	BRIDGE NO.	WESTERN PLACERVILLE INTERCHANGE
FUNCTIONAL SUPERVISOR	DRAWN BY: D. HANSEN	FIELD INVESTIGATION BY:	STATE OF CALIFORNIA	STRUCTURE DESIGN		
NAME:	CHECKED BY: R. LOUTZENHISER	R. CHURCH	DEPARTMENT OF TRANSPORTATION	DESIGN BRANCH	POST MILES	LOG OF TEST BORINGS (1 OF 3)

OGS CIVIL LOG OF TEST BORINGS SHEET

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

CU
EA

DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES

SHEET OF

REFERENCE: CALTRANS SOIL & ROCK LOGGING, CLASSIFICATION, AND PRESENTATION MANUAL (JUNE 2010)

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
05	ED	50	16.0 - 16.6		

REGISTERED PROFESSIONAL ENGINEER

JEREMY JACOB ZORNE
No. GE2636
GEOTECHNICAL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

PLANS APPROVAL DATE

The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

GEOCON CONSULTANTS, INC.
3160 GOLD VALLEY DR - SUITE 800 - RANCHO CORDOVA, CA 95742
PHONE 916.852.9118 - FAX 916.852.9132

Geocon Project No. S9420-05-04

CEMENTATION

Description	Criteria
Weak	Crumbles or breaks with handling or little finger pressure.
Moderate	Crumbles or breaks with considerable finger pressure.
Strong	Will not crumble or break with finger pressure.

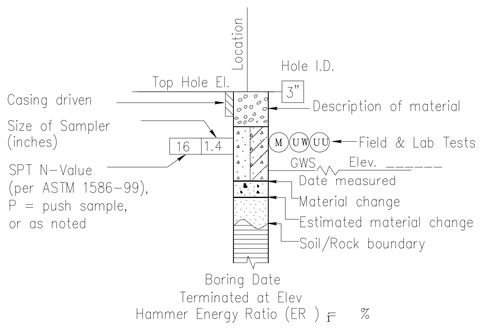
BOREHOLE IDENTIFICATION

Symbol	Hole Type	Description
Size	A	Auger Boring
Size	R P	Rotary drilled boring Rotary percussion boring (air)
Size	R	Rotary drilled diamond core
Size	HD HA	Hand driven (1-inch soil tube) Hand Auger
◉	D	Dynamic Cone Penetration Boring
▲	CPT	Cone Penetration Test (ASTM D 5778-95)
□	O	Other

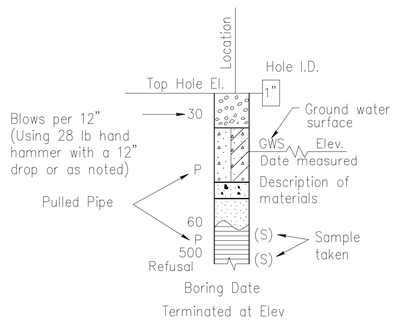
Note: Size in inches.

CONSISTENCY OF COHESIVE SOILS

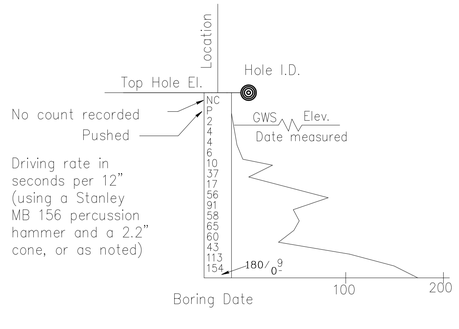
Description	Shear Strength (tsf)	Pocket Penetrometer Measurement, PP, (tsf)	Torvane Measurement, TV, (tsf)	Vane Shear Measurement, VS, (tsf)
Very Soft	Less than 0.12	Less than 0.25	Less than 0.12	Less than 0.12
Soft	0.12 – 0.25	0.25 – 0.5	0.12 – 0.25	0.12 – 0.25
Medium Stiff	0.25 to 0.5	0.5 – 1	0.25 – 0.5	0.25 – 0.5
Stiff	0.5 – 1	1 – 2	0.5 – 1	0.5 – 1
Very Stiff	1 – 2	2 – 4	1 – 2	1 – 2
Hard	Greater than 2	Greater than 4	Greater than 2	Greater than 2



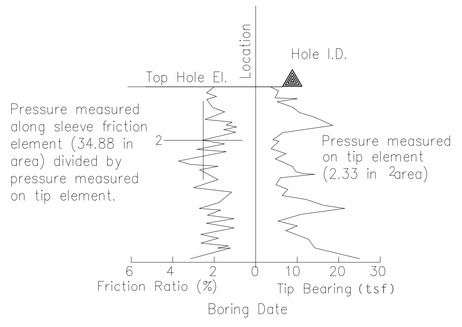
ROTARY BORING



HAND BORING



DYNAMIC CONE PENETRATION BORING



CONE PENETRATION TEST (CPT) SOUNDING

ENGINEERING SERVICES	GEOTECHNICAL SERVICES	PREPARED FOR THE	DIVISION OF ENGINEERING SERVICES	BRIDGE NO.	WESTERN PLACERVILLE INTERCHANGE
FUNCTIONAL SUPERVISOR	DRAWN BY: D. HANSEN	STATE OF CALIFORNIA	STRUCTURE DESIGN	POST MILES	LOG OF TEST BORINGS (2 OF 3)
NAME:	CHECKED BY: R. LOUTZENHISER	DEPARTMENT OF TRANSPORTATION	DESIGN BRANCH		
OGS CIVIL LOG OF TEST BORINGS SHEET	FIELD INVESTIGATION BY: R. CHURCH	ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3	CU EA 0E1501	DISREGARD PRINTS BEARING EARLIER REVISION DATES →	REVISION DATES / SHEET / OF

REFERENCE: CALTRANS SOIL & ROCK LOGGING, CLASSIFICATION, AND PRESENTATION MANUAL (JUNE 2010)

GROUP SYMBOLS AND NAMES

Graphic/Symbol	Group Names	Graphic/Symbol	Group Names
GW	Well-graded GRAVEL Well-graded GRAVEL with SAND	CL	Lean CLAY Lean CLAY with SAND Lean CLAY with GRAVEL SANDY lean CLAY SANDY lean CLAY with GRAVEL GRAVELLY lean CLAY GRAVELLY lean CLAY with SAND
GP	Poorly graded GRAVEL Poorly graded GRAVEL with SAND		
GW-GM	Well-graded GRAVEL with SILT Well-graded GRAVEL with SILT and SAND	CL-ML	SILTY CLAY SILTY CLAY with SAND SILTY CLAY with GRAVEL SANDY SILTY CLAY SANDY SILTY CLAY with GRAVEL GRAVELLY SILTY CLAY GRAVELLY SILTY CLAY with SAND
GW-GC	Well-graded GRAVEL with CLAY (or SILTY CLAY) Well-graded GRAVEL with CLAY and SAND (or SILTY CLAY and SAND)		
GP-GM	Poorly graded GRAVEL with SILT Poorly graded GRAVEL with SILT and SAND	ML	SILT SILT with SAND SILT with GRAVEL SANDY SILT SANDY SILT with GRAVEL GRAVELLY SILT GRAVELLY SILT with SAND
GP-GC	Poorly graded GRAVEL with CLAY (or SILTY CLAY) Poorly graded GRAVEL with CLAY and SAND (or SILTY CLAY and SAND)		
GM	SILTY GRAVEL SILTY GRAVEL with SAND	OL	ORGANIC lean CLAY ORGANIC lean CLAY with SAND ORGANIC lean CLAY with GRAVEL SANDY ORGANIC lean CLAY SANDY ORGANIC lean CLAY with GRAVEL GRAVELLY ORGANIC lean CLAY GRAVELLY ORGANIC lean CLAY with SAND
GC	CLAYEY GRAVEL CLAYEY GRAVEL with SAND		
GC-GM	SILTY, CLAYEY GRAVEL SILTY, CLAYEY GRAVEL with SAND	OL	ORGANIC SILT ORGANIC SILT with SAND ORGANIC SILT with GRAVEL SANDY ORGANIC SILT SANDY ORGANIC SILT with GRAVEL GRAVELLY ORGANIC SILT GRAVELLY ORGANIC SILT with SAND
SW	Well-graded SAND Well-graded SAND with GRAVEL		
SP	Poorly graded SAND Poorly graded SAND with GRAVEL	CH	Fat CLAY Fat CLAY with SAND Fat CLAY with GRAVEL SANDY fat CLAY SANDY fat CLAY with GRAVEL GRAVELLY fat CLAY GRAVELLY fat CLAY with SAND
SW-SM	Well-graded SAND with SILT Well-graded SAND with SILT and GRAVEL		
SW-SC	Well-graded SAND with CLAY (or SILTY CLAY) Well-graded SAND with CLAY and GRAVEL (or SILTY CLAY and GRAVEL)	MH	Elastic SILT Elastic SILT with SAND Elastic SILT with GRAVEL SANDY elastic SILT SANDY elastic SILT with GRAVEL GRAVELLY elastic SILT GRAVELLY elastic SILT with SAND
SP-SM	Poorly graded SAND with SILT Poorly graded SAND with SILT and GRAVEL		
SP-SC	Poorly graded SAND with CLAY (or SILTY CLAY) Poorly graded SAND with CLAY and GRAVEL (or SILTY CLAY and GRAVEL)	OH	ORGANIC fat CLAY ORGANIC fat CLAY with SAND ORGANIC fat CLAY with GRAVEL SANDY ORGANIC fat CLAY SANDY ORGANIC fat CLAY with GRAVEL GRAVELLY ORGANIC fat CLAY GRAVELLY ORGANIC fat CLAY with SAND
SM	SILTY SAND SILTY SAND with GRAVEL		
SC	CLAYEY SAND CLAYEY SAND with GRAVEL	OH	ORGANIC elastic SILT ORGANIC elastic SILT with SAND ORGANIC elastic SILT with GRAVEL SANDY ORGANIC elastic SILT SANDY ORGANIC elastic SILT with GRAVEL GRAVELLY ORGANIC elastic SILT GRAVELLY ORGANIC elastic SILT with SAND
SC-SM	SILTY, CLAYEY SAND SILTY, CLAYEY SAND with GRAVEL		
PT	PEAT	OL/OH	ORGANIC SOIL ORGANIC SOIL with SAND ORGANIC SOIL with GRAVEL SANDY ORGANIC SOIL SANDY ORGANIC SOIL with GRAVEL GRAVELLY ORGANIC SOIL GRAVELLY ORGANIC SOIL with SAND
	COBBLES COBBLES and BOULDERS BOULDERS		

FIELD AND LABORATORY TESTING

- (C) Consolidation (ASTM D 2435)
- (CL) Collapse Potential (ASTM D 5333)
- (CP) Compaction Curve (CTM 216)
- (CR) Corrosivity Testing (CTM 643, CTM 422, CTM 417)
- (CU) Consolidated Undrained Triaxial (ASTM D 4767)
- (DS) Direct Shear (ASTM D 3080)
- (EI) Expansion Index (ASTM D 4829)
- (M) Moisture Content (ASTM D 2216)
- (OC) Organic Content–% (ASTM D 2974)
- (P) Permeability (CTM 220)
- (PA) Particle Size Analysis (ASTM D 422)
- (PI) Plasticity Index (AASHTO T 90)
Liquid Limit (AASHTO T 89)
- (PL) Point Load Index (ASTM D 5731)
- (PM) Pressure Meter
- (R) R-Value (CTM 301)
- (SE) Sand Equivalent (CTM 217)
- (SG) Specific Gravity (AASHTO T 100)
- (SL) Shrinkage Limit (ASTM D 427)
- (SW) Swell Potential (ASTM D 4546)
- (UC) Unconfined Compression–Soil (ASTM D 2166)
Unconfined Compression–Rock (ASTM D 2938)
- (UU) Unconsolidated Undrained Triaxial (ASTM D 2850)
- (UW) Unit Weight (ASTM D 4767)

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
05	ED	50	16.0 - 16.6		

REGISTERED PROFESSIONAL ENGINEER

JEREMY JACOB ZORNE
No. GE2636
GEOTECHNICAL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

PLANS APPROVAL DATE

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GEOCON CONSULTANTS, INC.
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PHONE 916.852.9118 - FAX 916.852.9132

Geocon Project No. S9420-05-04

APPARENT DENSITY OF COHESIONLESS SOILS

Description	SPT N_{60} (Blows / 12 inches)
Very loose	0 – 5
Loose	5 – 10
Medium Dense	10 – 30
Dense	30 – 50
Very Dense	Greater than 50

MOISTURE

Description	Criteria
Dry	No discernable moisture
Moist	Moisture present, but no free water
Wet	Visible free water

PERCENT OR PROPORTION OF SOILS

Description	Criteria
Trace	Particles are present but estimated to be less than 5%
Few	5% – 10%
Little	15% – 25%
Some	30% – 45%
Mostly	50% – 100%

PARTICLE SIZE

Description		Size (in.)
Boulder		Greater than 12
Cobble		3 – 12
Gravel	Coarse	3/4 – 3
	Fine	1/5 – 3/4
Sand	Coarse	1/16 – 1/5
	Medium	1/64 – 1/16
	Fine	1/300 – 1/64
Silt and Clay		Less than 1/300

ENGINEERING SERVICES	GEOTECHNICAL SERVICES	PREPARED FOR THE	DIVISION OF ENGINEERING SERVICES	BRIDGE NO.	WESTERN PLACERVILLE INTERCHANGE
FUNCTIONAL SUPERVISOR NAME:	DRAWN BY: D. HANSEN CHECKED BY: R. LOUTZENHISER	FIELD INVESTIGATION BY: R. CHURCH	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	STRUCTURE DESIGN DESIGN BRANCH	POST MILES	LOG OF TEST BORINGS (3 OF 3)
OGS CIVIL LOG OF TEST BORINGS SHEET	ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3	CU EA 0E1501		DISREGARD PRINTS BEARING EARLIER REVISION DATES →	REVISION DATES	SHEET OF

APPENDIX D

APPENDIX D

CALTRANS COMMENTS AND RESPONSES

FOR

WESTERN PLACERVILLE INTERCHANGE PHASE 2 PROJECT
PLACERVILLE, CALIFORNIA

PROJECT NO. S9420-05-04

Office of Geotechnical Engineering
Comment & Response Form

(Revised 10/21/09)

General Project Information (OSFP Liaison to complete)	**Review Phase** (OSFP Liaison to complete)	**Reviewer Information** (Reviewer Liaison to complete)
Dist: EA: 03-37281 (E-Fis 0314000301) **Project Name: Western Placerville Interchange Phase II** **Senior Engineer: _____** **Phone: _____** **e-mail:** ***xxxxx@dot.ca.gov***	**__ PSR/PDS (Review No.__)** **__ APS/PSR (Review No.__)** **__ APS/PR (Review No.__)** **__ Type Selection** **_X_ 65% PS&E Unchecked Details** **__ PS&E (Review No _)** **__ Construction** **__ Other:**	**Reviewer Name: Fernando De Haro** **Functional Unit: 3657** **Cost Center: 059** **Phone Number: 916-227-1069** **e-mail: *Fernando.de.haro@dot.ca.gov*** **Date of Review: 08/04/2016** **Structure Name*:_____** **Br No*: _____** (*Use if necessary to when comment sheets are by individual structure)

Consultant Information (to be filled in by Consultant)

Consulting Company Lead (First and Last Name)	**Consulting Company Name**	**Phone Number**	**e-mail**	**Response Date**
Ronald Loutzenhiser	**Geocon**	**(916) 852-9132**		

#	Doc./ Page (See Note 1)	Section	Reviewer Comments	Consultant Responses	✓
1	GDR Page 8	5.3	It states that 6-inh hollow-stem augers were used. The LOTBs and Boring records show 8 inches. Make proper corrections.	The report text has been revised.	
2	GDR Page 19	8.4	Third Paragraph – It mentions that a maximum toe pressure of 3,200 psf is considered appropriate… Include the Retaining Wall foundation loading information and present the loads in a table format as required per Memo To Designers 4-1.	We have presented the foundation information per the table format in "Foundation Reports for Earth Retaining Systems" (August 2015).	

Note 1: Abbreviations for Typical Documents (if Abbr. is not below, type in the document type)					
P=Structure Plans	SP=Special Provisions	FR=Foundation Rpt	DC=Design Calcs	TS=Type Sel. Report	FWP = Falsework Plans
RP=Road Plans	E=Estimate	H=Hydraulics Rpt	CC=Check Calcs	QC=Quant. Calcs	FWC = Falsework Calcs.

✓= Comment Resolved
(for Reviewer's use)

Submittal Data (Reviewer to complete)

Dist-EA:03-37281 E-FIS#:0314000301 Reviewer: Fernando De Haro Str Name: _____

Date of Review: 07/28/16 Functional Unit: 3657 Br No. _____

3	GDR	Appendix A	It states that the boring records were prepared in accordance with the 2010 Soil Logging Manual. The following items are not in accordance with the soil logging manual: A) Borehole Location information - Section 5.2.3.4 B) Borehole Identification names – Section 2.4 C) Hammer Efficiency is missing - Section 5.2.3.4 D) Key Sheet for the sample symbols - Section 5.2.3.1 E) Rock description - Section 2.6 Make proper corrections.	The Boring Records have been revised.	
4	LOTB	LOTB Sheet 1 of 3	A) The signature block shows District 05. It should be 03. B) For the borehole location, add “F” Line to C/L Forni Road. Make proper corrections.	The LOTB has been revised.	
5	LOTB	Sheet 1 of 3	The presented blow counts in the LOTBs don’t match the information presented in the Boring Records. Boring records show “REF”. Make proper corrections.	The LOTB has been revised	
6	LOTB	Sheet 1 of 3	The LOTBs show ID = 2.0 for the Mod. Cal. It should be 2.4 inches. Make proper corrections.	The LOTB note has been revised.	
7	LOTB	Sheet 1 of 3	Note 1 mentions that the soil consistency and apparent density descriptors are based on the SPT uncorrected hammer energy ratio. The soil logging manual requires these descriptors be based on the N_{60} values – Section 2.5. Make proper corrections.	The LOTB note has been revised.	
8	LOTB	Sheet 1 of 3	Note 4 mentions that borehole elevations are approximate based on the topographic base map. Boreholes are to be surveyed as required in Section 5.23.3.d of the Soil Logging Manual. If the boreholes were surveyed, remove note 4.	The LOTB note has been removed.	
9			Submit an electronic copy of the GDR.		

ATTACHMENT 13

Western Placerville Interchange Project - Phase 2
Placerville, El Dorado County, California

Drainage Report

Prepared for:

Prepared by:

August 2017

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Western Placerville Interchange Project - Phase 2
Placerville, El Dorado County, California

Drainage Report

Submitted to:
Dokken Engineering

This report has been prepared by or under the supervision of the following Registered Engineer. The Registered Civil Engineer attests to the technical information contained herein and has judged the qualifications of any technical specialists providing engineering data upon which recommendations, conclusions, and decisions are based.

Chris Sewell, P.E.
Registered Civil Engineer

08/02/2017
Date

August 2017

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Table of Contents

Executive Summary iii
Acronyms iv
1 General Description 1
1.1 Purpose of Study 1
1.2 Project Description 1
1.3 Need for Project 4
1.4 Reference Documents 4
1.4.1 Layout Sheets 4
1.4.2 Geographical References 4
1.5 Soil Characteristics 4
1.6 Land Use 5
1.7 Creeks, Streams, and River Crossings 5
1.8 Existing Drainage and Drainage Design Issues 6
1.9 Drainage Design Criteria 6
1.10 Agencies Impacting Design 6
2 Offsite Hydrology 7
2.1 Watershed and Basin Characteristics 7
2.2 Rainfall Data and Intensities 7
2.3 Estimating Design Discharge 7
2.3.1 Stormdrain Pipe Design 7
2.3.2 Detention/Treatment Basin Design 7
2.4 Points of Concentration and Outfalls 9
3 Offsite Hydraulics 10
3.1 Culvert Material 10
3.2 Ditch Design 10
3.3 Inlet and Outlet Treatment and Energy Dissipation 10
4 On-site Roadway Drainage 11
4.1 Design Tools 11
4.2 Recurrence Interval 11
4.3 Grate Interception and Gutter Capacity 11
4.4 Stormwater Best Management Practices 11
5 Floodplain Information 13
6 Cost Estimate 14
7 References 15

Figures

Figure 1. Project Location Map 2
Figure 2. Project Vicinity Map 3
Figure 3. Project Land Use Map 5

Appendices

Appendix A Web Soil Survey Data
Appendix B HEC-HMS Model & Output
Appendix C Rainfall Data
Appendix D Proposed Watershed Map
Appendix E Hydraflow Storm Sewers Output
Appendix F Drainage Inlet Calculations
Appendix G Flood Insurance Rate Maps
Appendix H Ditch Capacity Calculations
Appendix I Cost Estimate Spreadsheet

EXECUTIVE SUMMARY

The City of Placerville (City) proposes to realign and widen Forni Road and construct a park and ride facility between Forni Road and US 50. The existing bike path will be re-routed along Forni Road to accommodate the proposed design and future development. The City proposes to construct a new eastbound off-ramp on US 50 at Ray Lawyer Drive. The proposed design necessitates the implementation of a detention/infiltration basin to reduce peak flow below pre-project conditions and treat the stormwater from the added and reworked impervious surface area.

The purpose of this report is to analyze the existing and proposed on- and off-site hydrology and hydraulics. The hydrologic and hydraulic analyses performed were in accordance to the design criteria set forth by the California Department of Transportation (Caltrans). The Project will maintain the overall existing drainage pattern of the area and treat all runoff from added impervious surface to the maximum extent practicable (MEP).

The proposed drainage design will meet the City's and El Dorado County's criteria and utilize City, County and Caltrans design standards. This report discusses the criteria, geographic and regulatory setting, and background information, and reflects the plans, specifications, and estimate (PS&E) drainage design efforts for the Project.

ACRONYMS

APC	Alternative Pipe Culvert
BMP	Best Management Practice
Caltrans	California Department of Transportation
EC	Erosion Control
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FIRM	Flood Insurance Rate Maps
HDM	Highway Design Manual
HEC-HMS	Hydrologic Engineering Center Hydrologic Modeling System
HEC-22	Hydraulic Engineering Circular Number 22
HSG	Hydrologic Soil Group
IDF	Intensity Duration Frequency
MEP	Maximum Extent Practicable
MS4	Municipal Separate Storm Sewer Systems
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
PS&E	Plans, Specifications & Estimates
USACE	U.S. Army Corps of Engineers
USGS	U.S. Geological Survey
WDR	Waste Discharge Requirement
WPC	Water Pollution Control

1 GENERAL DESCRIPTION

1.1 Purpose of Study

The proposed Western Placerville Interchange Project – Phase 2 (Project) is located within the City limits of Placerville in El Dorado County, California. This Drainage Report describes the existing hydrologic and hydraulic conditions of the drainage systems within the Project limits, presents the proposed drainage improvements, and explains the procedures, methodology, and criteria used in the drainage design and analysis. It also presents unusual aspects of the design that may require special attention.

1.2 Project Description

The City of Placerville proposes an eastbound direct access from US Route 50 (US 50) onto Ray Lawyer Drive with an eastbound auxiliary lane between the existing eastbound access ramp at Forni Road in addition to a proposed eastbound off-ramp at Ray Lawyer Drive. Also proposed is a retaining wall along Forni Road, resurfacing of the existing number one lane of mainline US 50 and a park-and-ride facility located between the proposed off-ramp and Forni Road. See Figure 1 and Figure 2 for the Project location map and vicinity map, respectively.

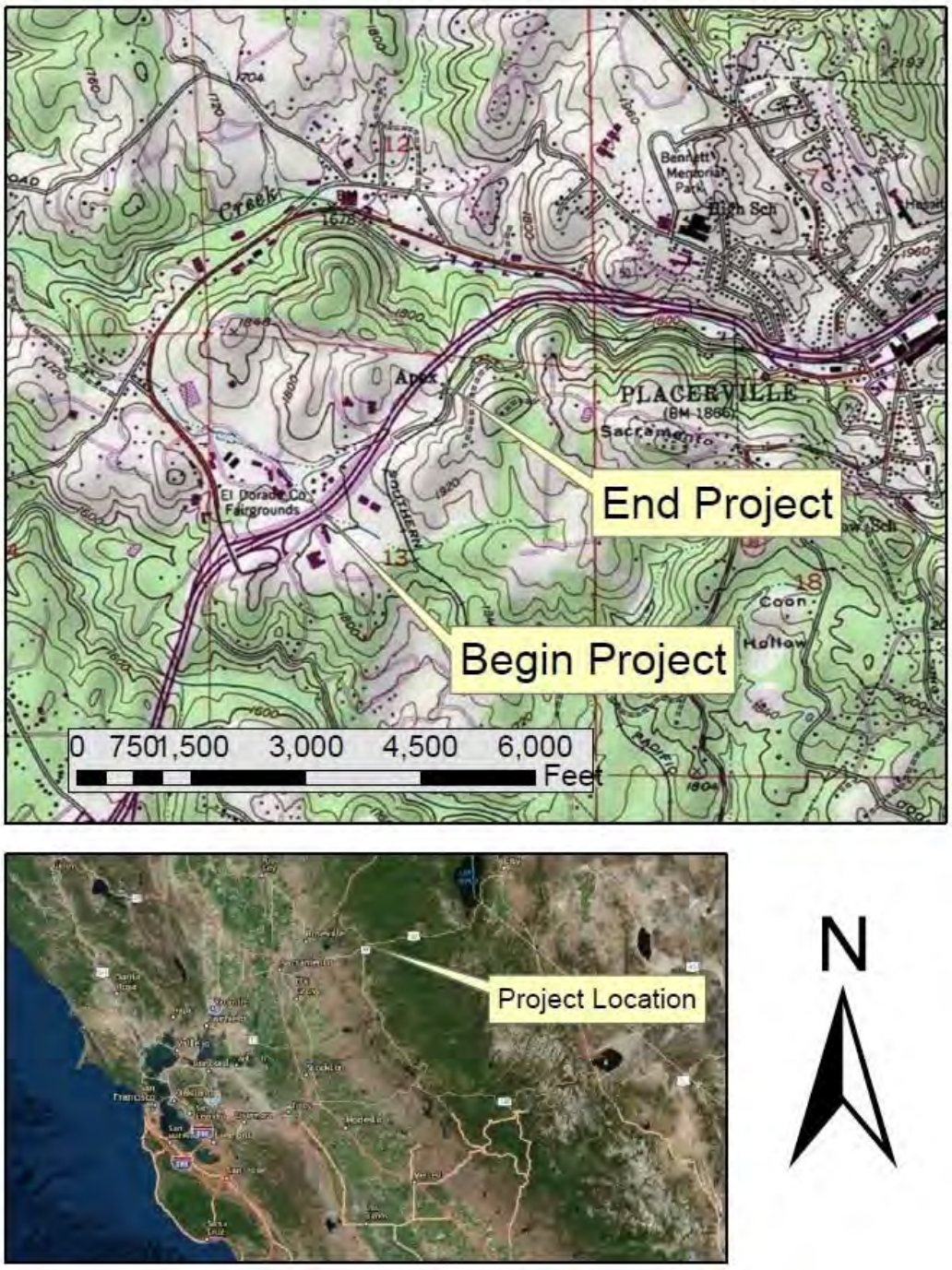

Figure 1. Project Location Map

Source: U.S. Geological Survey

Figure 2. Project Vicinity Map

Source: Google Earth

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1.3 Need for Project

The City of Placerville has determined the need to widen and realign Forni Road, construct an eastbound off-ramp at Ray Lawyer Drive, and improve the existing bike path along Forni Road. The Project will add impervious area and require the use of a detention/treatment basin to reduce peak flows and treat runoff from newly paved areas.

1.4 Reference Documents

1.4.1 Layout Sheets

Dokken Engineering provided proposed roadway geometries, typical cross sections, profiles, and existing drainage information for the Project.

1.4.2 Geographical References

The following geographical references were used:

- Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRMs) for City of Placerville and El Dorado County, California and Unincorporated Areas
- Topographical survey provided by Dokken Engineering

1.5 Soil Characteristics

According to the Natural Resources Conservation Service (NRCS) Web Soil Survey, Boomer gravelly loam accounts for more than half of the soils (slightly less than a third at 3–15% slopes, slightly more than a quarter at 15-30% slopes). Diamond Springs fine sandy loam comprises approximately one-third of the soils. Boomer very rocky loam and Cohasset cobbly loam comprise between 3 and 4% each (at 30-50% and 3-15% slopes respectively). Soil erosion factors are soil properties and interpretation used in evaluating the soil for potential erosion. The erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Values of K range from 0.10 to 0.43. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water. Boomer soils have a K factor of 0.15, which comprise just over 62% of the Project soils. Diamond Springs soils have a K factor of 0.43 and comprise 34.8% of the Project soils. Lastly Cohasset soils have a K factor of 0.10 and comprise only 3.2% of the Project soils. The Web Soil Survey output for the Project area is included in Appendix A.

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wetted, and receive precipitation from long duration storms. Soils are assigned to four groups: A, B, C, and D (in descending order of infiltration rates). Boomer and Diamond Springs soils, which comprise 97% of the Project soils, are classified as being within Hydrologic Soil Group (HSG) C. HSG C soils have a slow infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well-drained or well-drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of

water transmission. Cohasset soils (3.2% of the Project soils) are classified as HSG B soils, and have moderate infiltration when thoroughly wet. HSG data for the project site can also be found in Appendix A.

More detailed soils information may be found in the Project specific Geotechnical Design Report (GEOCON 2016).

1.6 Land Use

The area surrounding the Project has land use designations of Public Facilities (County Jail and City Hall), Business and Professional, Commercial, Highway Commercial, Rural Residential, Low Density Residential and High Density Residential based on the El Dorado County's GOTNET GIS web-based parcel inquiry. Figure 3 shows a screenshot of the GOTNET web view encompassing the Project limits.

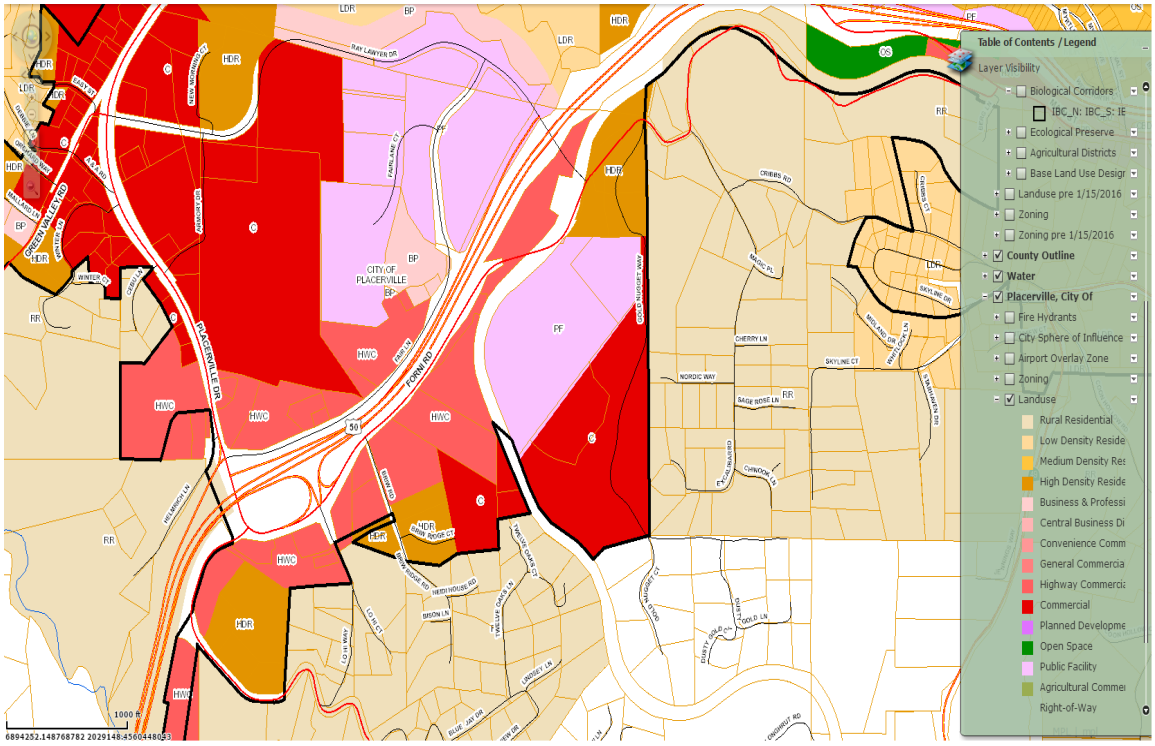

Figure 3. Project Land Use Map

Source: El Dorado County

1.7 Creeks, Streams, and River Crossings

The Project is located between Hangtown Creek to the north and Weber Creek to the south. The runoff from the Project drains to two channels, both of which cross US 50 and flow northwest to Hangtown Creek, upstream of the confluence of Weber Creek and Hangtown Creek. From the confluence Weber Creek flows west-northwest until it discharges into the South Fork American River (7.5 miles away) just upstream of Folsom Lake.

1.8 Existing Drainage and Drainage Design Issues

The existing drainage systems within the Project limits consist of curb and gutter collection, underground pipe culverts, corrugated metal pipe riser inlets, flared end sections, and one detention basin to collect stormwater and reduce peak flows.

1.9 Drainage Design Criteria

The drainage design criteria for the Project follows Caltrans' *Highway Design Manual* (HDM) guidelines for stormwater management along the new Ray Lawyer Drive off-ramp, as well as along Ray Lawyer Drive and Forni Road. The Rational Method was used to calculate runoff flowrates for storm drain system design. The design criteria also required a reduction in peak flows at Junctions 1 and 4 to levels equal to or below pre-Project conditions. Erosion Control (EC), Water Pollution Control (WPC), and stormwater best management practices (BMPs) shall be used to control erosion and water pollution (sediment and pavement runoff) during construction and post-construction runoff events to mitigate the adverse impacts of the Project.

The contract documents identify most of the new and replaced culverts as alternative pipe culverts (APC) rather than specifying particular pipe materials. This allows the Contractor the ability to choose the appropriate material from a list of allowable materials recommended by the Project geotechnical engineer. The acceptable APC materials for the Project are specified on Project plan sheet DQ-1, the first page of the Project drainage quantity sheets. Pipe joint types are standard or positive for new culverts placed under the roadway, with watertight joints specified for downdrains and welded steel pipe for retaining wall drains.

1.10 Agencies Impacting Design

The Project is located in the City of Placerville in El Dorado County, California. Drainage improvements proposed along Forni Road and those in the Project scope will conform to the local agencies' requirements.

The Project is under the jurisdiction of these agencies:

- City of Placerville
- Caltrans
- El Dorado County
- Other potential agencies include, but are not limited to, the Central Valley Regional Water Quality Control Board (CVRWQCB)

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2 OFFSITE HYDROLOGY

2.1 Watershed and Basin Characteristics

This site is located within the USGS/NRCS Hydrologic Unit Code 18020129, which is in the South Fork American River watershed. Approximately one third of the offsite watersheds have rural residential land use on 9-15% slopes. Half of the watersheds have little to no development, split in half by slopes of 3-15% and 15-30%. The rest of the offsite watersheds are medium density commercial development on 3-15% slopes.

2.2 Rainfall Data and Intensities

NOAA Atlas 14 rainfall data from the precipitation gage nearest and most similar to the Project site's climate was used to generate Point Precipitation Frequency Estimates and develop intensity-duration-frequency (IDF) curves. The calculations for the Point Precipitation Frequency Estimates can be found in Appendix C.

2.3 Estimating Design Discharge

2.3.1 Stormdrain Pipe Design

Travel time calculations outlined in the Caltrans' HDM were used to determine total offsite time of concentrations and to select an appropriate storm duration and rainfall intensity. Drainages with large off-site watershed areas tend to have travel times greater than paved area travel times therefore increasing design storm duration and reducing the design rainfall intensity. In the case that the travel time was less than the Caltrans' minimum recommended time of concentration value, the Caltrans; recommended value was used.

2.3.2 Detention/Treatment Basin Design

The U.S. Army Corps of Engineers' (USACE's) Hydrologic Engineering Center Hydrologic Modeling System (HEC-HMS) program, version 3.5 was used to develop a hydrological model of the pre-project and post-project conditions for the 10-year, 25-year, and 100-year design storms. HEC-HMS calculates watershed runoff by breaking the watershed into a series of subbasins, reaches, junctions, and reservoirs. Results from the HEC-HMS analysis are included in Appendix B.

The following methods and components in HEC-HMS were used:

- SCS Curve Number as the loss method
- SCS Unit Hydrograph as the transform method
- Type 1A 3-hour and 24-hour rainfall distribution for the meteorological model
- Elevation-Storage Function for detention basin storage

The subbasin flow rate depends on the amount of time it takes for runoff to reach the basin collection point. According to the HDM, the travel time of the runoff is the sum of

three travel times: 1) sheet flow; 2) shallow concentrated flow; and 3) channel flow. Sheet flow was estimated based on the equation below.

$$T_{sf} = \left(\frac{.007 L^{4/5} n^{4/5}}{P_2^{1/2} s^{2/5}} \right)$$

Where:

T_{sf} = sheet flow travel time (minutes)
n = Manning's roughness coefficient
L = length of overland flow (ft)
P_2 = length of overland flow (ft)
s = slope of surface (ft/ft)

The shallow concentrated velocity was used to calculate the travel time of that flow regime. The equations below are used to calculate the velocity and the travel time.

$$V = 3.28 k S^{1/2}$$

Where:

V = velocity (ft/s)
k = land cover dependent intercept coefficient
S = slope of surface (percent)

$$T_{sc} = \frac{L}{60V}$$

Where:

T_{sc} = travel time for shallow concentrated flow
L = length of overland flow (ft)
V = velocity (ft/s)

Channel flow velocity may be calculated from Manning's equation (below). Channel flow time may be calculated in the same manner as shallow concentrated flow using the above equation for travel time.

$$V = \frac{1.486}{n} R^{2/3} s^{1/2}$$

Where:

V = velocity (ft/s)
n = Manning's roughness coefficient
R = hydraulic radius (ft)

s = slope of surface (ft/ft)

The detention basin was modeled with an elevation-storage relationship based on area measurements taken from theproposed grading design. The outflow structures, which include an orifice outlet, a riser outlet, and an overflow spillway were user defined in the model with their associated dimensions. The outlet structures' dimensions and elevations were adjusted to ensure peak flows did not exceed pre-project levels at Junctions 1 and 4 and to meet stormwater treatment requirements.

2.4 Points of Concentration and Outfalls

According to the Project site information provided by Dokken Engineering, there are two locations within the Project vicinity where the increase of concentrated stormwater runoff should be prevented. These are identified as "Junction 1" and "Junction 4" in the hydrologic model (see Figure 2). The detention basin between the eastbound lanes of US 50 and the eastbound off-ramp at Ray Lawyer Drive is proposed to reduce the peak post-Project design flows at Junctions 1 and 4 under pre-Project peak flows.

There is an existing pipe that drains the Ray Lawyer Drive overcrossing, which outfalls on the east side of Ray Lawyer Drive and the south side of US 50. The inlet will be adjusted to the proposed grade, and the new outfall will be a tee structure with riprap to minimize the risk of erosion at the outfall. See Appendix D for the proposed watershed maps.

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3 OFFSITE HYDRAULICS

3.1 Culvert Material

Culvert material shall follow Caltrans standards for APC material. Some drainage systems will use pipe materials which match the existing pipes to provide ease of construction in joining pipes and to select the appropriate pipe material application.

3.2 Ditch Design

Ditches were placed at the toe of unpaved slopes or where manmade channels were part of the proposed grading. The larger ditches, and those in the manmade channels, are to be lined with hot mix asphalt. The smaller ditches are to be constructed of reinforced concrete. The flow capacity of the ditches was analyzed using Manning's equation to determine normal depth at the design flow. For the ditches within Caltrans' right-of-way the 25-year, 5 minute return precipitation event was used. For those along Forni Road and the proposed park and ride the 10- year, 5 minute event was used. See Appendix H for detailed ditch calculations.

3.3 Inlet and Outlet Treatment and Energy Dissipation

The tailwater constraints were determined based on the plans or through observing outfall conditions of the culverts during field inspections. Specifically, all culverts in the Project were observed to have no tailwater constraint, i.e., to be in a free fall condition at their outlets. The normal depth was assumed as the downstream boundary condition for all cross culverts in the Project that would be in a free fall condition. Significant flow velocities or flow rates at outlets and/or those onto steep grades implement riprap or other energy dissipation measures to reduce the risk of erosion.

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4 ON-SITE ROADWAY DRAINAGE

4.1 Design Tools

Hydraflow 2013 software for closed conduit systems was used for hydraulic analysis of the various drainage facilities. Calculations for spread and inlet capacity were developed using the Federal Highway Administration's (FHWA) *Hydraulic Engineering Circular Number 22* (HEC-22) Guidelines. Hydraflow output with hydraulic grade lines and drainage profiles is included in Appendix E.

4.2 Recurrence Interval

The recurrence interval of the design storm was determined following the Desirable Roadway Drainage Guidelines (Table 831.3) in the HDM. For the drainage design along the Ray Lawyer Drive off-ramp, the 25-year design storm was used. For Forni Road and Ray Lawyer Drive, the 10-year design storm was used. Rainfall intensity curves, as discussed in Section 2.2 above, were used in conjunction with the design recurrence interval to calculate design flows.

4.3 Grate Interception and Gutter Capacity

The method used for calculation of grate inlet interception capacity was based on the FHWA's HEC-22 publication for highway pavement drainage. Allowable water spread referenced Table 831.3 of the HDM. Design water spread along Forni Road and Ray Lawyer Drive was mostly in accordance with the more conservative freeway standards of being contained within the shoulder. The few cases where the spread exceeded the shoulder width were superelevation reversals where the cross-slope prevented a feasible design to keep spread within the shoulder. The spread in these locations was still contained within the half-lane width criterion outlined in Table 831.3. The on-site inlet capacity/spread calculations are included in Appendix F.

4.4 Stormwater Best Management Practices

The Project includes the widening of an existing road without additional traffic lanes, construction of a park and ride facility, and construction of a new freeway off-ramp. Because the Project exceeds 1 acre of land disturbance, it is regulated under Caltrans' State Water Resources Control Board Water Quality Construction General Permit (CGP) Order No. 2009-0009-DWQ (as amended by 2010-0014-DWQ and 2012-006-DWQ). The Project areas within Caltrans' right-of-way must meet the requirements of Caltrans' Permit, Order No. 2012-0011-DWQ, except for the post-construction treatment requirements enacted after the Project Initiation Document phase of the Project was completed. Parts of the Project are also regulated under the City of Placerville's and the El Dorado County's Phase II MS4 under NPDES General Permit No. S000004, Order No. 2013-0001-DWQ. Therefore, the Project must prevent or reduce adverse conditions of stormwater to the maximum extent practicable (MEP), including minimizing added impervious area and utilizing erosion control and construction site BMPs. The Project must also adhere to the hydromodification requirements of the City of Placerville's MS4 permit to propose no increase in downstream flow at selected control points. Bioswales

and basins with amended soils have been proposed as mitigation. Model simulations were conducted to size the detention basin and to ensure that peak design flow at downstream control points will not exceed pre-Project flows. These results can be found in Appendix B.

5 FLOODPLAIN INFORMATION

The FEMA FIRM (Map Number: 06017C0752E effective 9/26/2008) for El Dorado County unincorporated and incorporated areas was reviewed for this Project. The Project is located in the unshaded areas of Zone X on the FIRM, which are outside of the 500-year floodplain. Excerpts of the FIRM covering the Project limits are included in Appendix G.

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6 COST ESTIMATE

The cost estimate of the drainage system is approximately $1,040,000 The erosion control and water pollution control cost estimate is approximately $600,000. Job site management for the drainage construction is estimated to be $10,000. The total of the drainage, erosion, and water pollution control and construction management costs is estimated to be approximately $1,650,000. An itemized breakdown of the costs with Caltrans Cost Data pricing with item codes can be found in Appendix I.

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7 REFERENCES

California Department of Transportation. 2012. *Highway Design Manual, Sixth Edition.*

California Department of Transportation. 2016. Contract Cost Data
< http://sv08data.dot.ca.gov/contractcost/index.php>
(Last accessed: March 31, 2016)

El Dorado County GOTNET page (December 13, 2013 build date)
<http://gem.edcgov.us/gotnet/>
(Last accessed: March 9, 2016)

Federal Emergency Management Agency. (September 26, 2008). *Flood Insurance Rate Map, Panel 0752E of 1125, El Dorado County/City of Placerville.*

GEOCON Consultants, Inc. 2016. *Geotechnical Design Report-Western Placerville Interchange Phase 2 Project Placerville, California.*

Google Earth-Image. (Last accessed: March 09, 2016)

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Appendix A Web Soil Survey Data

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View Soil Information By Use: All Uses

Printable Version | Add to Shopping Cart

Search

Properties and Qualities Ratings

Open All | Close All

- Soil Chemical Properties
- **Soil Erosion Factors**
  - K Factor, Rock Free
  - K Factor, Whole Soil

View Description | View Rating

View Options

Map ☑

Table ☑

Description of Rating ☑

Rating Options ☑

Detailed Description ☐

Advanced Options

Aggregation Method: Dominant Condition

Component Percent Cutoff:

Tie-break Rule: ○ Lower ◉ Higher

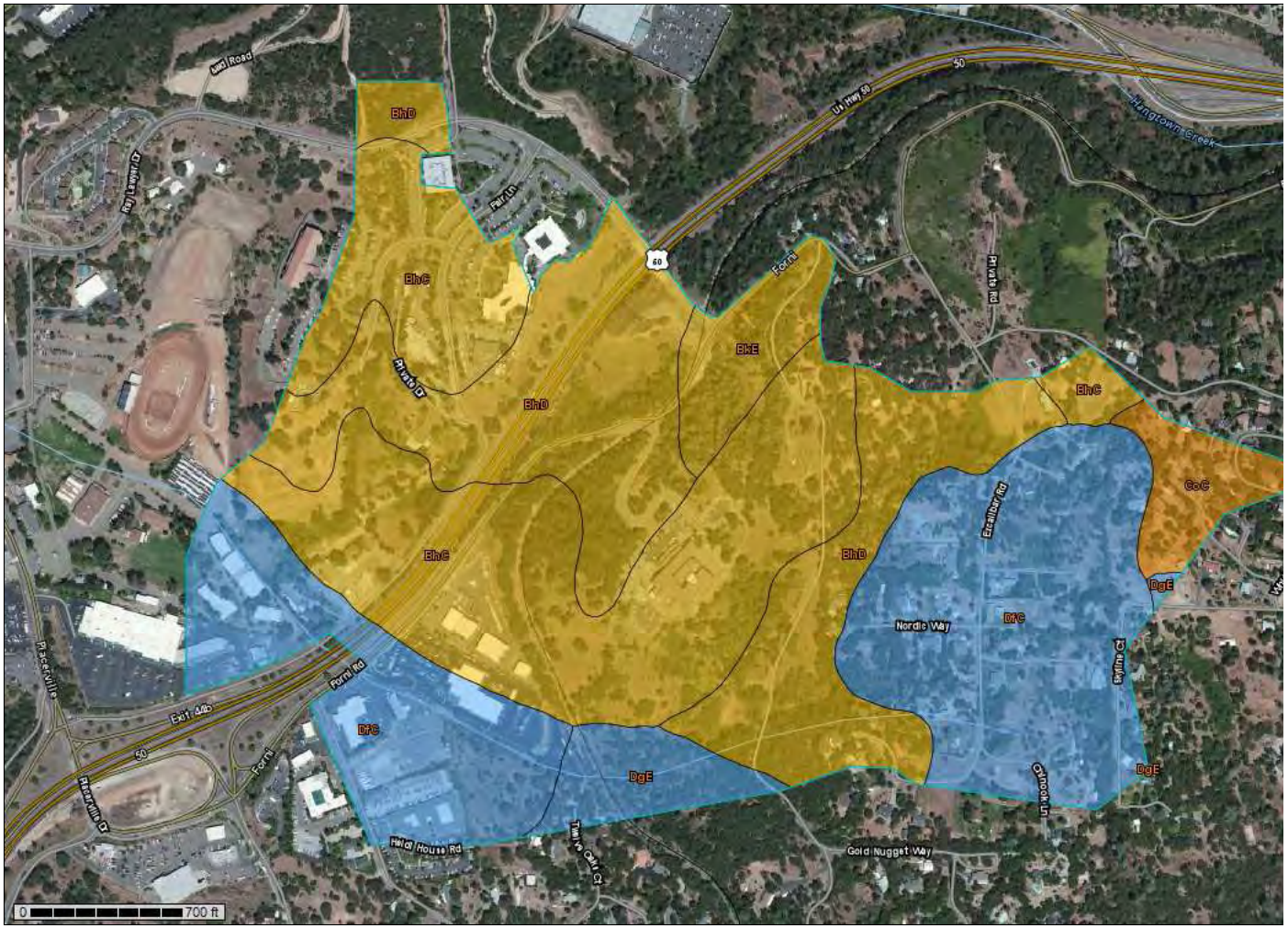
Layer Options (Horizon Aggregation Method):
◉ Surface Layer (Not applicable)
○ Depth Range (Weighted Average)
Top Depth:
Bottom Depth:
◉ Inches ○ Centimeters
○ All Layers (Weighted Average)

View Description | View Rating

  - T Factor
  - Wind Erodibility Group
  - Wind Erodibility Index
- Soil Physical Properties
- Soil Qualities and Features
- Water Features

Map — K Factor, Whole Soil

Scale (not to scale)



Warning: Soil Ratings Map may not be valid at this scale.

You have zoomed in beyond the scale at which the soil map for this area is intended to be used. Mapping of soils is done at a particular scale. The soil your AOI were mapped at 1:20,000. The design of map units and the level of detail shown in the resulting soil map are dependent on that map scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps areas of contrasting soils that could have been shown at a more detailed scale.

Soil Data Available

To see a description of the soil data available for a specific point on the map:

1. Click anywhere in the map. The soil data availability for that point will be shown here.
2. The point you clicked is marked with the identified point icon:
3. To see a map showing soil data availability for all locations in the U.S. and territories, click the **Soil Survey Status** link in the Navigation Bar above.

Tables — K Factor, Whole Soil — Summary By Map Unit

Summary by Map Unit — El Dorado Area, California (CA624)

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
BhC	Boomer gravelly loam, 3 to 15 percent slopes	.15	72.7	31.4%
BhD	Boomer gravelly loam, 15 to 30 percent slopes	.15	62.3	26.9%
BkE	Boomer very rocky loam, 30 to 50 percent slopes	.15	8.9	3.8%
CoC	Cohasset cobbly loam, 3 to 15 percent slopes	.10	7.4	3.2%
DfC	Diamond Springs very fine sandy loam, 9 to 15 percent slopes	.43	72.5	31.3%
DgE	Diamond Springs very rocky very fine sandy loam, 3 to 50 percent slopes	.43	8.1	3.5%
Totals for Area of Interest			**231.8**	**100.0%**

Description — K Factor, Whole Soil

Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and saturated hydraulic conductivity (Ksat). Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

"Erosion factor Kw (whole soil)" indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments.

Rating Options — K Factor, Whole Soil

Aggregation Method: Dominant Condition

Component Percent Cutoff: *None Specified*

Tie-break Rule: Higher

Layer Options (Horizon Aggregation Method): Surface Layer (Not applicable)

Search

Properties and Qualities Ratings

Open All | Close All

- Soil Chemical Properties
- **Soil Erosion Factors**
  - K Factor, Rock Free
  - K Factor, Whole Soil
  - T Factor
  - Wind Erodibility Group
  - Wind Erodibility Index
- Soil Physical Properties
- **Soil Qualities and Features**
  - AASHTO Group Classification (Surface)
  - Depth to a Selected Soil Restrictive Layer
  - Depth to Any Soil Restrictive Layer
  - Drainage Class
  - Frost Action
  - Frost-Free Days
  - Hydrologic Soil Group

View Description | View Rating

View Options

Map ☑

Table ☑

Description of Rating ☑

Rating Options ☑

Detailed Description ☐

Advanced Options

Aggregation Method: Dominant Condition

Component Percent Cutoff:

Tie-break Rule: Lower / Higher

View Description | View Rating

Map Unit Name

Map — Hydrologic Soil Group

Scale (not to scale)

- Parent Material Name
- Representative Slope
- Unified Soil Classification (Surface)
- Water Features

Warning: Soil Ratings Map may not be valid at this scale.

You have zoomed in beyond the scale at which the soil map for this area is intended to be used. Mapping of soils is done at a particular scale. The soil The design of map units and the level of detail shown in the resulting soil map are dependent on that map scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps have been shown at a more detailed scale.

Soil Data Available

To see a description of the soil data available for a specific point on the map:

1. Click anywhere in the map. The soil data availability for that point will be shown here.
2. The point you clicked is marked with the identified point icon:
3. To see a map showing soil data availability for all locations in the U.S. and territories, click the **Soil Survey Status** link in the Navigation Bar above.

Tables — Hydrologic Soil Group — Summary By Map Unit

Summary by Map Unit — El Dorado Area, California (CA624)

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
BhC	Boomer gravelly loam, 3 to 15 percent slopes	C	72.7	31.4%
BhD	Boomer gravelly loam, 15 to 30 percent slopes	C	62.3	26.9%
BkE	Boomer very rocky loam, 30 to 50 percent slopes	C	8.9	3.8%
CoC	Cohasset cobbly loam, 3 to 15 percent slopes	B	7.4	3.2%
DfC	Diamond Springs very fine sandy loam, 9 to 15 percent slopes	C	72.5	31.3%
DgE	Diamond Springs very rocky very fine sandy loam, 3 to 50 percent slopes	C	8.1	3.5%
Totals for Area of Interest			**231.8**	**100.0%**

Description — Hydrologic Soil Group

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options — Hydrologic Soil Group

Aggregation Method: Dominant Condition

Component Percent Cutoff: *None Specified*

Tie-break Rule: Higher

Appendix B HEC-HMS Model & Output

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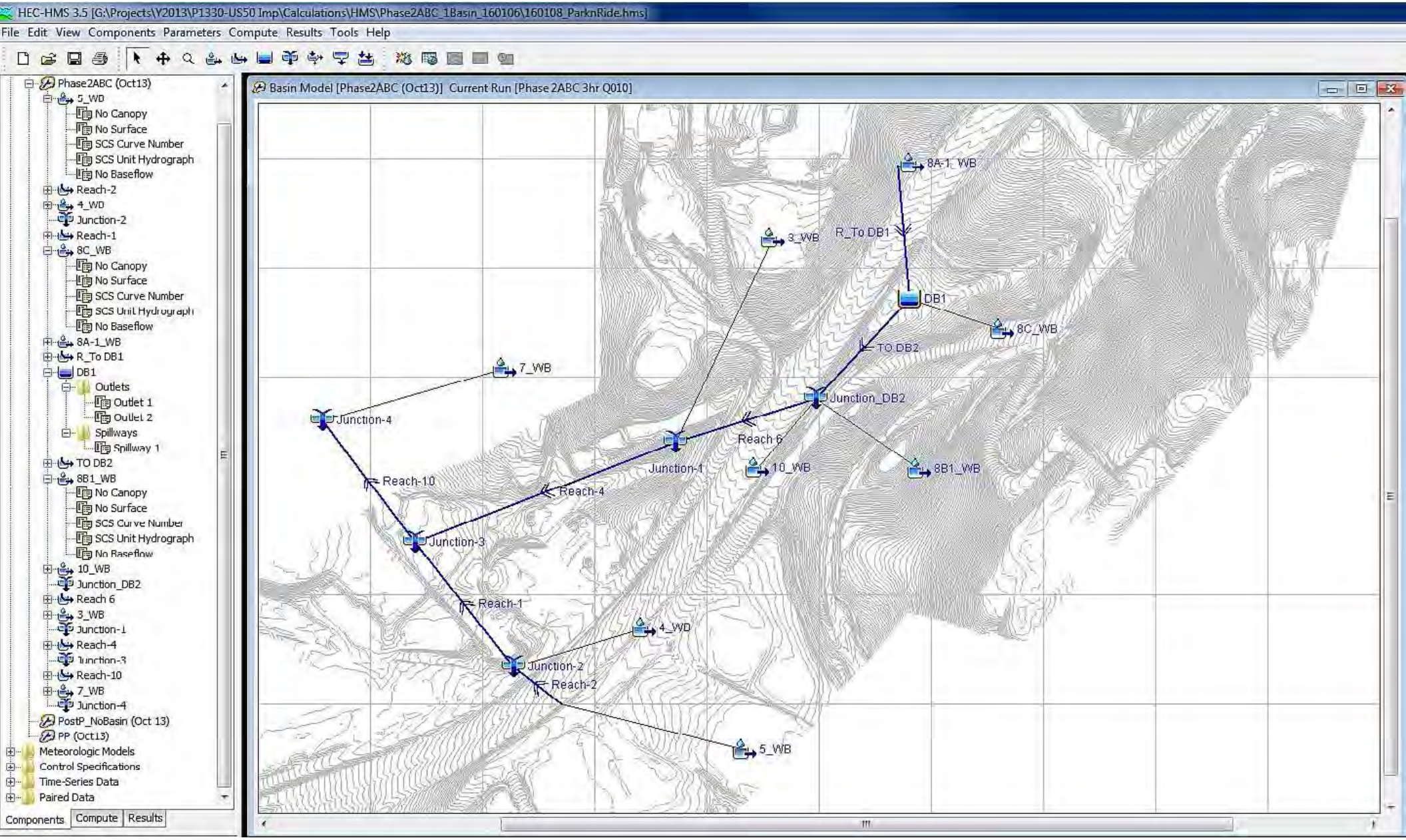
HEC-HMS 3.5 [G:\Projects\Y2013\P1330-US50 Imp\Calculations\HMS\Phase2ABC_1Basin_160106\160108_ParknRide.hms]
File Edit View Components Parameters Compute Results Tools Help
Phase2ABC (Oct13)
5_WD
No Canopy
No Surface
SCS Curve Number
SCS Unit Hydrograph
No Baseflow
Reach-2
4_WD
Junction-2
Reach-1
8C_WB
No Canopy
No Surface
SCS Curve Number
SCS Unit Hydrograph
No Baseflow
8A-1_WB
R_To DB1
DB1
Outlets
Outlet 1
Outlet 2
Spillways
Spillway 1
TO DB2
8B1_WB
No Canopy
No Surface
SCS Curve Number
SCS Unit Hydrograph
No Baseflow
10_WB
Junction_DB2
Reach 6
3_WB
Junction-1
Reach-4
Junction-3
Reach-10
7_WB
Junction-4
PostP_NoBasin (Oct 13)
PP (Oct13)
Meteorologic Models
Control Specifications
Time-Series Data
Paired Data
Components
Compute
Results
Basin Model [Phase2ABC (Oct13)] Current Run [Phase 2ABC 3hr Q010]
8A-1_WB
3_WB
R_To DB1
DB1
8C_WB
TO DB2
7_WB
Junction-4
Junction_DB2
Reach 6
Junction-1
10_WB
8B1_WB
Reach-10
Reach-4
Junction-3
Reach-1
4_WD
Junction-2
Reach-2
5_WB

Project: 160108-ParknRide Simulation Run: Phase 2ABC 3hr Q010

Start of Run: 01Jan2000, 00:05 Basin Model: Phase2ABC (Oct13)
End of Run: 01Jan2000, 04:00 Meteorologic Model: 10-yr 3 hour storm
Compute Time: 01Apr2016, 15:26:10 Control Specifications: Control 1

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
5_WB	0.21510	39.8	01Jan2000, 01:55	0.47
Reach-2	0.21510	39.8	01Jan2000, 01:57	0.46
4_WB	0.00375	5.2	01Jan2000, 01:30	1.67
Junction-2	0.21885	41.1	01Jan2000, 01:57	0.49
Reach-1	0.21885	41.1	01Jan2000, 01:58	0.48
8C_WB	0.03690	13.6	01Jan2000, 01:41	0.69
8A-1_WB	0.00480	3.9	01Jan2000, 01:33	1.05
R_To DB1	0.00480	3.9	01Jan2000, 01:33	1.05
DB1	0.04170	5.3	01Jan2000, 03:02	0.35
TO DB2	0.04170	5.3	01Jan2000, 03:03	0.35
8B1_WB	0.01320	2.6	01Jan2000, 01:30	0.30
10_WB	0.00380	4.0	01Jan2000, 01:30	1.16
Junction_DB2	0.05870	6.8	01Jan2000, 02:40	0.39
Reach 6	0.05870	6.8	01Jan2000, 02:42	0.39
3_WB	0.01740	18.7	01Jan2000, 01:31	1.29
Junction-1	0.07610	25.2	01Jan2000, 01:31	0.59
Reach-4	0.07610	25.0	01Jan2000, 01:35	0.58

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
Junction-3	0.29495	50.4	01Jan2000, 02:02	0.51
Reach-10	0.29495	50.3	01Jan2000, 02:03	0.51
7_WB	0.06550	25.2	01Jan2000, 01:49	0.80
Junction-4	0.36045	73.3	01Jan2000, 01:53	0.56

Project: 160108-ParknRide Simulation Run: Phase 2ABC 3hr Q025

Start of Run: 01Jan2000, 00:05 Basin Model: Phase2ABC (Oct13)
End of Run: 01Jan2000, 04:00 Meteorologic Model: 25-yr 3 hour storm
Compute Time: 01Apr2016, 15:28:44 Control Specifications: Control 1

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
5_WB	0.21510	56.1	01Jan2000, 01:55	0.62
Reach-2	0.21510	56.1	01Jan2000, 01:57	0.62
4_WB	0.00375	6.2	01Jan2000, 01:30	1.96
Junction-2	0.21885	57.6	01Jan2000, 01:57	0.64
Reach-1	0.21885	57.6	01Jan2000, 01:58	0.64
8C_WB	0.03690	18.1	01Jan2000, 01:41	0.88
8A-1_WB	0.00480	4.9	01Jan2000, 01:33	1.28
R_To DB1	0.00480	4.9	01Jan2000, 01:33	1.28
DB1	0.04170	6.7	01Jan2000, 03:03	0.49
TO DB2	0.04170	6.7	01Jan2000, 03:05	0.48
8B1_WB	0.01320	3.1	01Jan2000, 01:31	0.40
10_WB	0.00380	5.0	01Jan2000, 01:30	1.41
Junction_DB2	0.05870	8.7	01Jan2000, 02:40	0.52
Reach 6	0.05870	8.7	01Jan2000, 02:41	0.52
3_WB	0.01740	23.0	01Jan2000, 01:31	1.55
Junction-1	0.07610	31.0	01Jan2000, 01:31	0.76
Reach-4	0.07610	30.6	01Jan2000, 01:34	0.74

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
Junction-3	0.29495	72.0	01Jan2000, 01:57	0.67
Reach-10	0.29495	71.9	01Jan2000, 01:57	0.66
7_WB	0.06550	32.9	01Jan2000, 01:49	1.01
Junction-4	0.36045	101.8	01Jan2000, 01:55	0.73

Project: 160108-ParknRide Simulation Run: Phase 2ABC 3hr Q100

Start of Run: 01Jan2000, 00:05 Basin Model: Phase2ABC (Oct13)
End of Run: 01Jan2000, 04:00 Meteorologic Model: 100-yr 3 hr storm
Compute Time: 01Apr2016, 15:29:32 Control Specifications: Control 1

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
5_WB	0.21510	82.4	01Jan2000, 01:54	0.86
Reach-2	0.21510	82.4	01Jan2000, 01:56	0.86
4_WB	0.00375	7.5	01Jan2000, 01:30	2.37
Junction-2	0.21885	84.2	01Jan2000, 01:56	0.89
Reach-1	0.21885	84.2	01Jan2000, 01:57	0.89
8C_WB	0.03690	25.0	01Jan2000, 01:41	1.17
8A-1_WB	0.00480	6.3	01Jan2000, 01:33	1.64
R_To DB1	0.00480	6.3	01Jan2000, 01:33	1.64
DB1	0.04170	8.5	01Jan2000, 03:05	0.66
TO DB2	0.04170	8.5	01Jan2000, 03:06	0.66
8B1_WB	0.01320	4.9	01Jan2000, 01:32	0.58
10_WB	0.00380	6.3	01Jan2000, 01:30	1.79
Junction_DB2	0.05870	11.3	01Jan2000, 02:50	0.71
Reach 6	0.05870	11.3	01Jan2000, 02:51	0.71
3_WB	0.01740	28.7	01Jan2000, 01:31	1.94
Junction-1	0.07610	39.5	01Jan2000, 01:31	0.99
Reach-4	0.07610	39.2	01Jan2000, 01:34	0.97

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
Junction-3	0.29495	103.5	01Jan2000, 01:56	0.91
Reach-10	0.29495	103.5	01Jan2000, 01:56	0.91
7_WB	0.06550	44.3	01Jan2000, 01:48	1.32
Junction-4	0.36045	144.1	01Jan2000, 01:54	0.98

Project: 160108-ParknRide Simulation Run: Phase 2ABC SCS-24hr Q010

Start of Run: 01Jan2000, 00:00 Basin Model: Phase2ABC (Oct13)
End of Run: 02Jan2000, 00:01 Meteorologic Model: SCS 010-yr 24hr storm
Compute Time: 01Apr2016, 15:30:52 Control Specifications: 24hr_SCS

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
5_WB	0.21510	62.6	01Jan2000, 08:14	2.38
Reach-2	0.21510	62.6	01Jan2000, 08:16	2.37
4_WB	0.00375	2.6	01Jan2000, 07:50	4.47
Junction-2	0.21885	63.8	01Jan2000, 08:15	2.41
Reach-1	0.21885	63.8	01Jan2000, 08:17	2.41
8C_WB	0.03690	15.2	01Jan2000, 08:04	2.86
8A-1_WB	0.00480	2.7	01Jan2000, 07:59	3.54
R_To DB1	0.00480	2.7	01Jan2000, 07:59	3.54
DB1	0.04170	7.7	01Jan2000, 08:48	2.57
TO DB2	0.04170	7.7	01Jan2000, 08:50	2.56
8B1_WB	0.01320	3.2	01Jan2000, 07:59	1.82
10_WB	0.00380	2.3	01Jan2000, 07:56	3.76
Junction_DB2	0.05870	11.2	01Jan2000, 07:59	2.47
Reach 6	0.05870	11.2	01Jan2000, 08:00	2.47
3_WB	0.01740	10.9	01Jan2000, 07:58	3.95
Junction-1	0.07610	22.0	01Jan2000, 07:59	2.81
Reach-4	0.07610	22.0	01Jan2000, 08:03	2.80

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
Junction-3	0.29495	80.0	01Jan2000, 08:15	2.51
Reach-10	0.29495	80.0	01Jan2000, 08:16	2.51
7_WB	0.06550	27.9	01Jan2000, 08:10	3.10
Junction-4	0.36045	107.3	01Jan2000, 08:12	2.61

Project: 160108-ParknRide Simulation Run: Phase 2ABC SCS-24hr Q025

Start of Run: 01Jan2000, 00:00 Basin Model: Phase2ABC (Oct13)
End of Run: 02Jan2000, 00:01 Meteorologic Model: SCS 025-yr 24hr storm
Compute Time: 01Apr2016, 15:31:44 Control Specifications: 24hr_SCS

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
5_WB	0.21510	82.9	01Jan2000, 08:14	3.04
Reach-2	0.21510	82.8	01Jan2000, 08:15	3.03
4_WB	0.00375	3.1	01Jan2000, 07:50	5.26
Junction-2	0.21885	84.4	01Jan2000, 08:15	3.07
Reach-1	0.21885	84.3	01Jan2000, 08:16	3.07
8C_WB	0.03690	19.4	01Jan2000, 08:04	3.56
8A-1_WB	0.00480	3.3	01Jan2000, 07:59	4.30
R_To DB1	0.00480	3.3	01Jan2000, 07:59	4.30
DB1	0.04170	9.0	01Jan2000, 08:58	3.26
TO DB2	0.04170	9.0	01Jan2000, 08:59	3.26
8B1_WB	0.01320	4.5	01Jan2000, 07:59	2.40
10_WB	0.00380	2.8	01Jan2000, 07:56	4.54
Junction_DB2	0.05870	14.0	01Jan2000, 07:59	3.15
Reach 6	0.05870	14.0	01Jan2000, 08:00	3.15
3_WB	0.01740	13.1	01Jan2000, 07:57	4.73
Junction-1	0.07610	26.9	01Jan2000, 07:59	3.51
Reach-4	0.07610	26.9	01Jan2000, 08:02	3.50

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
Junction-3	0.29495	103.9	01Jan2000, 08:15	3.18
Reach-10	0.29495	103.9	01Jan2000, 08:15	3.18
7_WB	0.06550	35.0	01Jan2000, 08:10	3.83
Junction-4	0.36045	138.3	01Jan2000, 08:12	3.30

Project: 160108-ParknRide Simulation Run: Phase 2ABC SCS-24hr Q100

Start of Run: 01Jan2000, 00:00 Basin Model: Phase2ABC (Oct13)
End of Run: 02Jan2000, 00:01 Meteorologic Model: SCS 100-yr 24 hr storm
Compute Time: 01Apr2016, 15:33:04 Control Specifications: 24hr_SCS

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
5_WB	0.21510	117.2	01Jan2000, 08:13	4.14
Reach-2	0.21510	117.1	01Jan2000, 08:15	4.13
4_WB	0.00375	3.8	01Jan2000, 07:50	6.54
Junction-2	0.21885	119.0	01Jan2000, 08:15	4.17
Reach-1	0.21885	119.0	01Jan2000, 08:16	4.17
8C_WB	0.03690	26.3	01Jan2000, 08:04	4.73
8A-1_WB	0.00480	4.2	01Jan2000, 07:59	5.53
R_To DB1	0.00480	4.2	01Jan2000, 07:59	5.52
DB1	0.04170	20.6	01Jan2000, 08:20	4.41
TO DB2	0.04170	20.6	01Jan2000, 08:21	4.41
8B1_WB	0.01320	6.7	01Jan2000, 07:59	3.39
10_WB	0.00380	3.6	01Jan2000, 07:48	5.79
Junction_DB2	0.05870	25.3	01Jan2000, 08:20	4.27
Reach 6	0.05870	25.3	01Jan2000, 08:21	4.26
3_WB	0.01740	16.6	01Jan2000, 07:57	5.99
Junction-1	0.07610	34.9	01Jan2000, 07:59	4.66
Reach-4	0.07610	34.8	01Jan2000, 08:02	4.64

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
Junction-3	0.29495	150.4	01Jan2000, 08:18	4.29
Reach-10	0.29495	150.4	01Jan2000, 08:18	4.29
7_WB	0.06550	46.7	01Jan2000, 08:09	5.02
Junction-4	0.36045	194.0	01Jan2000, 08:16	4.42

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Appendix C Rainfall Data

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Precipitation Frequency Data Server (PFDS)

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NOAA ATLAS 14 POINT PRECIPITATION FREQUENCY ESTIMATES: CA

DATA DESCRIPTION

Data type: precipitation intensity ▼ **Units:** english ▼ **Time series type:** partial duration ▼

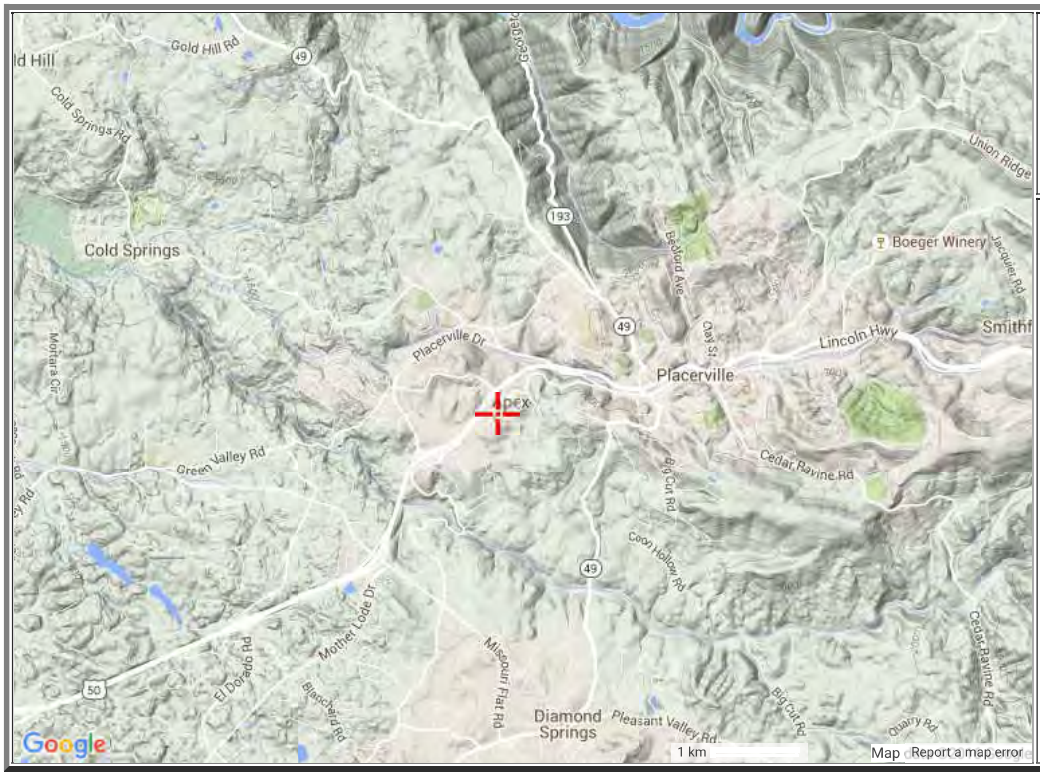
SELECT LOCATION

1. Manually:

a) Enter location (decimal degrees, use "-" for S and W): latitude: longitude: submit

b) Select station (click here for a list of stations used in frequency analysis for CA): select station ▼

2. Use map:



a) Select location
(move crosshair or double click)
b) Click on station icon
(show stations on map)

LOCATION INFORMATION:
Name: Placerville, California, US*
Latitude: 38.7257°
Longitude: -120.8239°
Elevation: 1900 ft*

* source: Google Maps

POINT PRECIPITATION FREQUENCY (PF) ESTIMATES

WITH 90% CONFIDENCE INTERVALS AND SUPPLEMENTARY INFORMATION
NOAA Atlas 14, Volume 6, Version 2

PF tabular | PF graphical | Supplementary information | Print Page

PDS-based precipitation frequency estimates with 90% confidence intervals (in inches/hour)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	1.75 (1.55-2.00)	2.11 (1.86-2.41)	2.58 (2.28-2.96)	2.98 (2.59-3.44)	3.50 (2.95-4.20)	3.92 (3.23-4.81)	4.36 (3.49-5.47)	4.80 (3.74-6.20)	5.41 (4.04-7.31)	5.89 (4.25-8.26)
10-min	1.26 (1.11-1.44)	1.51 (1.34-1.73)	1.85 (1.63-2.12)	2.13 (1.86-2.47)	2.51 (2.12-3.01)	2.81 (2.32-3.44)	3.12 (2.51-3.92)	3.44 (2.68-4.45)	3.88 (2.90-5.24)	4.22 (3.05-5.92)
15-min	1.01 (0.896-1.16)	1.22 (1.08-1.40)	1.49 (1.32-1.71)	1.72 (1.50-1.99)	2.03 (1.71-2.43)	2.27 (1.87-2.78)	2.52 (2.02-3.16)	2.77 (2.16-3.59)	3.13 (2.34-4.22)	3.40 (2.46-4.77)
30-min	0.708 (0.626-0.810)	0.852 (0.752-0.976)	1.04 (0.918-1.20)	1.20 (1.05-1.39)	1.42 (1.19-1.70)	1.58 (1.31-1.94)	1.76 (1.41-2.21)	1.94 (1.51-2.51)	2.18 (1.63-2.95)	2.38 (1.72-3.33)
60-min	0.504 (0.446-0.576)	0.607 (0.536-0.695)	0.743 (0.654-0.852)	0.854 (0.745-0.989)	1.01 (0.849-1.21)	1.13 (0.929-1.38)	1.25 (1.00-1.57)	1.38 (1.08-1.78)	1.55 (1.16-2.10)	1.69 (1.22-2.37)
2-hr	0.375 (0.332-0.429)	0.442 (0.390-0.506)	0.528 (0.465-0.607)	0.600 (0.524-0.694)	0.698 (0.588-0.836)	0.773 (0.637-0.948)	0.850 (0.683-1.07)	0.930 (0.726-1.20)	1.04 (0.776-1.40)	1.12 (0.810-1.57)
3-hr	0.308 (0.272-0.352)	0.359 (0.317-0.411)	0.428 (0.376-0.491)	0.483 (0.422-0.559)	0.559 (0.471-0.670)	0.617 (0.509-0.757)	0.677 (0.544-0.851)	0.739 (0.576-0.956)	0.822 (0.614-1.11)	0.887 (0.640-1.24)
6-hr	0.228 (0.202-0.261)	0.265 (0.234-0.304)	0.314 (0.276-0.360)	0.353 (0.308-0.409)	0.407 (0.343-0.488)	0.449 (0.370-0.550)	0.491 (0.395-0.618)	0.535 (0.418-0.693)	0.594 (0.444-0.803)	0.641 (0.462-0.897)

12-hr	**0.157** (0.138-0.179)	**0.184** (0.162-0.210)	**0.219** (0.193-0.252)	**0.249** (0.217-0.288)	**0.290** (0.244-0.348)	**0.322** (0.266-0.395)	**0.355** (0.285-0.447)	**0.390** (0.304-0.505)	**0.438** (0.327-0.592)	**0.475** (0.343-0.666)
24-hr	**0.111** (0.099-0.127)	**0.133** (0.119-0.152)	**0.162** (0.145-0.185)	**0.186** (0.165-0.215)	**0.220** (0.188-0.262)	**0.246** (0.206-0.299)	**0.273** (0.223-0.340)	**0.301** (0.239-0.386)	**0.340** (0.259-0.455)	**0.371** (0.273-0.514)
2-day	**0.072** (0.065-0.082)	**0.089** (0.079-0.101)	**0.110** (0.098-0.126)	**0.127** (0.113-0.147)	**0.150** (0.128-0.179)	**0.167** (0.140-0.204)	**0.184** (0.151-0.230)	**0.202** (0.160-0.259)	**0.225** (0.172-0.301)	**0.243** (0.179-0.336)
3-day	**0.056** (0.050-0.064)	**0.070** (0.063-0.080)	**0.088** (0.078-0.100)	**0.102** (0.090-0.117)	**0.120** (0.102-0.143)	**0.133** (0.111-0.162)	**0.146** (0.119-0.182)	**0.159** (0.126-0.204)	**0.176** (0.134-0.235)	**0.189** (0.139-0.261)
4-day	**0.047** (0.042-0.053)	**0.059** (0.053-0.067)	**0.074** (0.066-0.085)	**0.086** (0.076-0.099)	**0.101** (0.087-0.121)	**0.112** (0.094-0.137)	**0.123** (0.101-0.154)	**0.134** (0.106-0.172)	**0.147** (0.112-0.197)	**0.157** (0.116-0.218)
7-day	**0.033** (0.030-0.038)	**0.042** (0.037-0.048)	**0.053** (0.047-0.060)	**0.061** (0.054-0.070)	**0.071** (0.061-0.085)	**0.079** (0.066-0.096)	**0.086** (0.070-0.107)	**0.092** (0.073-0.118)	**0.101** (0.077-0.135)	**0.107** (0.079-0.148)
10-day	**0.027** (0.024-0.030)	**0.034** (0.030-0.039)	**0.042** (0.038-0.049)	**0.049** (0.043-0.057)	**0.057** (0.049-0.068)	**0.063** (0.053-0.077)	**0.068** (0.056-0.085)	**0.073** (0.058-0.094)	**0.080** (0.061-0.107)	**0.084** (0.062-0.117)
20-day	**0.018** (0.016-0.021)	**0.023** (0.021-0.026)	**0.029** (0.026-0.033)	**0.034** (0.030-0.039)	**0.039** (0.033-0.046)	**0.043** (0.036-0.052)	**0.046** (0.038-0.058)	**0.050** (0.039-0.064)	**0.054** (0.041-0.072)	**0.056** (0.042-0.078)
30-day	**0.015** (0.013-0.017)	**0.019** (0.017-0.021)	**0.023** (0.021-0.027)	**0.027** (0.024-0.031)	**0.031** (0.027-0.037)	**0.034** (0.028-0.041)	**0.037** (0.030-0.046)	**0.039** (0.031-0.050)	**0.042** (0.032-0.057)	**0.045** (0.033-0.062)
45-day	**0.012** (0.011-0.014)	**0.015** (0.014-0.017)	**0.019** (0.017-0.022)	**0.022** (0.019-0.025)	**0.025** (0.022-0.030)	**0.028** (0.023-0.034)	**0.030** (0.025-0.037)	**0.032** (0.025-0.041)	**0.035** (0.026-0.046)	**0.036** (0.027-0.050)
60-day	**0.011** (0.010-0.012)	**0.013** (0.012-0.015)	**0.017** (0.015-0.019)	**0.019** (0.017-0.022)	**0.022** (0.019-0.027)	**0.024** (0.021-0.030)	**0.026** (0.022-0.033)	**0.028** (0.022-0.036)	**0.030** (0.023-0.041)	**0.032** (0.024-0.044)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

Estimates from the table in csv format: precipitation frequency estimates ▼ Submit

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NOAA ATLAS 14 POINT PRECIPITATION FREQUENCY ESTIMATES: CA

DATA DESCRIPTION

Data type: precipitation depth ▼ **Units:** english ▼ **Time series type:** partial duration ▼

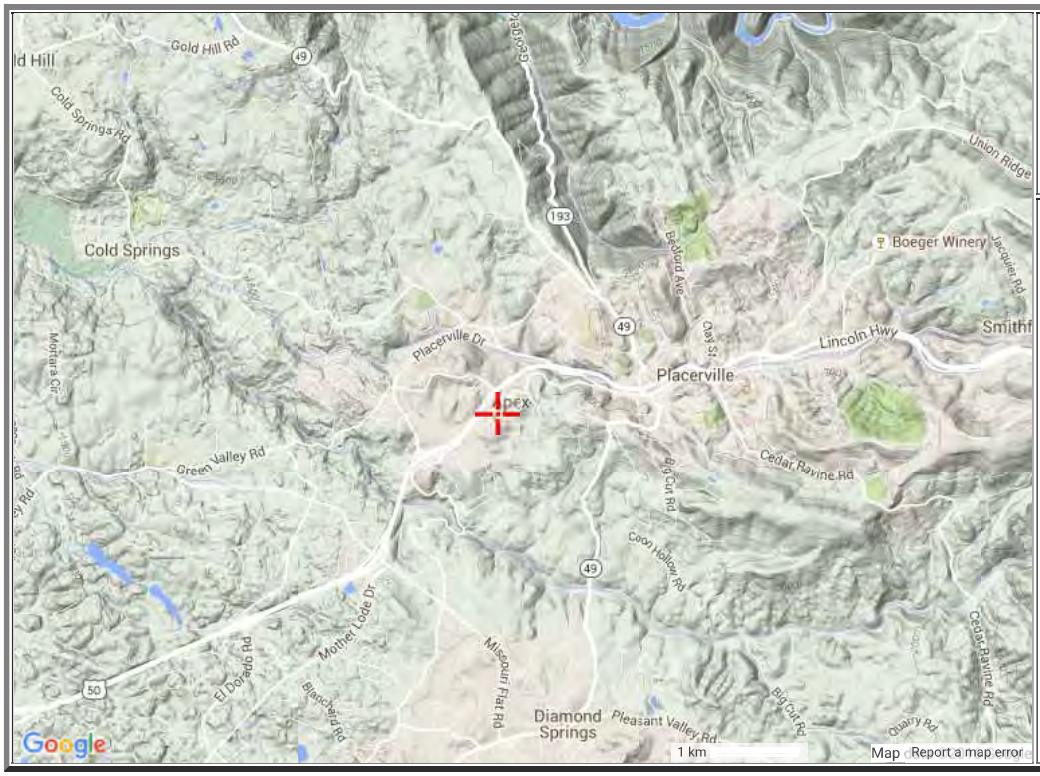
SELECT LOCATION

1. Manually:

a) Enter location (decimal degrees, use "-" for S and W): latitude: longitude: submit

b) Select station (click here for a list of stations used in frequency analysis for CA): select station ▼

2. Use map:



a) Select location
(move crosshair or double click)

b) Click on station icon
(show stations on map)

LOCATION INFORMATION:
Name: Placerville, California, US*
Latitude: 38.7257°
Longitude: -120.8239°
Elevation: 1900 ft*

* source: Google Maps

POINT PRECIPITATION FREQUENCY (PF) ESTIMATES

WITH 90% CONFIDENCE INTERVALS AND SUPPLEMENTARY INFORMATION
NOAA Atlas 14, Volume 6, Version 2

PF tabular PF graphical Supplementary information Print Page

PDS-based precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.146 (0.129-0.167)	0.176 (0.155-0.201)	0.215 (0.190-0.247)	0.248 (0.216-0.287)	0.292 (0.246-0.350)	0.327 (0.269-0.401)	0.363 (0.291-0.456)	0.400 (0.312-0.517)	0.451 (0.337-0.609)	0.491 (0.354-0.688)
10-min	0.210 (0.185-0.240)	0.252 (0.223-0.289)	0.309 (0.272-0.354)	0.355 (0.310-0.411)	0.419 (0.353-0.502)	0.469 (0.386-0.574)	0.520 (0.418-0.653)	0.573 (0.447-0.742)	0.646 (0.483-0.874)	0.704 (0.508-0.986)
15-min	0.253 (0.224-0.290)	0.305 (0.269-0.349)	0.373 (0.329-0.428)	0.429 (0.375-0.497)	0.507 (0.427-0.607)	0.567 (0.467-0.695)	0.629 (0.505-0.790)	0.693 (0.541-0.897)	0.782 (0.584-1.06)	0.851 (0.614-1.19)
30-min	0.354 (0.313-0.405)	0.426 (0.376-0.488)	0.522 (0.459-0.599)	0.600 (0.524-0.695)	0.708 (0.596-0.849)	0.792 (0.653-0.970)	0.878 (0.706-1.10)	0.968 (0.756-1.25)	1.09 (0.816-1.48)	1.19 (0.858-1.67)
60-min	0.504 (0.446-0.576)	0.607 (0.536-0.695)	0.743 (0.654-0.852)	0.854 (0.745-0.989)	1.01 (0.849-1.21)	1.13 (0.929-1.38)	1.25 (1.00-1.57)	1.38 (1.08-1.78)	1.55 (1.16-2.10)	1.69 (1.22-2.37)
2-hr	0.750 (0.663-0.858)	0.883 (0.779-1.01)	1.06 (0.930-1.21)	1.20 (1.05-1.39)	1.40 (1.18-1.67)	1.55 (1.27-1.90)	1.70 (1.37-2.14)	1.86 (1.45-2.41)	2.08 (1.55-2.81)	2.25 (1.62-3.15)
3-hr	0.924 (0.816-1.06)	1.08 (0.952-1.24)	1.28 (1.13-1.47)	1.45 (1.27-1.68)	1.68 (1.41-2.01)	1.85 (1.53-2.27)	2.03 (1.63-2.56)	2.22 (1.73-2.87)	2.47 (1.84-3.34)	2.67 (1.92-3.73)
6-hr	1.37 (1.21-1.56)	1.59 (1.40-1.82)	1.88 (1.65-2.16)	2.12 (1.85-2.45)	2.44 (2.06-2.92)	2.69 (2.22-3.29)	2.94 (2.36-3.70)	3.20 (2.50-4.15)	3.56 (2.66-4.81)	3.84 (2.77-5.37)

12-hr	**1.89** (1.67-2.16)	**2.21** (1.95-2.53)	**2.64** (2.33-3.03)	**3.00** (2.62-3.47)	**3.49** (2.94-4.19)	**3.88** (3.20-4.76)	**4.28** (3.44-5.38)	**4.70** (3.67-6.08)	**5.27** (3.94-7.13)	**5.73** (4.13-8.02)
24-hr	**2.67** (2.39-3.04)	**3.19** (2.85-3.64)	**3.89** (3.47-4.45)	**4.47** (3.95-5.15)	**5.27** (4.51-6.28)	**5.90** (4.94-7.18)	**6.55** (5.35-8.17)	**7.22** (5.74-9.27)	**8.16** (6.22-10.9)	**8.90** (6.56-12.3)
2-day	**3.46** (3.10-3.94)	**4.26** (3.81-4.86)	**5.29** (4.71-6.05)	**6.11** (5.40-7.04)	**7.20** (6.16-8.59)	**8.03** (6.73-9.78)	**8.85** (7.24-11.0)	**9.69** (7.70-12.4)	**10.8** (8.23-14.4)	**11.6** (8.58-16.1)
3-day	**4.02** (3.60-4.58)	**5.04** (4.51-5.75)	**6.32** (5.63-7.22)	**7.32** (6.47-8.44)	**8.62** (7.37-10.3)	**9.58** (8.03-11.7)	**10.5** (8.60-13.1)	**11.5** (9.11-14.7)	**12.7** (9.66-16.9)	**13.6** (10.0-18.8)
4-day	**4.50** (4.03-5.13)	**5.68** (5.08-6.48)	**7.14** (6.37-8.17)	**8.28** (7.33-9.55)	**9.74** (8.33-11.6)	**10.8** (9.05-13.2)	**11.8** (9.67-14.8)	**12.8** (10.2-16.5)	**14.1** (10.8-18.9)	**15.1** (11.1-20.9)
7-day	**5.55** (4.97-6.32)	**7.04** (6.29-8.03)	**8.85** (7.89-10.1)	**10.2** (9.04-11.8)	**12.0** (10.2-14.3)	**13.2** (11.1-16.1)	**14.4** (11.7-17.9)	**15.5** (12.3-19.9)	**16.9** (12.9-22.7)	**18.0** (13.2-24.9)
10-day	**6.40** (5.73-7.29)	**8.13** (7.27-9.27)	**10.2** (9.10-11.7)	**11.8** (10.4-13.6)	**13.7** (11.7-16.3)	**15.1** (12.6-18.4)	**16.4** (13.4-20.4)	**17.6** (14.0-22.6)	**19.2** (14.6-25.7)	**20.3** (14.9-28.1)
20-day	**8.74** (7.83-9.96)	**11.1** (9.97-12.7)	**14.0** (12.5-16.0)	**16.1** (14.2-18.6)	**18.7** (16.0-22.3)	**20.5** (17.2-25.0)	**22.2** (18.1-27.7)	**23.8** (18.9-30.5)	**25.7** (19.6-34.4)	**27.1** (19.9-37.5)
30-day	**10.5** (9.39-11.9)	**13.4** (12.0-15.3)	**16.8** (15.0-19.2)	**19.3** (17.1-22.2)	**22.4** (19.1-26.7)	**24.5** (20.5-29.8)	**26.4** (21.6-33.0)	**28.3** (22.5-36.3)	**30.6** (23.3-40.9)	**32.1** (23.7-44.5)
45-day	**12.9** (11.6-14.7)	**16.5** (14.7-18.8)	**20.6** (18.4-23.6)	**23.7** (21.0-27.3)	**27.4** (23.5-32.7)	**30.0** (25.1-36.5)	**32.4** (26.5-40.4)	**34.6** (27.5-44.4)	**37.3** (28.5-49.9)	**39.2** (28.9-54.3)
60-day	**15.3** (13.7-17.4)	**19.4** (17.4-22.2)	**24.3** (21.7-27.8)	**27.9** (24.7-32.2)	**32.3** (27.6-38.5)	**35.2** (29.5-42.9)	**38.0** (31.1-47.4)	**40.6** (32.3-52.1)	**43.8** (33.4-58.6)	**46.0** (33.9-63.7)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

Estimates from the table in csv format: precipitation frequency estimates ▼ Submit

Main Link Categories:
Home | NWC(OHD)

US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center (formerly OHD)
1325 East West Highway
Silver Spring, MD 20910
Page Author: HDSC webmaster
Page last modified: August 27, 2014

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Appendix D Proposed Watershed Maps

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FOR COMPLETE RIGHT-OF-WAY AND ACCURATE ACCESS DATA,
SEE RIGHT-OF-WAY RECORD MAPS AT DISTRICT OFFICE.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
03	ED	50	16.0-16.6		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — No. Exp. — STATE OF CALIFORNIA

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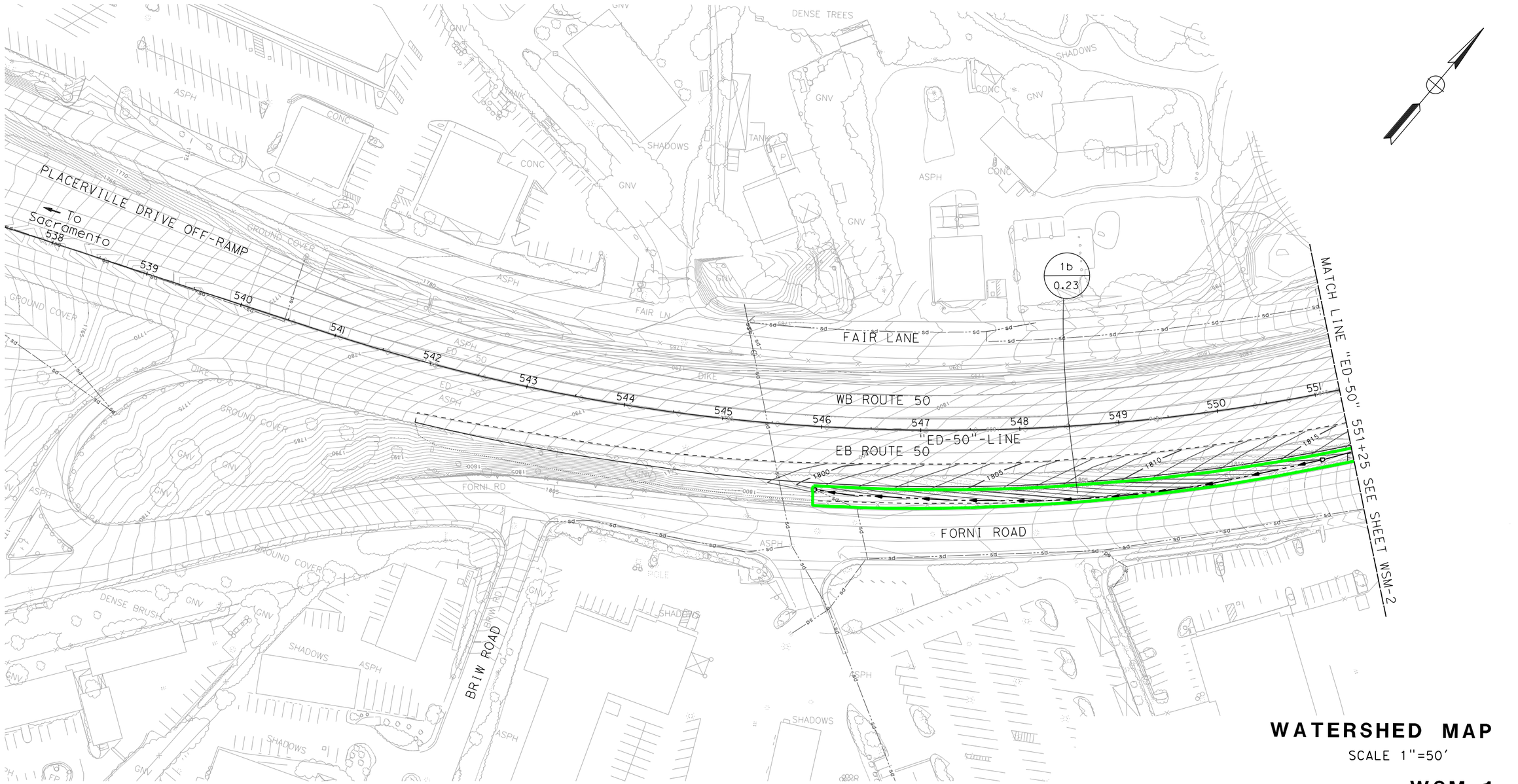
DEVELOPMENT SERVICES
DEPARTMENT
3101 CENTER STREET
PLACERVILLE, CA 95667

DRAINAGE SYSTEM UNIT
AREA (ac)

FLOW DIRECTION

ONSITE WATERSHED

OFFSITE WATERSHED



WATERSHED MAP

SCALE 1"=50'

WSM-1

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans®

CONSULTANT FUNCTIONAL SUPERVISOR: HAN-BIN LIANG

CALCULATED-DESIGNED BY: JEREMY MILLER-SCHULZE
CHECKED BY: CHRIS SEWELL

REVISED BY	DATE REVISED

LAST REVISION 00-00-00
DATE PLOTTED => $DATE
TIME PLOTTED => $TIME

BORDER LAST REVISED 4/11/2008

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

USERNAME => $USER
DGN FILE => $REQUEST

CU 00000

EA 37280

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
03	ED	50	16.0-16.6		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER No. Exp. STATE OF CALIFORNIA

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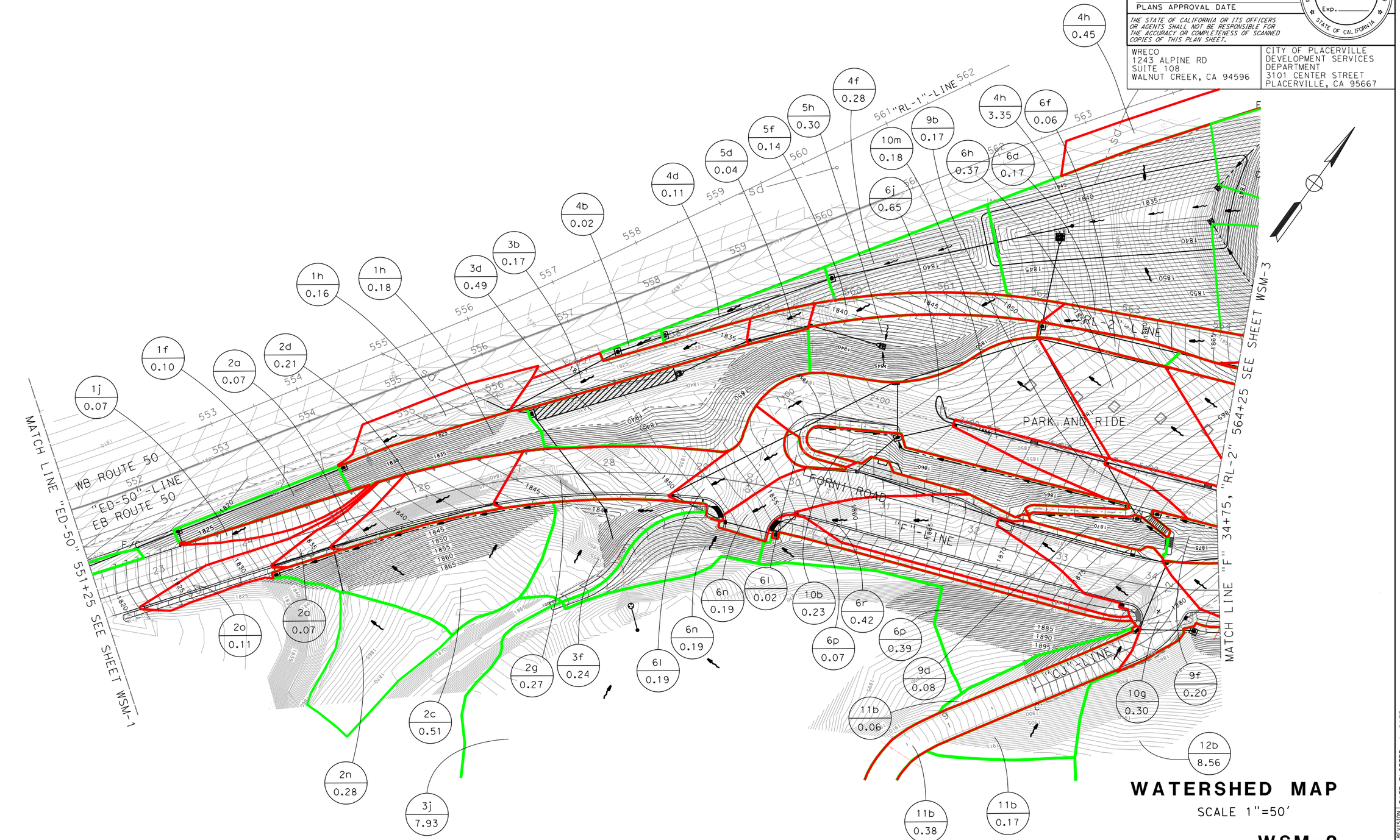
DEVELOPMENT SERVICES DEPARTMENT
3101 CENTER STREET
PLACERVILLE, CA 95667



WATERSHED MAP

SCALE 1"=50'

WSM-2

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	HAN-BIN LIANG	
	CALCULATED-DESIGNED BY	JEREMY MILLER-SCHULZE	REVISED BY
	CHECKED BY	CHRIS SEWELL	DATE REVISED

LAST REVISION 00-00-00 DATE PLOTTED => $DATE TIME PLOTTED => $TIME

BORDER LAST REVISED 4/11/2008

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

USERNAME => $USER
DGN FILE => $REQUEST

CU 00000

EA 37280

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
03	ED	50	16.0-16.6		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — No. Exp. — STATE OF CALIFORNIA

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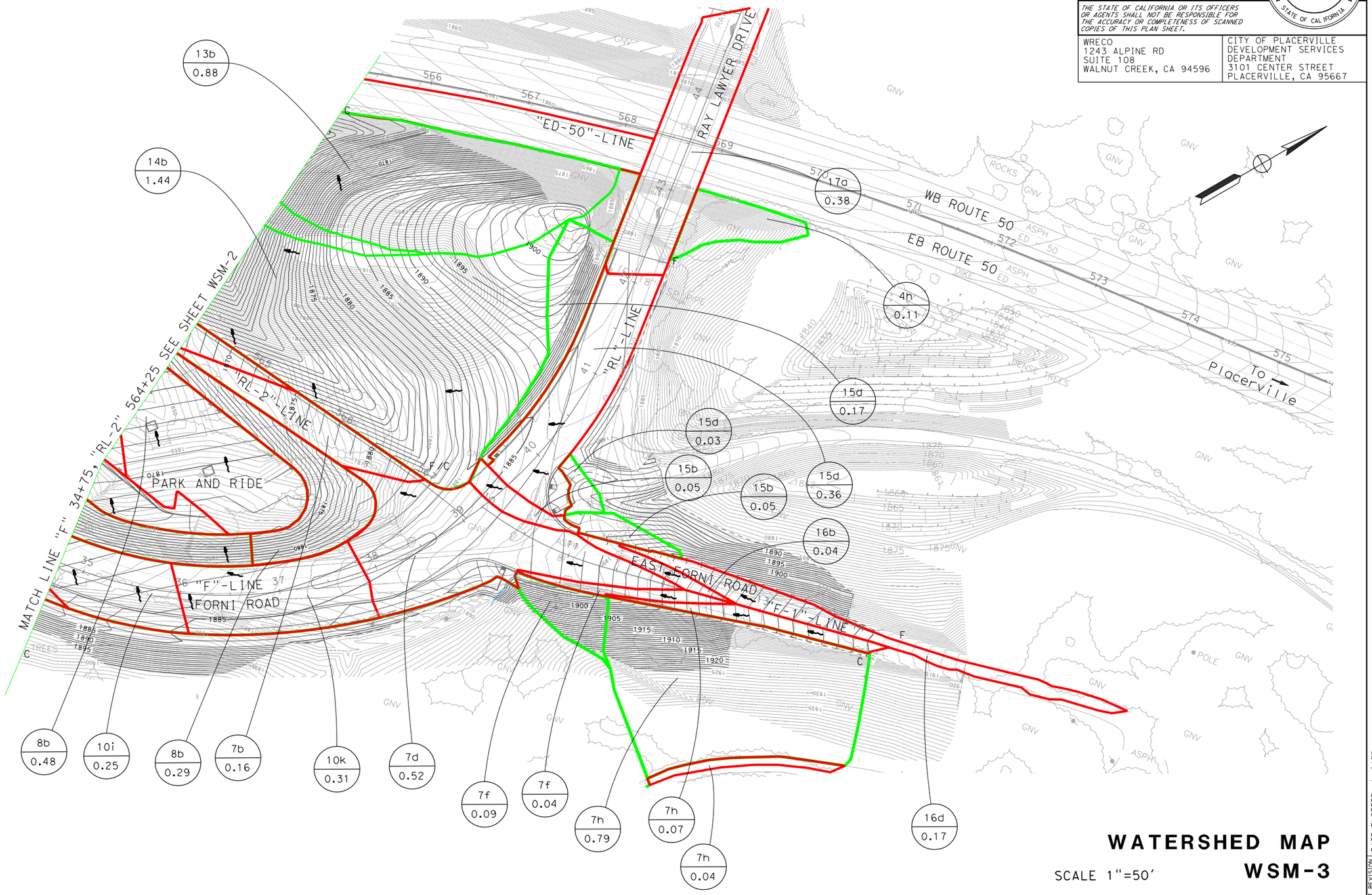
CITY OF PLACERVILLE
DEVELOPMENT SERVICES
DEPARTMENT
3101 CENTER STREET
PLACERVILLE, CA 95667



WATERSHED MAP

SCALE 1"=50'

WSM-3

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans®

CONSULTANT FUNCTIONAL SUPERVISOR: HAN-BIN LIANG

CALCULATED-DESIGNED BY: JEREMY MILLER-SCHULZE
CHECKED BY: CHRIS SEWELL

REVISED BY | DATE REVISED

LAST REVISION
DATE PLOTTED => $DATE
TIME PLOTTED => $TIME
00-00-00

BORDER LAST REVISED 4/11/2008

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

USERNAME => $USER
DGN FILE => $REQUEST

CU 00000

EA 37280

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Appendix E Hydraflow Storm Sewers Output

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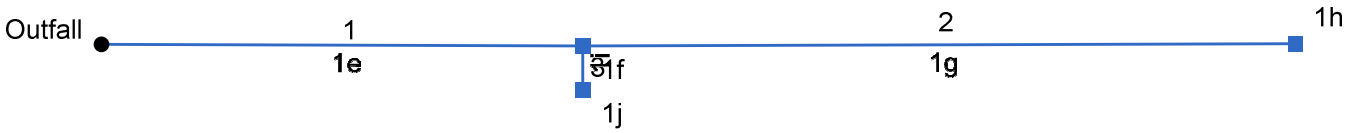
W Forni - Inlet to Ditch



Project File: DS-1 APC.stm	Number of lines: 3	Date: 8/1/2017

Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/ Rim El (ft)	
1	End	128.400	0.200	DrGrt	0.00	0.10	0.60	5.0	1815.00	0.86	1816.11	18	Cir	0.024	1.50	1820.00	1e
2	1	190.100	-0.392	DrGrt	0.00	0.34	0.81	5.0	1816.21	1.53	1819.11	18	Cir	0.024	1.00	1822.91	1g
3	1	11.800	89.800	DrGrt	0.00	0.07	1.00	5.0	1816.21	50.00	1822.11	18	Cir	0.024	1.00	1826.00	1i

W Forni - Inlet to Ditch | Number of lines: 3 | Date: 8/1/2017

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	128.400	0.10	0.51	0.60	0.06	0.41	5.0	11.0	2.3	0.94	5.29	2.16	18	0.86	1815.00	1816.11	1815.36	1816.70	1816.50	1820.00	1e
2	1	190.100	0.34	0.34	0.81	0.28	0.28	5.0	5.0	3.4	0.94	7.03	2.25	18	1.53	1816.21	1819.11	1816.75	1819.47	1820.00	1822.91	1g
3	1	11.800	0.07	0.07	1.00	0.07	0.07	5.0	5.0	3.4	0.24	40.22	1.20	18	50.00	1816.21	1822.11	1816.75	1822.29	1820.00	1826.00	1i

W Forni - Inlet to Ditch | Number of lines: 3 | Run Date: 8/1/2017

NOTES:Intensity = 7.60 / (Inlet time + 0.10) ^ 0.49; Return period =Yrs. 25 ; c = cir e = ellip b = box

Hydraulic Grade Line Computations

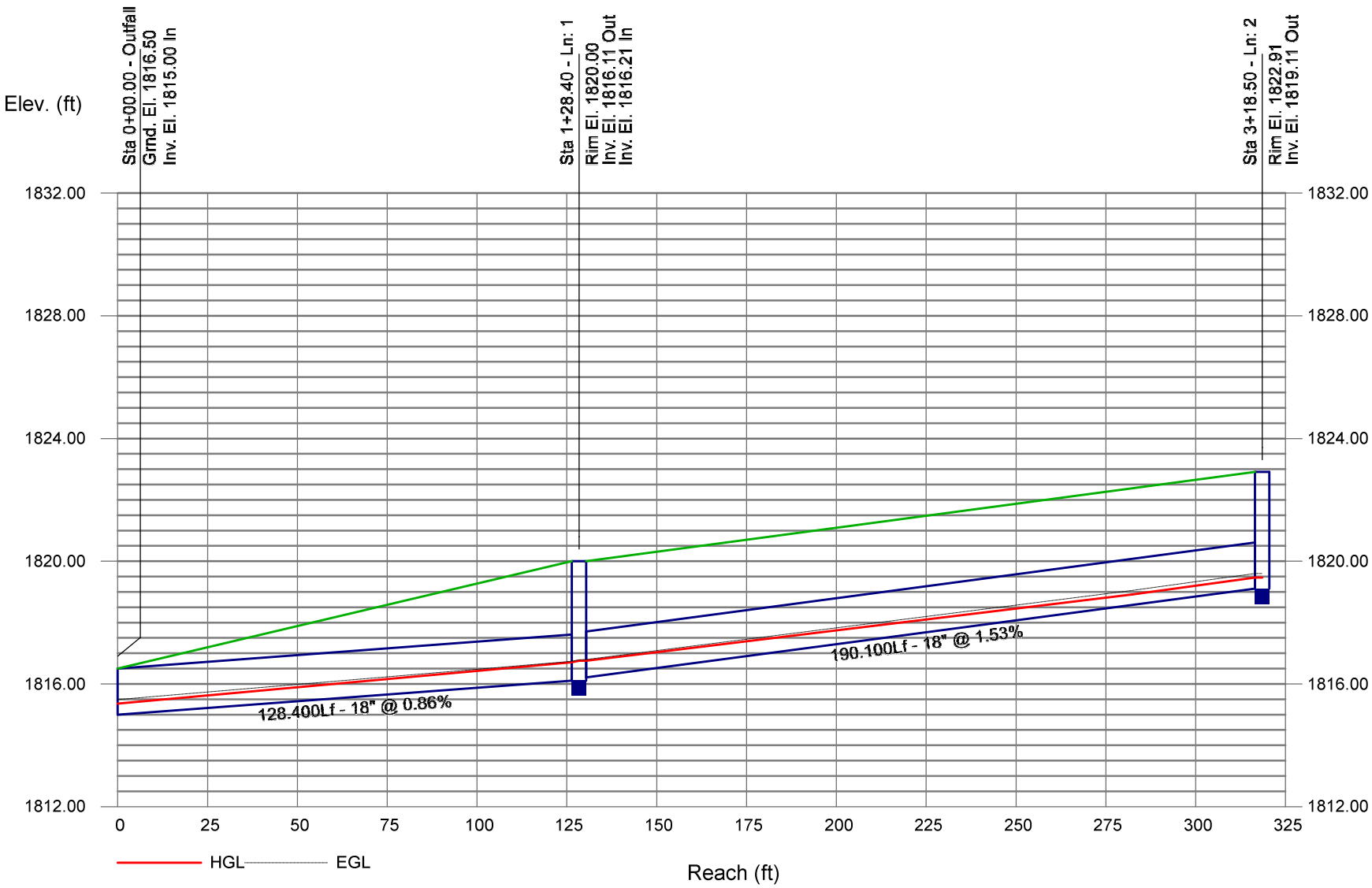
Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf		Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf	Ave Sf	Enrgy loss		
	(in)	(cfs)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(ft)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(%)	(ft)	(K)	(ft)
1	18	0.94	1815.00	1815.36	0.36	0.33	2.87	0.13	1815.49	1.689	128.400	1816.11	1816.70	0.59	0.65	1.45	0.03	1816.74	0.251	0.970	1.245	1.50	0.05
2	18	0.94	1816.21	1816.75	0.54	0.33	1.62	0.04	1816.79	0.346	190.100	1819.11	1819.47 j	0.36**	0.33	2.87	0.13	1819.60	1.692	1.019	n/a	1.00	0.13
3	18	0.24	1816.21	1816.75	0.54	0.12	0.41	0.06	1816.82	0.000	11.800	1822.11	1822.29 j	0.18**	0.12	1.99	0.06	1822.35	0.000	0.000	n/a	1.00	0.06

W Forni - Inlet to Ditch | Number of lines: 3 | Run Date: 8/1/2017

Notes: ; ** Critical depth.; j-Line contains hyd. jump. ; c = cir e = ellip b = box

Storm Sewer Profile

Proj. file: DS-1 APC.stm



Storm Sewer Profile

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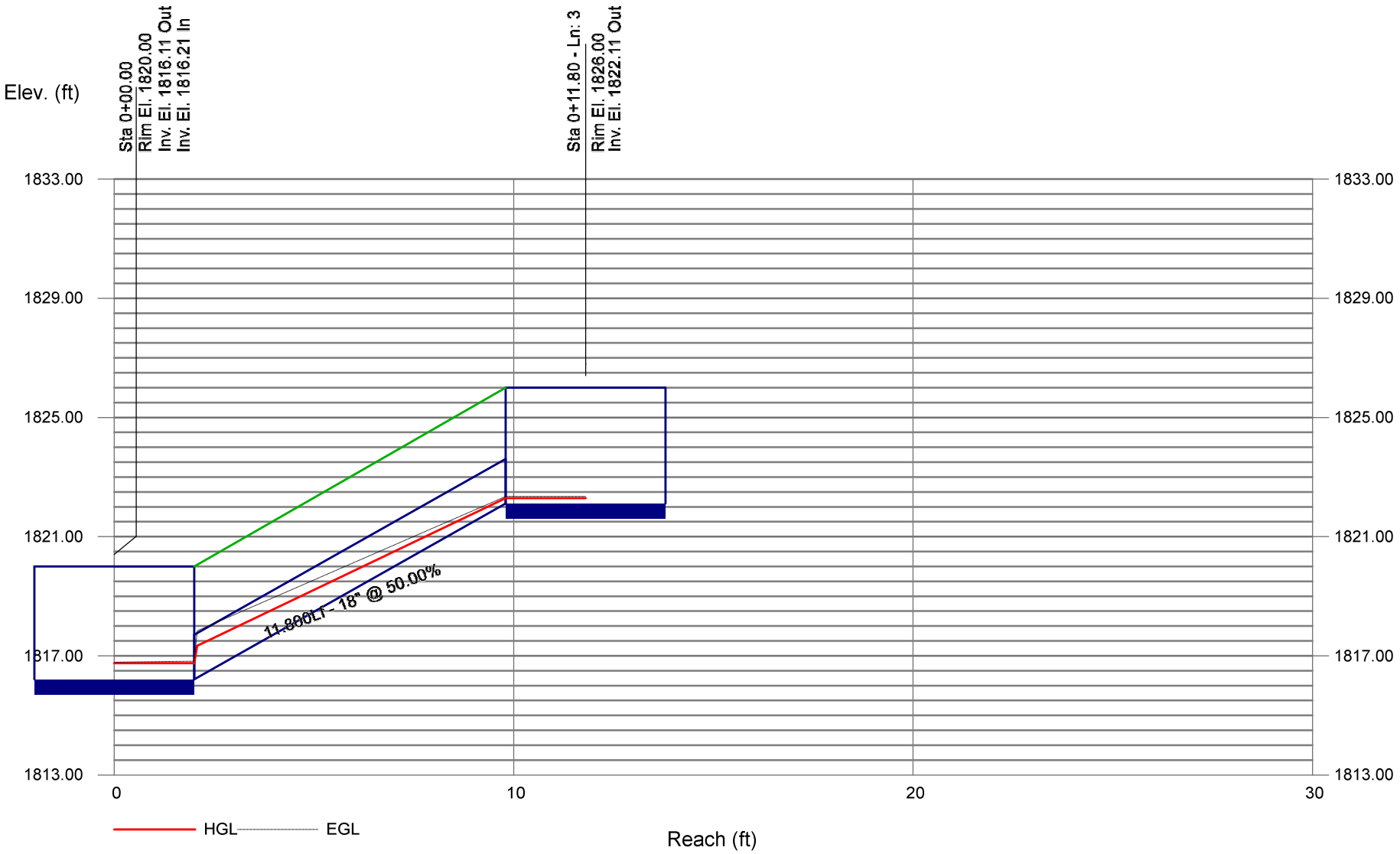
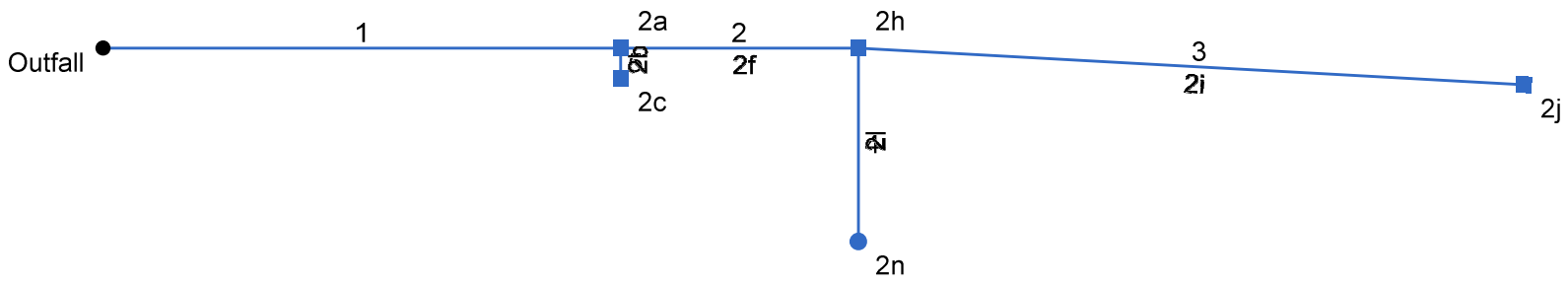


W_Forni



Project File: DS-2 APC.stm	Number of lines: 5	Date: 8/1/2017

Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/ Rim El (ft)	
1	End	138.609	0.000	DrGrt	0.00	0.07	1.00	5.0	1817.10	8.13	1828.37	18	Cir	0.024	1.50	1831.97	
2	1	63.600	0.000	DrGrt	0.00	0.21	1.00	5.0	1828.47	5.53	1831.99	18	Cir	0.024	1.50	1835.92	2f
3	2	178.400	3.000	DrGrt	0.00	0.27	1.00	5.0	1832.09	4.15	1839.49	18	Cir	0.024	1.00	1843.32	2i
4	2	49.000	90.000	DrGrt	0.00	0.28	0.54	5.0	1832.09	27.82	1845.72	18	Cir	0.024	1.00	1853.00	2l
5	1	7.700	90.000	DrGrt	0.00	0.51	0.54	5.0	1828.47	8.83	1829.15	18	Cir	0.024	1.00	1832.75	2b

W_Forni | Number of lines: 5 | Date: 8/1/2017

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	138.609	0.07	1.34	1.00	0.07	0.98	5.0	11.7	2.3	2.20	16.22	5.04	18	8.13	1817.10	1828.37	1817.47	1828.93	1821.10	1831.97	
2	1	63.600	0.21	0.76	1.00	0.21	0.63	5.0	10.7	2.4	1.48	13.38	3.24	18	5.53	1828.47	1831.99	1828.93	1832.45	1831.97	1835.92	2f
3	2	178.400	0.27	0.27	1.00	0.27	0.27	5.0	5.0	3.4	0.92	11.58	2.86	18	4.15	1832.09	1839.49	1832.45	1839.85	1835.92	1843.32	2i
4	2	49.000	0.28	0.28	0.54	0.15	0.15	5.0	5.0	3.4	0.51	30.00	2.02	18	27.82	1832.09	1845.72	1832.45	1845.99	1835.92	1853.00	2l
5	1	7.700	0.51	0.51	0.54	0.28	0.28	5.0	5.0	3.4	0.94	16.90	2.45	18	8.83	1828.47	1829.15	1828.93	1829.51	1831.97	1832.75	2b

W_Forni | Number of lines: 5 | Run Date: 8/1/2017

NOTES:Intensity = 7.60 / (Inlet time + 0.10) ^ 0.49; Return period =Yrs. 25 ; c = cir e = ellip b = box

Hydraulic Grade Line Computations

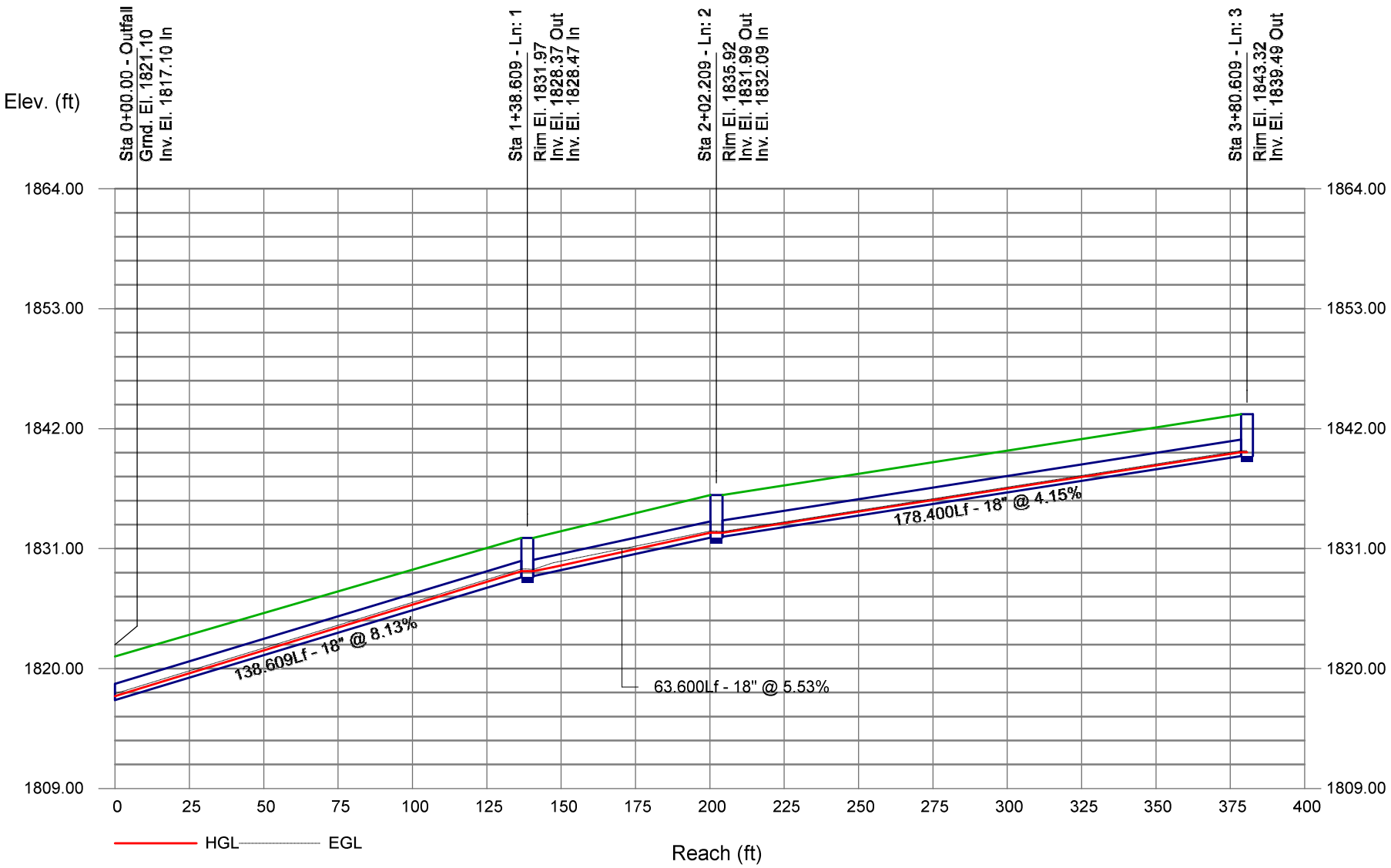
Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf		Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf	Ave Sf	Enrgy loss		
	(in)	(cfs)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(ft)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(%)	(ft)	(K)	(ft)
1	18	2.20	1817.10	1817.47	0.37	0.34	6.41	0.21	1817.68	0.000	138.609	1828.37	1828.93	0.56**	0.60	3.66	0.21	1829.14	0.000	0.000	n/a	1.50	n/a
2	18	1.48	1828.47	1828.93	0.46	0.46	3.23	0.17	1829.10	0.000	63.600	1831.99	1832.45 j	0.46**	0.46	3.26	0.17	1832.61	0.000	0.000	n/a	1.50	n/a
3	18	0.92	1832.09	1832.45	0.36	0.32	2.86	0.13	1832.57	0.000	178.400	1839.49	1839.85	0.36**	0.32	2.86	0.13	1839.97	0.000	0.000	n/a	1.00	n/a
4	18	0.51	1832.09	1832.45	0.36	0.21	1.60	0.09	1832.54	0.000	49.000	1845.72	1845.99 j	0.27**	0.21	2.44	0.09	1846.08	0.000	0.000	n/a	1.00	n/a
5	18	0.94	1828.47	1828.93	0.46	0.33	2.04	0.13	1829.06	0.000	7.700	1829.15	1829.51 j	0.36**	0.33	2.87	0.13	1829.64	0.000	0.000	n/a	1.00	0.13

W_Forni | Number of lines: 5 | Run Date: 8/1/2017

Notes: ; ** Critical depth.; j-Line contains hyd. jump. ; c = cir e = ellip b = box

Storm Sewer Profile

Proj. file: DS-2 APC.stm



Storm Sewer Profile

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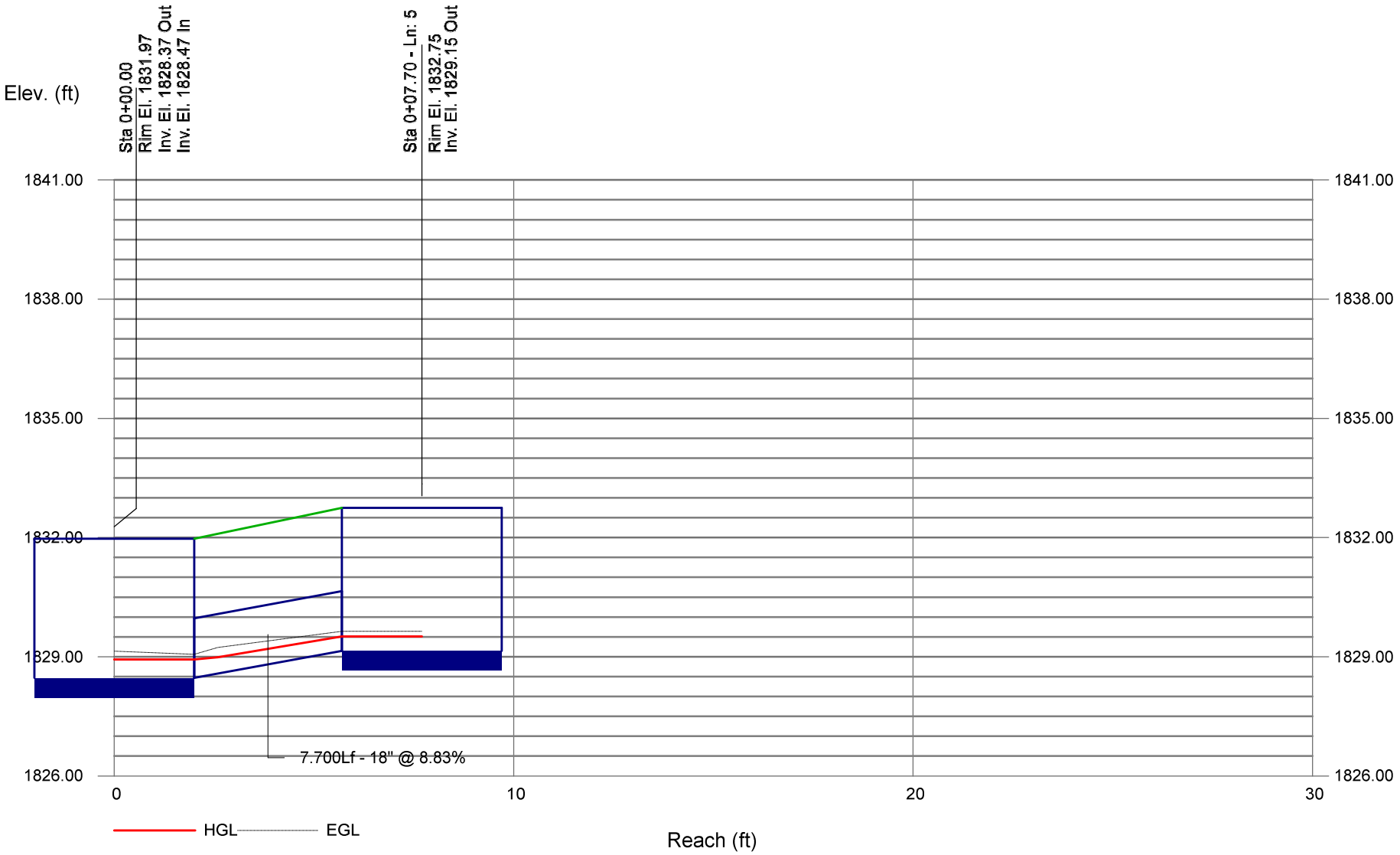

Storm Sewer Profile

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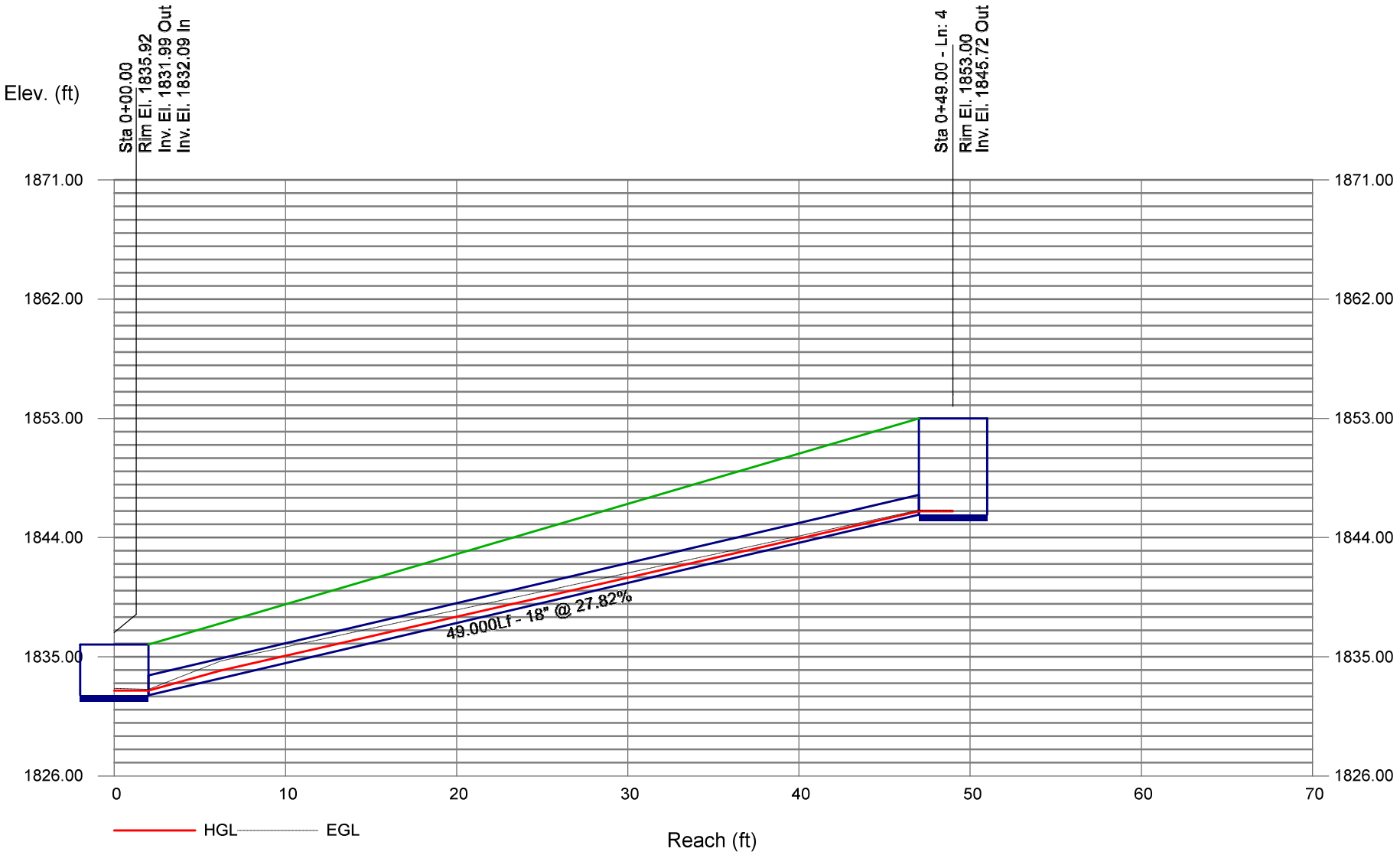
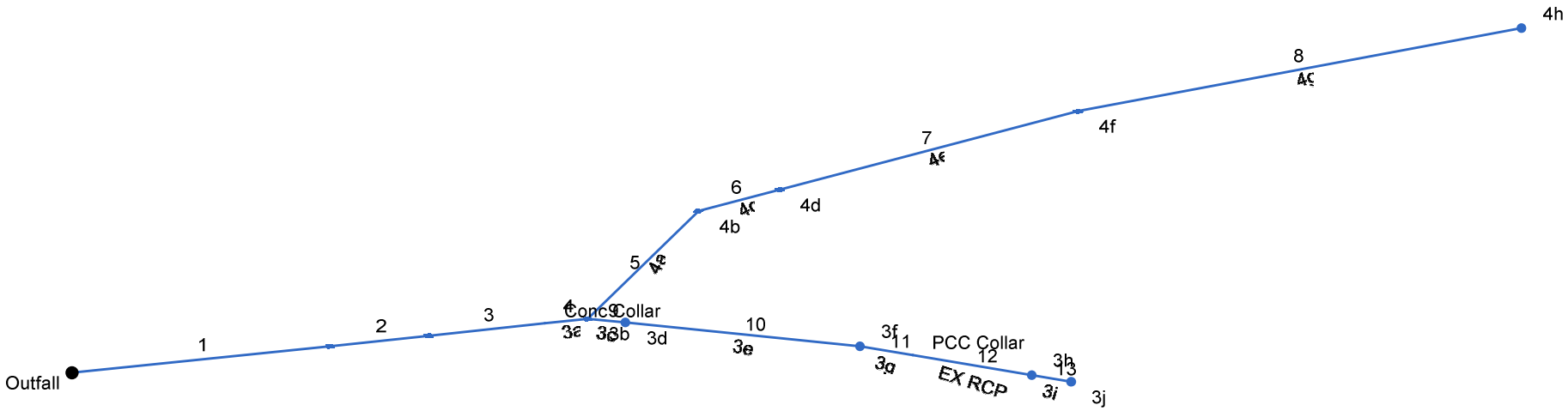


Forni Rd US-50 Culv



Project File: DS-3&4.stm	Number of lines: 13	Date: 8/3/2017

Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/ Rim El (ft)	
1	End	146.745	-11.099	DrGrt	0.00	0.00	0.00	5.0	1793.30	10.36	1808.50	42	Cir	0.024	0.50	1824.50	
2	1	56.089	-0.211	DrGrt	0.00	0.44	1.00	5.0	1810.00	10.34	1815.80	24	Cir	0.024	0.50	1825.00	
3	2	66.362	-0.317	None	0.00	0.00	0.00	5.0	1815.90	10.34	1822.76	24	Cir	0.024	0.15	1826.77	
4	3	24.400	0.000	DrGrt	0.00	0.17	1.00	5.0	1822.76	0.98	1823.00	24	Cir	0.024	1.48	1826.50	3a
5	4	130.200	-50.000	DrGrt	0.00	0.02	0.54	5.0	1823.10	2.90	1826.87	18	Cir	0.024	0.94	1830.90	4a
6	5	51.000	35.000	DrGrt	0.00	0.11	0.54	5.0	1826.97	2.16	1828.07	18	Cir	0.024	0.50	1832.00	4c
7	6	186.300	0.000	DrGrt	0.00	0.28	0.54	5.0	1828.17	2.15	1832.17	18	Cir	0.024	0.50	1836.00	4e
8	7	262.800	7.000	Genr	0.00	3.80	0.19	5.0	1832.27	0.66	1834.00	18	Cir	0.024	1.00	1840.00	4g
9	4	21.400	22.500	DrGrt	0.00	0.49	0.54	5.0	1823.10	2.29	1823.59	24	Cir	0.024	0.50	1826.84	3c
10	9	133.600	0.000	Genr	0.00	0.24	0.54	5.0	1823.69	10.13	1837.23	24	Cir	0.024	0.50	1845.00	3e
11	10	30.900	7.000	None	0.00	0.00	0.00	0.0	1837.33	8.84	1840.06	24	Cir	0.024	0.15	1851.00	3g
12	11	70.000	0.000	MH	0.00	0.00	0.00	0.0	1840.06	8.86	1846.26	24	Cir	0.013	0.15	1854.00	EX RCP
13	12	22.700	0.000	Genr	0.00	7.93	0.54	60.5	1846.36	0.88	1846.56	24	Cir	0.024	1.00	1852.10	3i

Forni Rd US-50 Culv | Number of lines: 13 | Date: 8/3/2017

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	146.745	0.00	13.48	0.00	0.00	6.23	5.0	65.1	1.0	6.04	175.4	6.29	42	10.36	1793.30	1808.50	1793.75	1809.24	1797.50	1824.50	
2	1	56.089	0.44	13.48	1.00	0.44	6.23	5.0	64.7	1.0	6.06	39.40	6.85	24	10.34	1810.00	1815.80	1810.53	1816.67	1824.50	1825.00	
3	2	66.362	0.00	13.04	0.00	0.00	5.79	5.0	64.1	1.0	5.66	39.39	4.80	24	10.34	1815.90	1822.76	1816.67	1823.60	1825.00	1826.77	
4	3	24.400	0.17	13.04	1.00	0.17	5.79	5.0	63.8	1.0	5.67	12.15	3.80	24	0.98	1822.76	1823.00	1823.72	1823.96	1826.77	1826.50	3a
5	4	130.200	0.02	4.21	0.54	0.01	0.94	5.0	10.8	2.3	2.21	9.68	2.56	18	2.90	1823.10	1826.87	1824.29	1827.43	1826.50	1830.90	4a
6	5	51.000	0.11	4.19	0.54	0.06	0.93	5.0	10.2	2.4	2.24	8.35	3.84	18	2.16	1826.97	1828.07	1827.50	1828.64	1830.90	1832.00	4c
7	6	186.300	0.28	4.08	0.54	0.15	0.87	5.0	8.1	2.7	2.35	8.33	3.89	18	2.15	1828.17	1832.17	1828.72	1832.75	1832.00	1836.00	4e
8	7	262.800	3.80	3.80	0.19	0.72	0.72	5.0	5.0	3.4	2.46	4.62	2.65	18	0.66	1832.27	1834.00	1833.05	1834.78	1836.00	1840.00	4g
9	4	21.400	0.49	8.66	0.54	0.26	4.68	5.0	63.6	1.0	4.59	18.54	3.30	24	2.29	1823.10	1823.59	1824.29	1824.34	1826.50	1826.84	3c
10	9	133.600	0.24	8.17	0.54	0.13	4.41	5.0	62.0	1.0	4.38	39.00	4.56	24	10.13	1823.69	1837.23	1824.34	1837.97	1826.84	1845.00	3e
11	10	30.900	0.00	7.93	0.00	0.00	4.28	0.0	61.6	1.0	4.27	36.42	4.57	24	8.84	1837.33	1840.06	1837.97	1840.79	1845.00	1851.00	3g
12	11	70.000	0.00	7.93	0.00	0.00	4.28	0.0	60.8	1.0	4.30	67.31	4.17	24	8.86	1840.06	1846.26	1840.79	1846.99	1851.00	1854.00	EX RCP
13	12	22.700	7.93	7.93	0.54	4.28	4.28	60.5	60.5	1.0	4.31	11.50	3.39	24	0.88	1846.36	1846.56	1847.21	1847.41	1854.00	1852.10	3i

Forni Rd US-50 Culv | Number of lines: 13 | Run Date: 8/3/2017

NOTES:Intensity = 7.60 / (Inlet time + 0.10) ^ 0.49; Return period =Yrs. 25 ; c = cir e = ellip b = box

Hydraulic Grade Line Computations

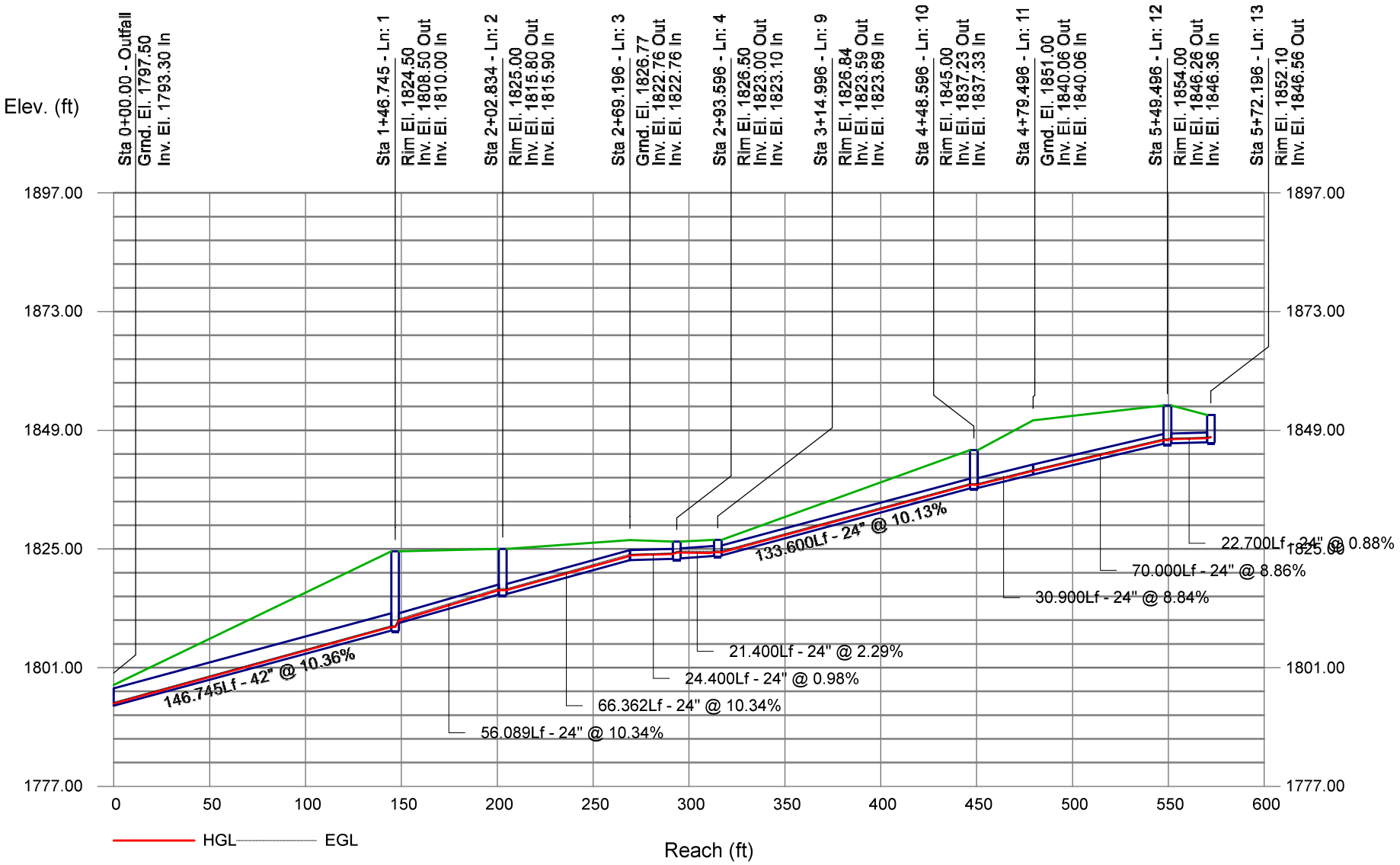
Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
	(in)	(cfs)	Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	(ft)	Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	Ave Sf (%)	Enrgy loss (ft)	(K)	(ft)
1	42	6.04	1793.30	1793.75	0.45	0.71	8.48	0.26	1794.01	0.000	146.745	1808.50	1809.24	0.74**	1.48	4.09	0.26	1809.50	0.000	0.000	n/a	0.50	0.13
2	24	6.06	1810.00	1810.53	0.53*	0.67	9.08	0.33	1810.86	0.000	56.089	1815.80	1816.67	0.87**	1.31	4.62	0.33	1817.00	0.000	0.000	n/a	0.50	0.17
3	24	5.66	1815.90	1816.67	0.77	1.12	5.07	0.32	1816.99	0.000	66.362	1822.76	1823.60	0.84**	1.25	4.52	0.32	1823.92	0.000	0.000	n/a	0.15	n/a
4	24	5.67	1822.76	1823.72	0.96*	1.49	3.80	0.22	1823.95	0.982	24.400	1823.00	1823.96	0.96	1.49	3.81	0.23	1824.19	0.987	0.985	0.240	1.48	0.33
5	18	2.21	1823.10	1824.29	1.19	0.60	1.47	0.21	1824.50	0.000	130.200	1826.87	1827.43 j	0.56**	0.60	3.66	0.21	1827.64	0.000	0.000	n/a	0.94	n/a
6	18	2.24	1826.97	1827.50	0.53*	0.56	4.01	0.21	1827.71	0.000	51.000	1828.07	1828.64	0.57**	0.61	3.68	0.21	1828.85	0.000	0.000	n/a	0.50	n/a
7	18	2.35	1828.17	1828.72	0.54*	0.58	4.05	0.22	1828.93	0.000	186.300	1832.17	1832.75	0.58**	0.63	3.73	0.22	1832.97	0.000	0.000	n/a	0.50	n/a
8	18	2.46	1832.27	1833.05	0.78*	0.93	2.65	0.11	1833.16	0.658	262.800	1834.00	1834.78	0.78	0.93	2.65	0.11	1834.89	0.657	0.657	1.727	1.00	0.11
9	24	4.59	1823.10	1824.29	1.19	1.08	2.35	0.28	1824.57	0.000	21.400	1823.59	1824.34 j	0.75**	1.08	4.24	0.28	1824.62	0.000	0.000	n/a	0.50	0.14
10	24	4.38	1823.69	1824.34	0.65	0.89	4.92	0.27	1824.62	0.000	133.600	1837.23	1837.97	0.73**	1.05	4.19	0.27	1838.24	0.000	0.000	n/a	0.50	n/a
11	24	4.27	1837.33	1837.97	0.63	0.86	4.98	0.27	1838.23	0.000	30.900	1840.06	1840.79	0.72**	1.03	4.15	0.27	1841.05	0.000	0.000	n/a	0.15	0.04
12	24	4.30	1840.06	1840.79	0.72	1.03	4.18	0.27	1841.05	0.000	70.000	1846.26	1846.99	0.73**	1.03	4.16	0.27	1847.26	0.000	0.000	n/a	0.15	n/a
13	24	4.31	1846.36	1847.21	0.85*	1.27	3.40	0.18	1847.39	0.880	22.700	1846.56	1847.41	0.85	1.27	3.39	0.18	1847.59	0.873	0.876	0.199	1.00	0.18

Forni Rd US-50 Culv | Number of lines: 13 | Run Date: 8/3/2017

Notes: * Normal depth assumed.; ** Critical depth.; j-Line contains hyd. jump. ; c = cir e = ellip b = box

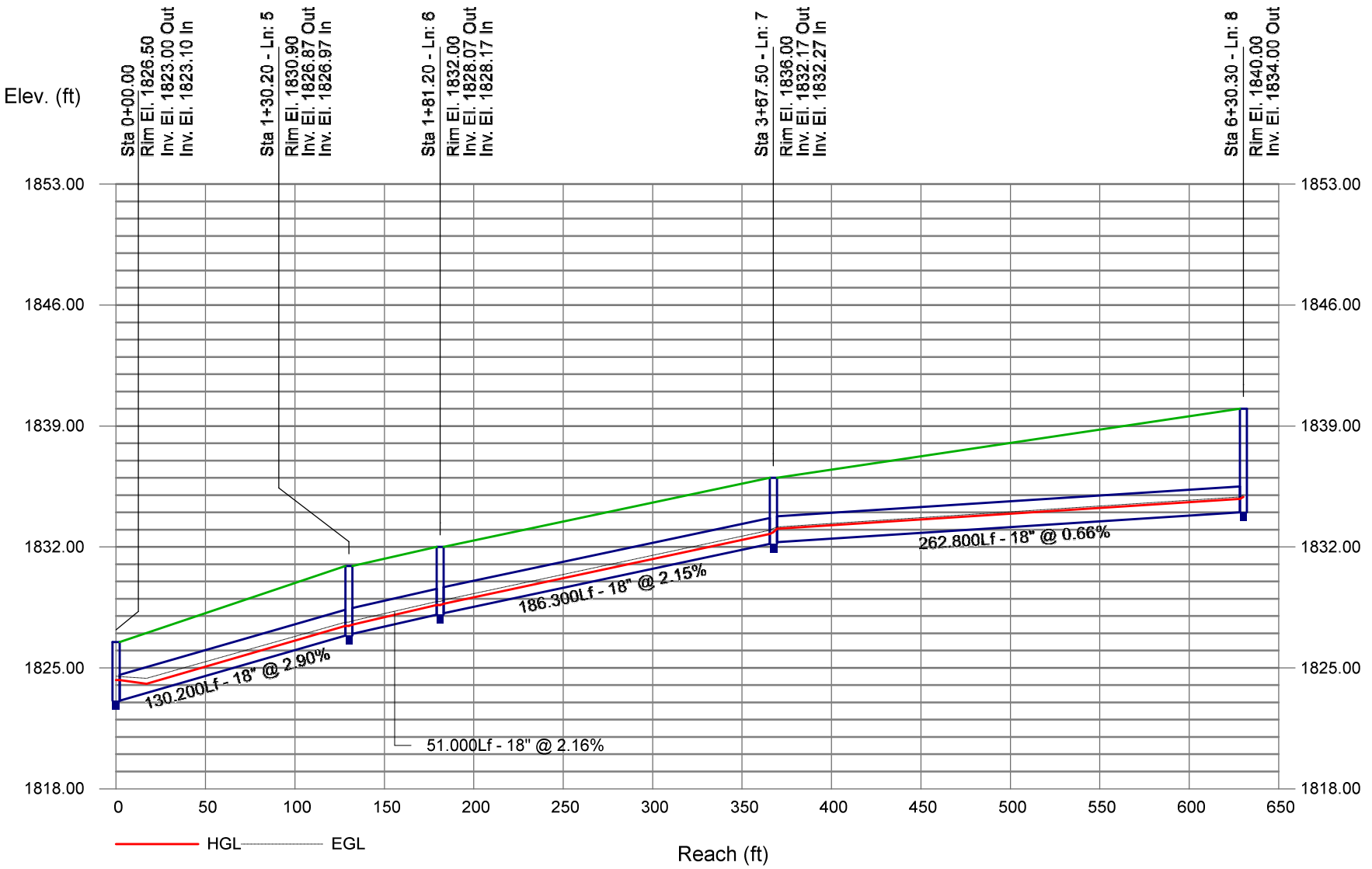
Storm Sewer Profile

Proj. file: DS-3&4.stm

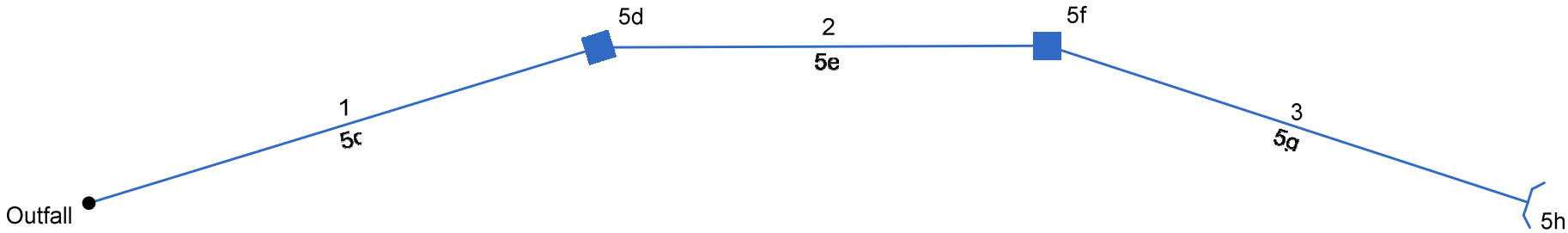


Storm Sewer Profile

Proj. file: DS-3&4.stm



Drainage System 5



Project File: DS-5.stm	Number of lines: 3	Date: 8/1/2017

Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/ Rim El (ft)	
1	End	76.900	-17.028	DrGrt	0.00	0.04	1.00	5.0	1830.50	0.83	1831.14	18	Cir	0.024	0.51	1835.07	5c
2	1	64.700	16.810	DrGrt	0.00	0.14	1.00	5.0	1831.24	3.20	1833.31	18	Cir	0.024	0.55	1837.14	5e
3	2	72.900	18.298	Hdwl	0.00	0.30	0.50	5.0	1833.41	0.81	1834.00	18	Cir	0.024	1.00	1835.50	5g

Drainage System 5 | Number of lines: 3 | Date: 8/1/2017

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	76.900	0.04	0.48	1.00	0.04	0.33	5.0	11.2	2.3	0.76	5.19	2.04	18	0.83	1830.50	1831.14	1830.82	1831.67	1832.00	1835.07	5c
2	1	64.700	0.14	0.44	1.00	0.14	0.29	5.0	9.2	2.5	0.73	10.17	2.19	18	3.20	1831.24	1833.31	1831.68	1833.63	1835.07	1837.14	5e
3	2	72.900	0.30	0.30	0.50	0.15	0.15	5.0	5.0	3.4	0.51	5.12	1.85	18	0.81	1833.41	1834.00	1833.73	1834.32	1837.14	1835.50	5g

Drainage System 5 | Number of lines: 3 | Run Date: 8/1/2017

NOTES:Intensity = 7.60 / (Inlet time + 0.10) ^ 0.49; Return period =Yrs. 25 ; c = cir e = ellip b = box

Hydraulic Grade Line Computations

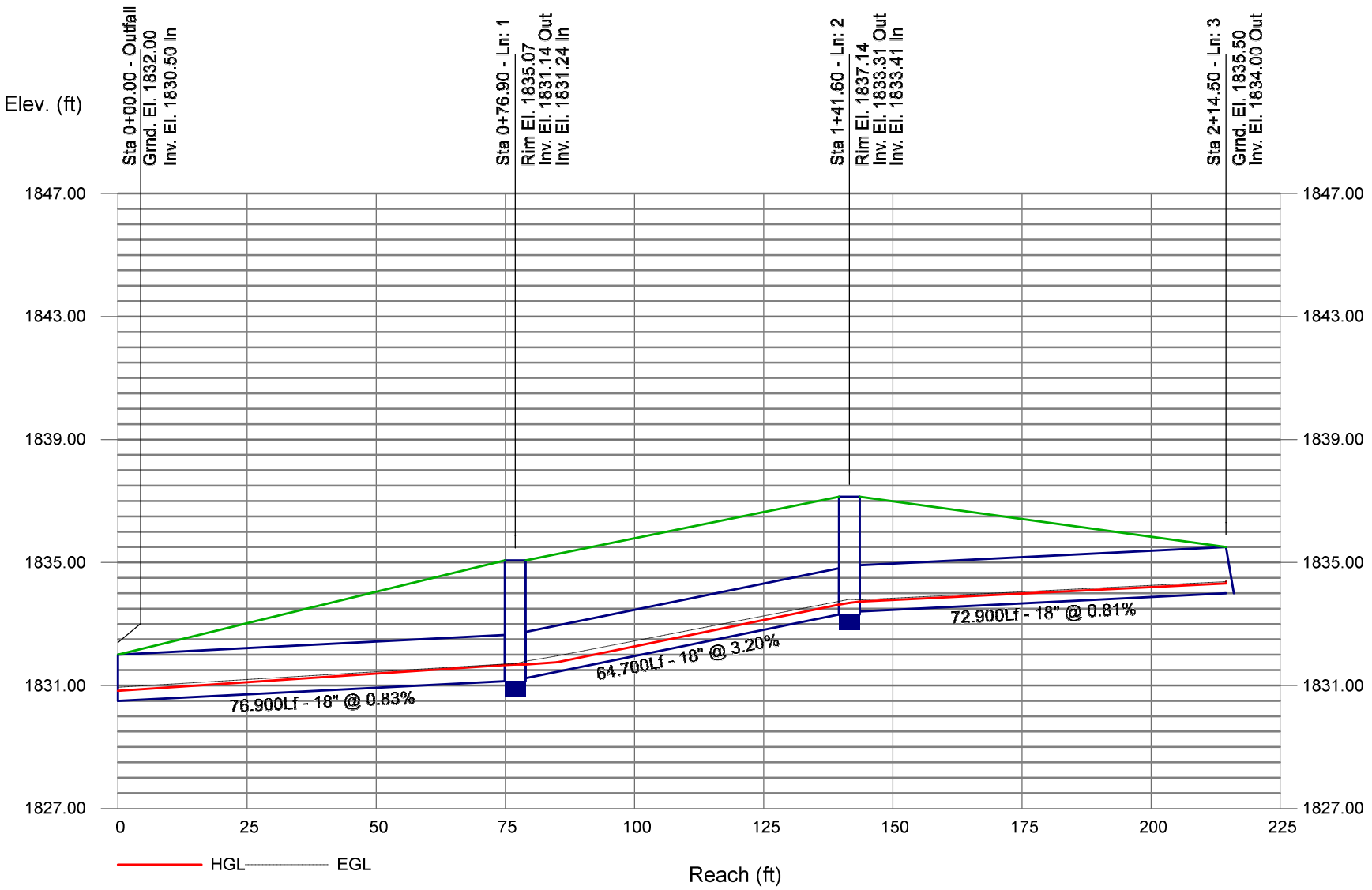
Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf		Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf	Ave Sf	Enrgy loss		
	(in)	(cfs)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(ft)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(%)	(ft)	(K)	(ft)
1	18	0.76	1830.50	1830.82	0.32	0.28	2.71	0.11	1830.94	1.711	76.900	1831.14	1831.67	0.52	0.55	1.38	0.03	1831.69	0.258	0.985	0.757	0.51	0.02
2	18	0.73	1831.24	1831.68	0.44	0.27	1.70	0.11	1831.79	0.000	64.700	1833.31	1833.63 j	0.32**	0.27	2.68	0.11	1833.74	0.000	0.000	n/a	0.55	0.06
3	18	0.51	1833.41	1833.73	0.32*	0.28	1.85	0.05	1833.78	0.809	72.900	1834.00	1834.32	0.32	0.28	1.84	0.05	1834.37	0.803	0.806	0.587	1.00	0.05

Drainage System 5 | Number of lines: 3 | Run Date: 8/1/2017

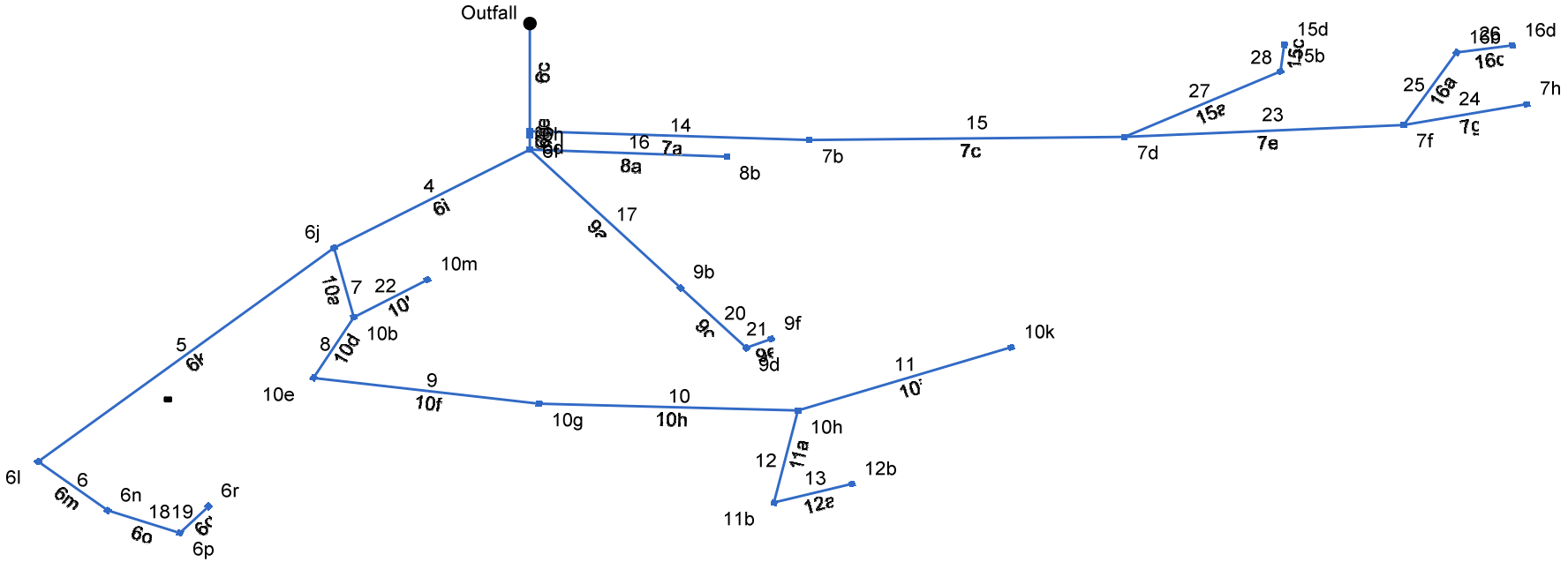
Notes: * Normal depth assumed.; ** Critical depth.; j-Line contains hyd. jump. ; c = cir e = ellip b = box

Storm Sewer Profile

Proj. file: DS-5.stm



Forni



Project File: DS - 6,7,8,9,10,11,12 (water main reroute).stm	Number of lines: 28	Date: 8/2/2017

Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/ Rim El (ft)	
1	End	84.500	90.000	DrGrt	0.00	0.17	1.00	5.0	1838.50	4.79	1842.55	24	Cir	0.024	1.50	1851.43	6c
2	1	3.060	0.000	DrGrt	0.00	0.06	0.54	5.0	1842.65	0.65	1842.67	24	Cir	0.024	0.50	1851.00	6e
3	2	11.400	0.000	DrGrt	0.00	0.37	1.00	5.0	1842.77	0.53	1842.83	24	Cir	0.024	1.67	1854.00	6g
4	3	157.700	60.750	DrGrt	0.00	0.65	1.00	5.0	1842.93	0.82	1844.23	24	Cir	0.024	1.46	1851.30	6i
5	4	267.000	-9.600	DrGrt	0.00	0.21	0.96	5.0	1844.33	0.50	1845.66	18	Cir	0.024	1.50	1849.49	6k
6	5	62.200	-102.960	DrGrt	0.00	0.38	0.77	5.0	1845.76	3.55	1847.97	18	Cir	0.024	0.57	1851.90	6m
7	4	56.100	-75.000	DrGrt	0.00	0.23	0.60	5.0	1847.47	3.17	1849.25	18	Cir	0.024	1.50	1853.75	10a
8	7	55.400	45.000	DrGrt	0.00	0.00	1.00	5.0	1849.35	12.36	1856.20	18	Cir	0.024	1.50	1860.34	10d
9	8	159.700	-113.500	DrGrt	0.00	0.30	1.00	5.0	1856.45	5.39	1865.06	18	Cir	0.024	0.50	1869.10	10f
10	9	182.100	-5.550	DrGrt	0.00	0.25	1.00	5.0	1865.16	2.26	1869.27	18	Cir	0.024	1.50	1877.69	10h
11	10	157.800	-20.040	DrGrt	0.00	0.31	1.00	5.0	1873.50	2.85	1878.00	18	Cir	0.024	1.00	1882.10	10j
12	10	74.200	101.500	DrGrt	0.00	0.55	0.86	5.0	1870.26	1.00	1871.00	18	Cir	0.024	1.50	1881.06	11a
13	12	56.700	-118.167	DrGrt	0.00	8.56	0.54	60.5	1871.10	10.86	1877.26	18	Cir	0.024	1.00	1881.50	12a
14	1	196.300	-88.006	DrGrt	0.00	0.16	1.00	5.0	1847.20	7.15	1861.24	18	Cir	0.024	0.50	1865.47	7a
15	14	221.500	-2.630	DrGrt	0.00	0.52	1.00	5.0	1861.34	6.14	1874.94	18	Cir	0.024	0.70	1879.07	7c
16	3	138.400	-87.704	DrGrt	0.00	0.77	0.85	5.0	1848.97	4.12	1854.67	18	Cir	0.024	1.00	1860.30	8a
17	3	151.500	-44.340	DrGrt	0.00	0.17	1.00	5.0	1848.97	5.94	1857.97	18	Cir	0.024	0.50	1861.90	9a
18	6	53.700	-19.050	DrGrt	0.00	0.46	0.61	5.0	1848.07	3.99	1850.21	18	Cir	0.024	1.38	1854.40	6o
19	18	28.900	-65.000	DrGrt	0.00	0.42	1.00	5.0	1850.31	6.06	1852.06	18	Cir	0.024	1.00	1855.88	6q
20	17	65.900	0.000	DrGrt	0.00	0.08	0.70	5.0	1858.07	5.31	1861.57	18	Cir	0.024	1.41	1865.50	9c
21	20	18.900	-67.468	DrGrt	0.00	0.20	0.70	5.0	1861.67	2.65	1862.17	18	Cir	0.024	1.00	1866.00	9e
22	7	59.600	-105.360	DrGrt	0.00	0.18	1.00	5.0	1849.35	3.89	1851.67	18	Cir	0.024	1.00	1855.50	10l
23	15	196.500	-2.052	DrGrt	0.00	0.13	0.68	5.0	1875.04	1.43	1877.85	18	Cir	0.024	1.26	1886.83	7e

Forni | Number of lines: 28 | Date: 8/2/2017

Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/ Rim El (ft)	
24	23	88.000	-8.033	DrGrt	0.00	0.90	0.60	5.0	1883.00	3.22	1885.83	18	Cir	0.024	1.00	1890.97	7g
25	23	67.900	-54.158	DrGrt	0.00	0.04	1.00	5.0	1878.15	0.52	1878.50	18	Cir	0.024	1.18	1888.42	16a
26	25	39.500	48.623	DrGrt	0.00	0.17	1.00	5.0	1884.59	6.48	1887.15	18	Cir	0.024	1.00	1890.98	16c
27	15	121.100	-24.470	DrGrt	0.00	0.10	0.77	5.0	1875.04	4.19	1880.12	18	Cir	0.024	1.31	1884.18	15a
28	27	20.900	-57.713	DrGrt	0.00	0.56	0.86	5.0	1880.22	1.29	1880.49	18	Cir	0.024	1.00	1884.37	15c

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	84.500	0.17	16.90	1.00	0.17	11.79	5.0	64.7	1.0	11.47	26.82	6.97	24	4.79	1838.50	1842.55	1839.41	1843.77	0.00	1851.43	6c
2	1	3.060	0.06	14.15	0.54	0.03	9.54	5.0	64.7	1.0	9.29	9.91	2.96	24	0.65	1842.65	1842.67	1845.31	1845.32	1851.43	1851.00	6e
3	2	11.400	0.37	14.09	1.00	0.37	9.51	5.0	64.6	1.0	9.26	8.88	2.95	24	0.53	1842.77	1842.83	1845.39	1845.46	1851.00	1854.00	6g
4	3	157.700	0.65	12.50	1.00	0.65	8.12	5.0	63.6	1.0	7.97	11.12	2.54	24	0.82	1842.93	1844.23	1845.68	1846.35	1854.00	1851.30	6i
5	4	267.000	0.21	1.47	0.96	0.20	1.19	5.0	6.8	2.9	3.50	4.01	1.98	18	0.50	1844.33	1845.66	1846.50	1847.50	1851.30	1849.49	6k
6	5	62.200	0.38	1.26	0.77	0.29	0.99	5.0	6.3	3.1	3.03	10.72	2.88	18	3.55	1845.76	1847.97	1847.60	1848.63	1849.49	1851.90	6m
7	4	56.100	0.23	10.38	0.60	0.14	6.27	5.0	63.3	1.0	6.17	10.13	5.59	18	3.17	1847.47	1849.25	1848.32	1850.21	1851.30	1853.75	10a
8	7	55.400	0.00	9.97	1.00	0.00	5.96	5.0	63.0	1.0	5.87	20.00	5.34	18	12.36	1849.35	1856.20	1850.21	1857.14	1853.75	1860.34	10d
9	8	159.700	0.30	9.97	1.00	0.30	5.96	5.0	62.2	1.0	5.91	13.21	6.17	18	5.39	1856.45	1865.06	1857.15	1866.00	1860.34	1869.10	10f
10	9	182.100	0.25	9.67	1.00	0.25	5.66	5.0	61.3	1.0	5.65	8.55	5.08	18	2.26	1865.16	1869.27	1866.05	1870.19	1869.10	1877.69	10h
11	10	157.800	0.31	0.31	1.00	0.31	0.31	5.0	5.0	3.4	1.06	9.61	3.27	18	2.85	1873.50	1878.00	1873.84	1878.38	1877.69	1882.10	10j
12	10	74.200	0.55	9.11	0.86	0.47	5.10	5.0	60.9	1.0	5.11	5.68	3.64	18	1.00	1870.26	1871.00	1871.37	1872.11	1877.69	1881.06	11a
13	12	56.700	8.56	8.56	0.54	4.62	4.62	60.5	60.5	1.0	4.65	18.75	3.74	18	10.86	1871.10	1877.26	1872.42	1878.09	1881.06	1881.50	12a
14	1	196.300	0.16	2.58	1.00	0.16	2.08	5.0	13.2	2.1	4.42	15.21	6.01	18	7.15	1847.20	1861.24	1847.75	1862.05	1851.43	1865.47	7a
15	14	221.500	0.52	2.42	1.00	0.52	1.92	5.0	12.0	2.2	4.26	14.09	4.87	18	6.14	1861.34	1874.94	1862.05	1875.73	1865.47	1879.07	7c
16	3	138.400	0.77	0.77	0.85	0.65	0.65	5.0	5.0	3.4	2.23	11.54	4.36	18	4.12	1848.97	1854.67	1849.42	1855.23	1854.00	1860.30	8a
17	3	151.500	0.17	0.45	1.00	0.17	0.37	5.0	9.1	2.5	0.93	13.86	3.66	18	5.94	1848.97	1857.97	1849.23	1858.33	1854.00	1861.90	9a
18	6	53.700	0.46	0.88	0.61	0.28	0.70	5.0	5.6	3.2	2.26	11.36	3.72	18	3.99	1848.07	1850.21	1848.63	1850.78	1851.90	1854.40	6o
19	18	28.900	0.42	0.42	1.00	0.42	0.42	5.0	5.0	3.4	1.43	14.00	3.14	18	6.06	1850.31	1852.06	1850.78	1852.51	1854.40	1855.88	6q
20	17	65.900	0.08	0.28	0.70	0.06	0.20	5.0	6.2	3.1	0.60	13.11	2.75	18	5.31	1858.07	1861.57	1858.33	1861.86	1861.90	1865.50	9c
21	20	18.900	0.20	0.20	0.70	0.14	0.14	5.0	5.0	3.4	0.48	9.25	2.57	18	2.65	1861.67	1862.17	1861.90	1862.43	1865.50	1866.00	9e
22	7	59.600	0.18	0.18	1.00	0.18	0.18	5.0	5.0	3.4	0.61	11.22	1.57	18	3.89	1849.35	1851.67	1850.21	1851.96	1853.75	1855.50	10l

Forni | Number of lines: 28 | Run Date: 8/2/2017

NOTES:Intensity = 7.60 / (Inlet time + 0.10) ^ 0.49; Return period =Yrs. 25 ; c = cir e = ellip b = box

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
23	15	196.500	0.13	1.24	0.68	0.09	0.84	5.0	9.9	2.4	2.05	6.80	2.70	18	1.43	1875.04	1877.85	1875.95	1878.39	1879.07	1886.83	7e
24	23	88.000	0.90	0.90	0.60	0.54	0.54	5.0	5.0	3.4	1.84	10.20	3.92	18	3.22	1883.00	1885.83	1883.43	1886.34	1886.83	1890.97	7g
25	23	67.900	0.04	0.21	1.00	0.04	0.21	5.0	7.0	2.9	0.61	4.08	1.65	18	0.52	1878.15	1878.50	1878.54	1878.89	1886.83	1888.42	16a
26	25	39.500	0.17	0.17	1.00	0.17	0.17	5.0	5.0	3.4	0.58	14.48	3.25	18	6.48	1884.59	1887.15	1884.80	1887.43	1888.42	1890.98	16c
27	15	121.100	0.10	0.66	0.77	0.08	0.56	5.0	5.4	3.3	1.84	11.65	2.89	18	4.19	1875.04	1880.12	1875.73	1880.63	1879.07	1884.18	15a
28	27	20.900	0.56	0.56	0.86	0.48	0.48	5.0	5.0	3.4	1.64	6.47	2.66	18	1.29	1880.22	1880.49	1880.88	1881.00	1884.18	1884.37	15c

Forni | Number of lines: 28 | Run Date: 8/2/2017

NOTES:Intensity = 7.60 / (Inlet time + 0.10) ^ 0.49; Return period =Yrs. 25 ; c = cir e = ellip b = box

Hydraulic Grade Line Computations

Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf		Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf	Ave Sf	Enrgy loss		
	(in)	(cfs)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(ft)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(%)	(ft)	(K)	(ft)
1	24	11.47	1838.50	1839.41	0.91	1.40	8.20	0.51	1839.93	0.000	84.500	1842.55	1843.77	1.21**	2.00	5.75	0.51	1844.28	0.000	0.000	n/a	1.50	n/a
2	24	9.29	1842.65	1845.31	2.00	3.14	2.96	0.14	1845.44	0.575	3.060	1842.67	1845.32	2.00	3.14	2.96	0.14	1845.46	0.575	0.575	0.018	0.50	0.07
3	24	9.26	1842.77	1845.39	2.00	3.14	2.95	0.14	1845.53	0.572	11.400	1842.83	1845.46	2.00	3.14	2.95	0.14	1845.59	0.571	0.571	0.065	1.67	0.23
4	24	7.97	1842.93	1845.68	2.00	3.14	2.54	0.10	1845.78	0.423	157.700	1844.23	1846.35	2.00	3.14	2.54	0.10	1846.45	0.423	0.423	0.667	1.46	0.15
5	18	3.50	1844.33	1846.50	1.50	1.77	1.98	0.06	1846.56	0.378	267.000	1845.66	1847.50	1.50	1.77	1.98	0.06	1847.57	0.378	0.378	1.010	1.50	0.09
6	18	3.03	1845.76	1847.60	1.50	0.75	1.72	0.05	1847.64	0.284	62.200	1847.97	1848.63 j	0.66**	0.75	4.04	0.25	1848.89	1.759	1.022	n/a	0.57	0.14
7	18	6.17	1847.47	1848.32	0.85*	1.03	6.01	0.42	1848.73	0.000	56.100	1849.25	1850.21	0.96**	1.19	5.17	0.42	1850.63	0.000	0.000	n/a	1.50	0.62
8	18	5.87	1849.35	1850.21	0.86	1.05	5.61	0.40	1850.61	0.000	55.400	1856.20	1857.14	0.93**	1.16	5.07	0.40	1857.53	0.000	0.000	n/a	1.50	n/a
9	18	5.91	1856.45	1857.15	0.70*	0.81	7.26	0.40	1857.56	0.000	159.700	1865.06	1866.00	0.94**	1.16	5.08	0.40	1866.40	0.000	0.000	n/a	0.50	0.20
10	18	5.65	1865.16	1866.05	0.89*	1.09	5.17	0.39	1866.44	0.000	182.100	1869.27	1870.19	0.92**	1.13	5.00	0.39	1870.58	0.000	0.000	n/a	1.50	0.58
11	18	1.06	1873.50	1873.84	0.34*	0.30	3.57	0.14	1873.97	0.000	157.800	1878.00	1878.38	0.38**	0.36	2.96	0.14	1878.52	0.000	0.000	n/a	1.00	n/a
12	18	5.11	1870.26	1871.37	1.11*	1.41	3.64	0.21	1871.58	0.997	74.200	1871.00	1872.11	1.11	1.41	3.64	0.21	1872.32	0.996	0.997	0.739	1.50	0.31
13	18	4.65	1871.10	1872.42	1.32	1.00	2.82	0.34	1872.76	0.000	56.700	1877.26	1878.09 j	0.83**	1.00	4.65	0.34	1878.42	0.000	0.000	n/a	1.00	0.34
14	18	4.42	1847.20	1847.75	0.55*	0.59	7.46	0.32	1848.08	0.000	196.300	1861.24	1862.05	0.81**	0.97	4.57	0.32	1862.37	0.000	0.000	n/a	0.50	n/a
15	18	4.26	1861.34	1862.05	0.71	0.82	5.22	0.32	1862.36	0.000	221.500	1874.94	1875.73	0.79**	0.95	4.51	0.32	1876.05	0.000	0.000	n/a	0.70	0.22
16	18	2.23	1848.97	1849.42	0.45*	0.44	5.05	0.21	1849.63	0.000	138.400	1854.67	1855.23	0.56**	0.61	3.67	0.21	1855.44	0.000	0.000	n/a	1.00	n/a
17	18	0.93	1848.97	1849.23	0.26*	0.21	4.46	0.13	1849.36	0.000	151.500	1857.97	1858.33	0.36**	0.33	2.86	0.13	1858.46	0.000	0.000	n/a	0.50	n/a
18	18	2.26	1848.07	1848.63	0.56	0.60	3.74	0.21	1848.84	0.000	53.700	1850.21	1850.78	0.57**	0.61	3.69	0.21	1850.99	0.000	0.000	n/a	1.38	0.29
19	18	1.43	1850.31	1850.78	0.47	0.44	3.04	0.16	1850.94	0.000	28.900	1852.06	1852.51 j	0.45**	0.44	3.23	0.16	1852.67	0.000	0.000	n/a	1.00	0.16
20	18	0.60	1858.07	1858.33	0.26	0.20	2.95	0.10	1858.43	0.000	65.900	1861.57	1861.86	0.29**	0.24	2.55	0.10	1861.96	0.000	0.000	n/a	1.41	n/a
21	18	0.48	1861.67	1861.90	0.23*	0.17	2.75	0.09	1861.99	0.000	18.900	1862.17	1862.43	0.26**	0.20	2.39	0.09	1862.51	0.000	0.000	n/a	1.00	n/a
22	18	0.61	1849.35	1850.21	0.86	0.24	0.59	0.10	1850.31	0.000	59.600	1851.67	1851.96 j	0.29**	0.24	2.55	0.10	1852.06	0.000	0.000	n/a	1.00	n/a

Forni | Number of lines: 28 | Run Date: 8/2/2017

Notes: * Normal depth assumed.; ** Critical depth.; j-Line contains hyd. jump. ; c = cir e = ellip b = box

Hydraulic Grade Line Computations

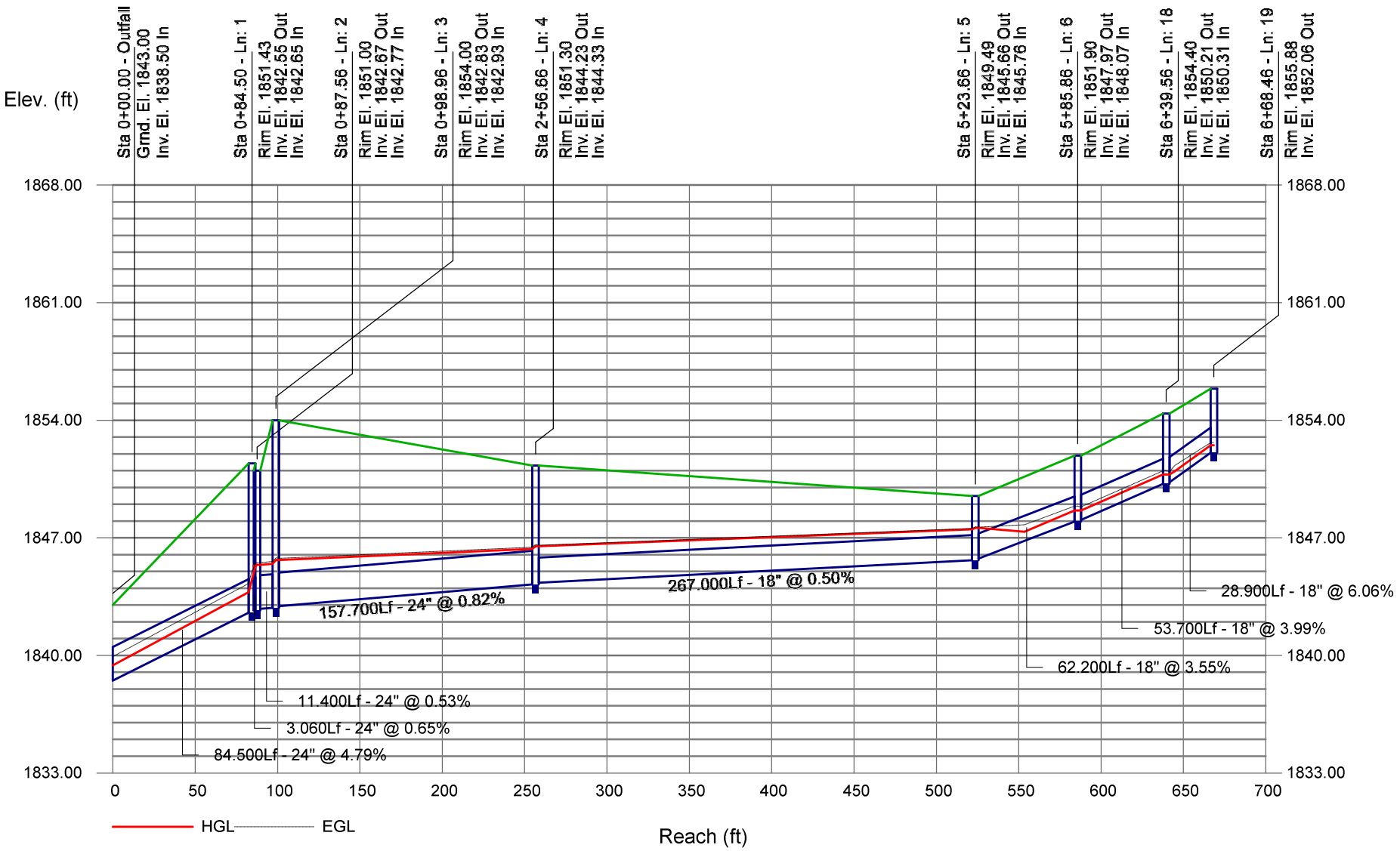
Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf		Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf	Ave Sf	Enrgy loss		
	(in)	(cfs)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(ft)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(%)	(ft)	(K)	(ft)
23	18	2.05	1875.04	1875.95	0.91	0.57	1.82	0.05	1876.00	0.277	196.500	1877.85	1878.39 j	0.54**	0.57	3.58	0.20	1878.59	1.695	0.986	n/a	1.26	0.25
24	18	1.84	1883.00	1883.43	0.43*	0.42	4.37	0.19	1883.62	0.000	88.000	1885.83	1886.34	0.51**	0.53	3.47	0.19	1886.53	0.000	0.000	n/a	1.00	n/a
25	18	0.61	1878.15	1878.54	0.39*	0.37	1.66	0.04	1878.58	0.516	67.900	1878.50	1878.89	0.39	0.37	1.65	0.04	1878.94	0.509	0.512	0.348	1.18	0.05
26	18	0.58	1884.59	1884.80	0.20*	0.15	3.99	0.10	1884.89	0.000	39.500	1887.15	1887.43	0.28**	0.23	2.52	0.10	1887.53	0.000	0.000	n/a	1.00	n/a
27	18	1.84	1875.04	1875.73	0.69	0.53	2.31	0.19	1875.92	0.000	121.100	1880.12	1880.63 j	0.51**	0.53	3.47	0.19	1880.82	0.000	0.000	n/a	1.31	0.24
28	18	1.64	1880.22	1880.88	0.65	0.74	2.21	0.08	1880.95	0.534	20.900	1880.49	1881.00	0.51	0.53	3.10	0.15	1881.15	1.353	0.944	0.197	1.00	0.15

Forni | Number of lines: 28 | Run Date: 8/2/2017

Notes: * Normal depth assumed.; ** Critical depth.; j-Line contains hyd. jump. ; c = cir e = ellip b = box

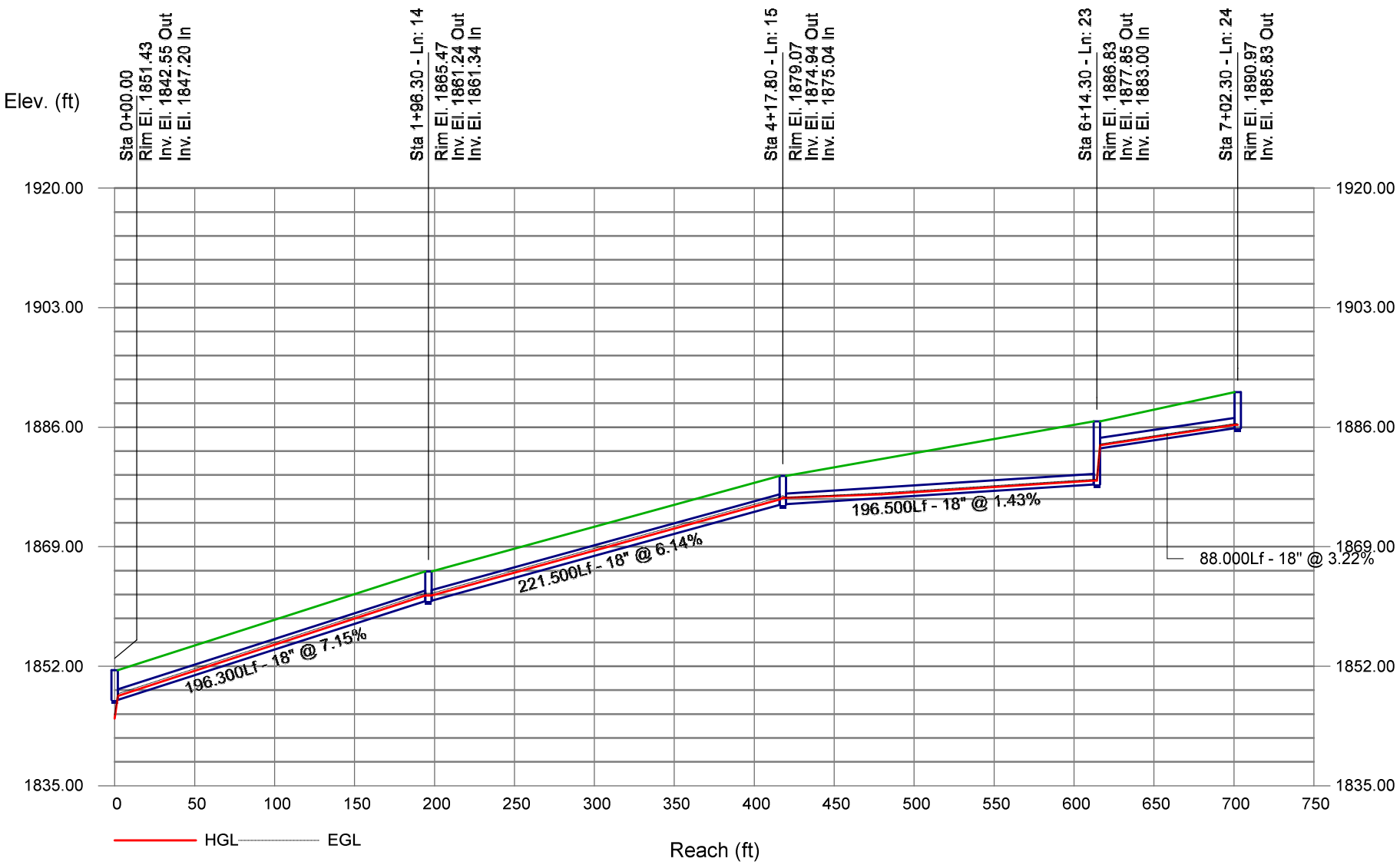
Storm Sewer Profile

Proj. file: DS - 6,7,8,9,10,11,12 (water main reroute).stm



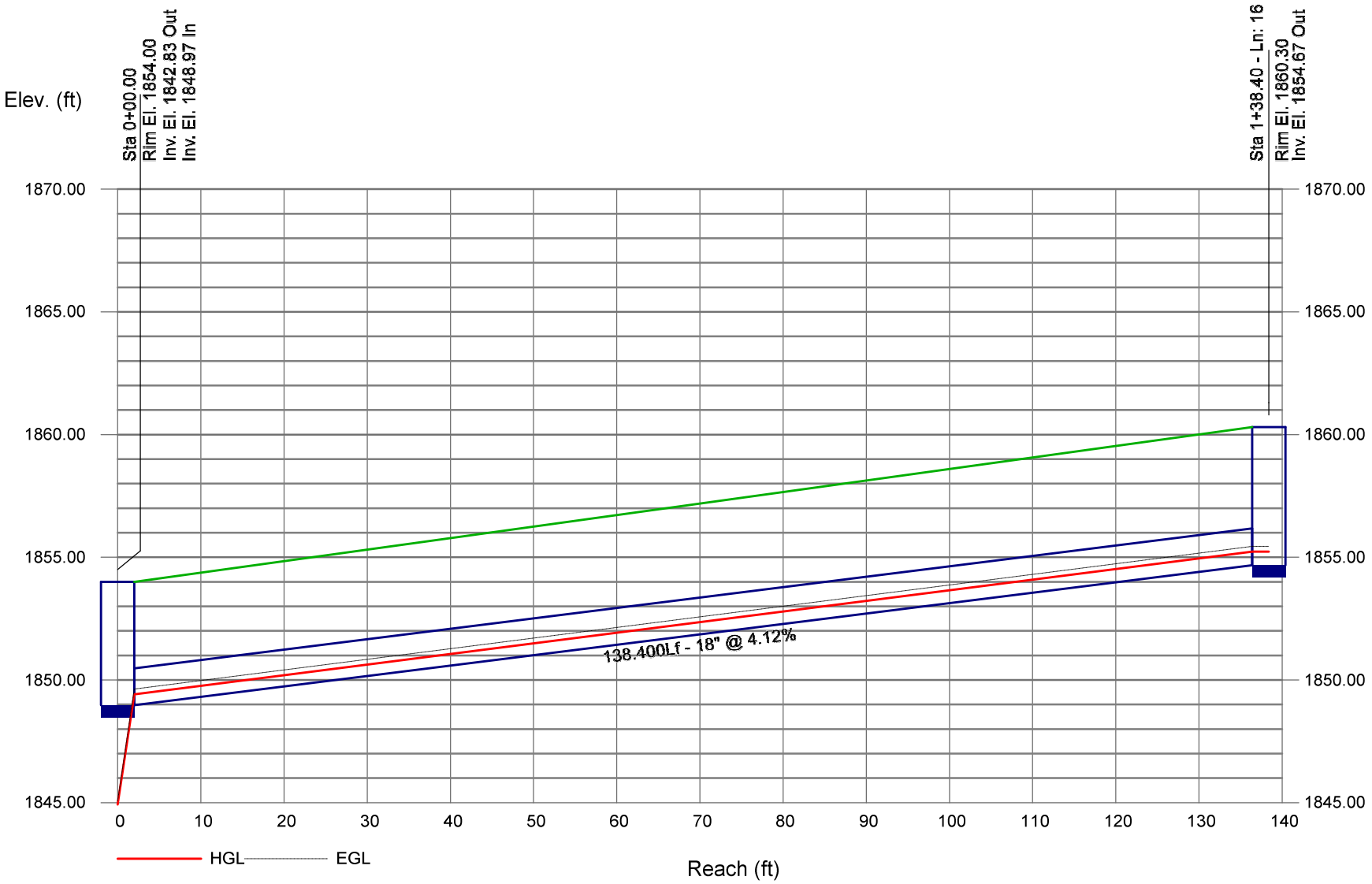
Storm Sewer Profile

Proj. file: DS - 6,7,8,9,10,11,12 (water main reroute).stm



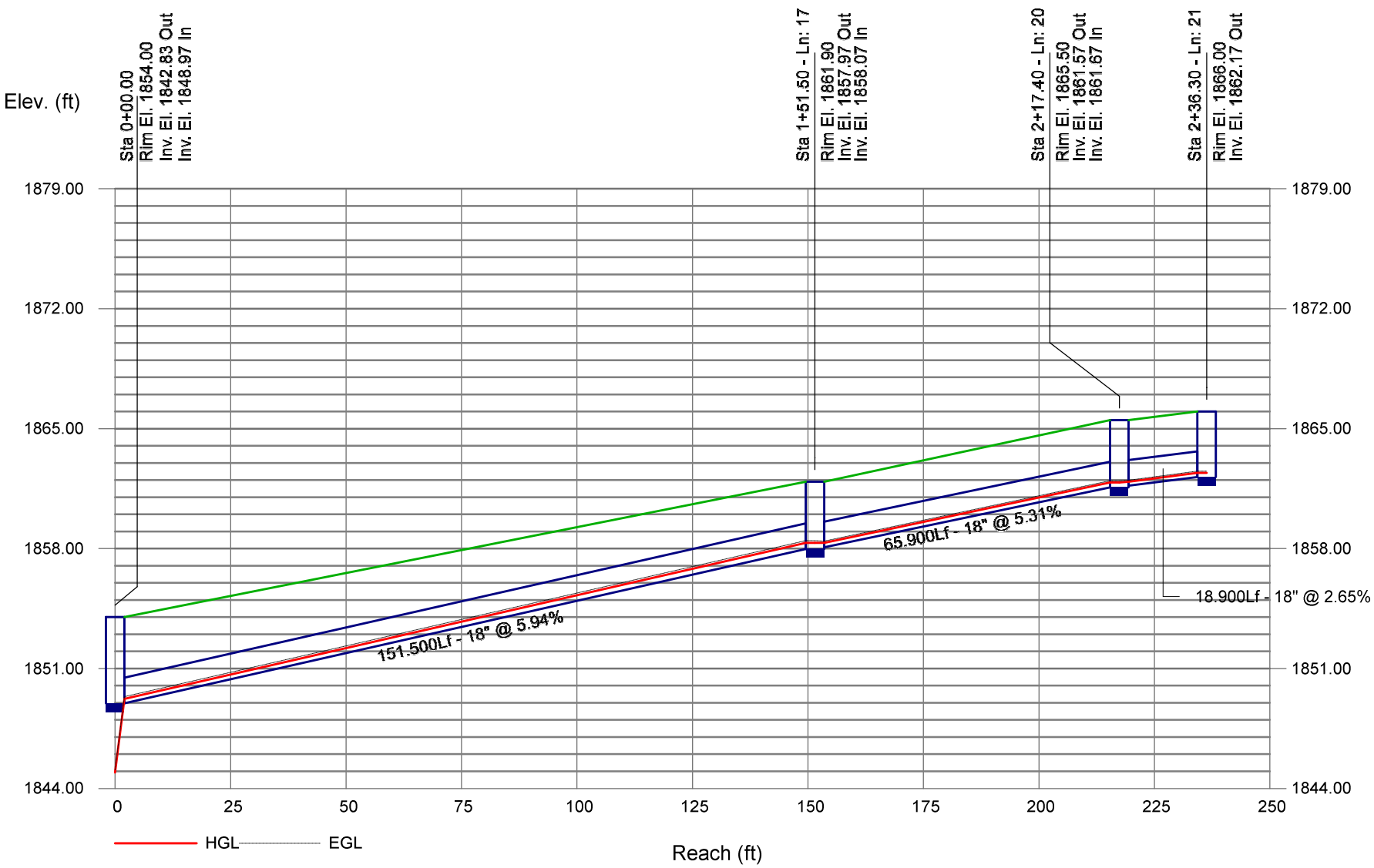
Storm Sewer Profile

Proj. file: DS - 6,7,8,9,10,11,12 (water main reroute).stm



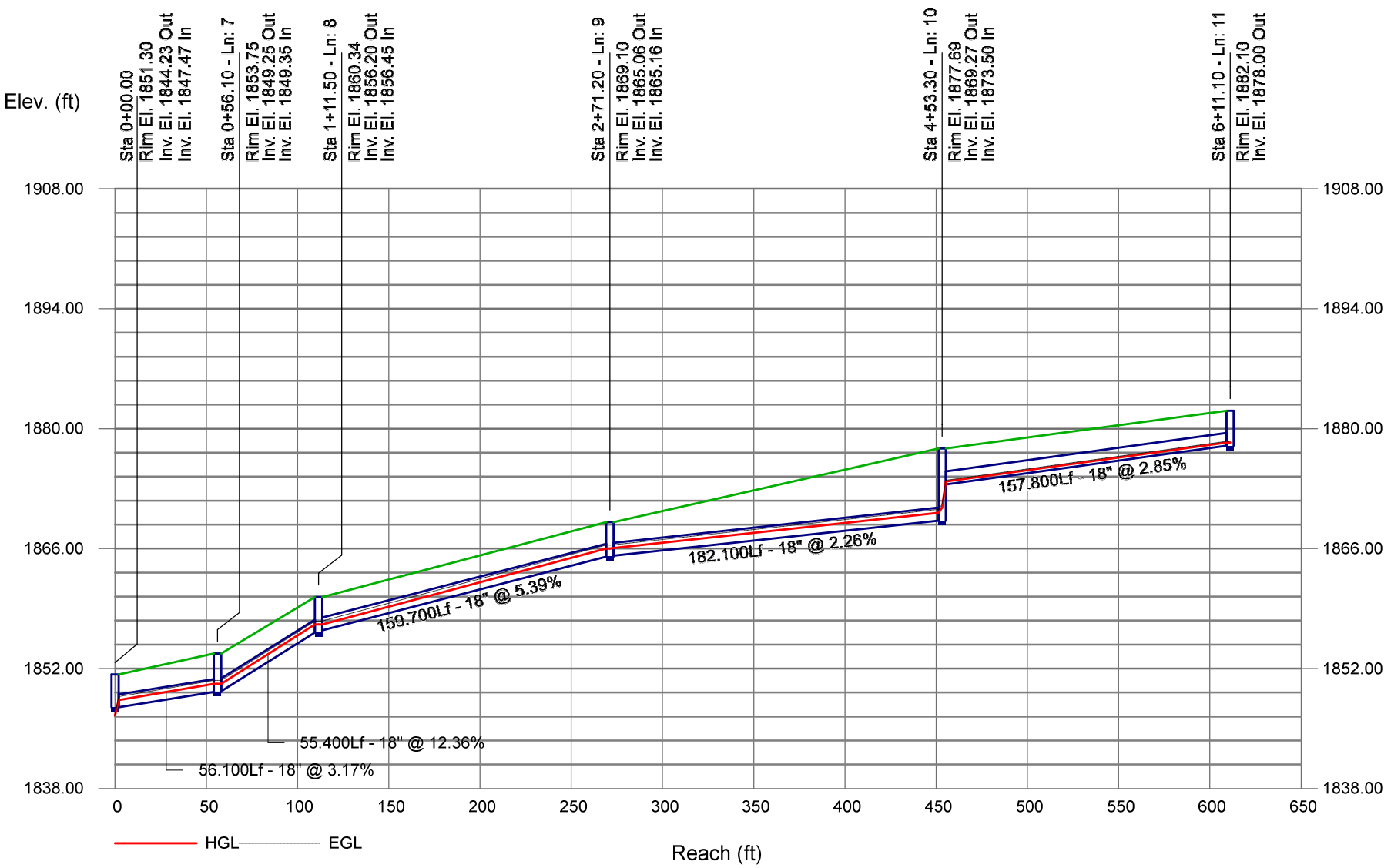
Storm Sewer Profile

Proj. file: DS - 6,7,8,9,10,11,12 (water main reroute).stm



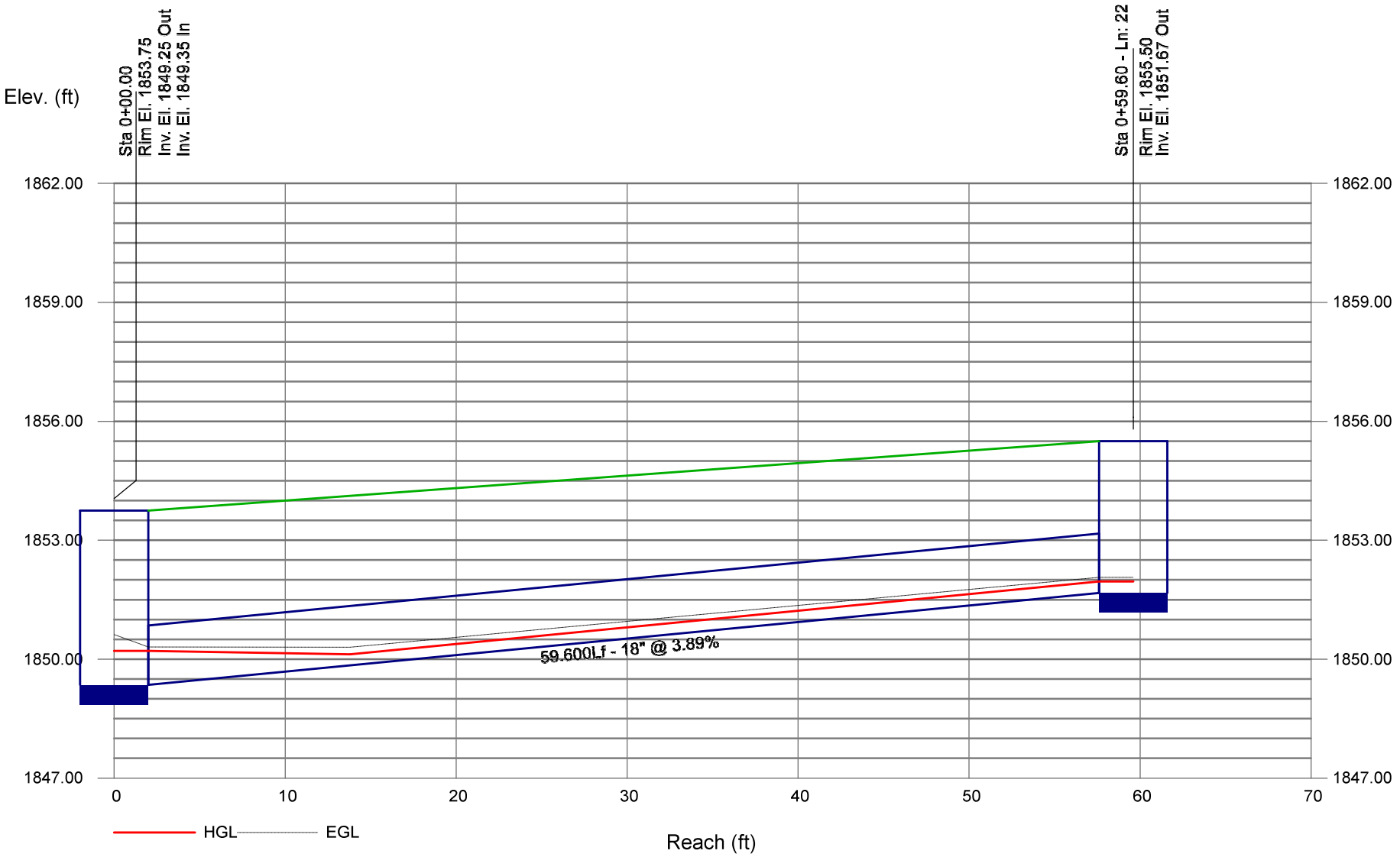
Storm Sewer Profile

Proj. file: DS - 6,7,8,9,10,11,12 (water main reroute).stm



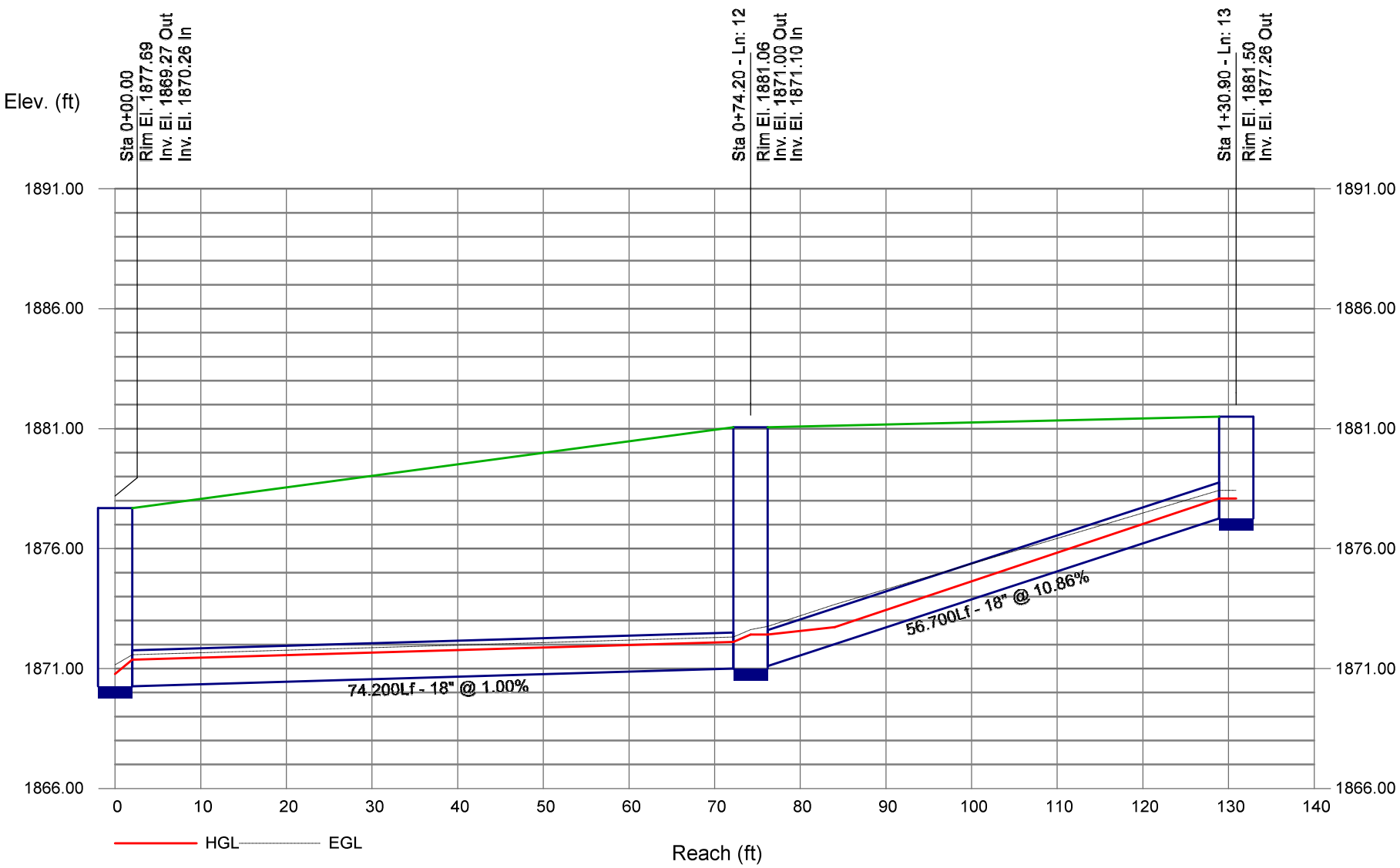
Storm Sewer Profile

Proj. file: DS - 6,7,8,9,10,11,12 (water main reroute).stm



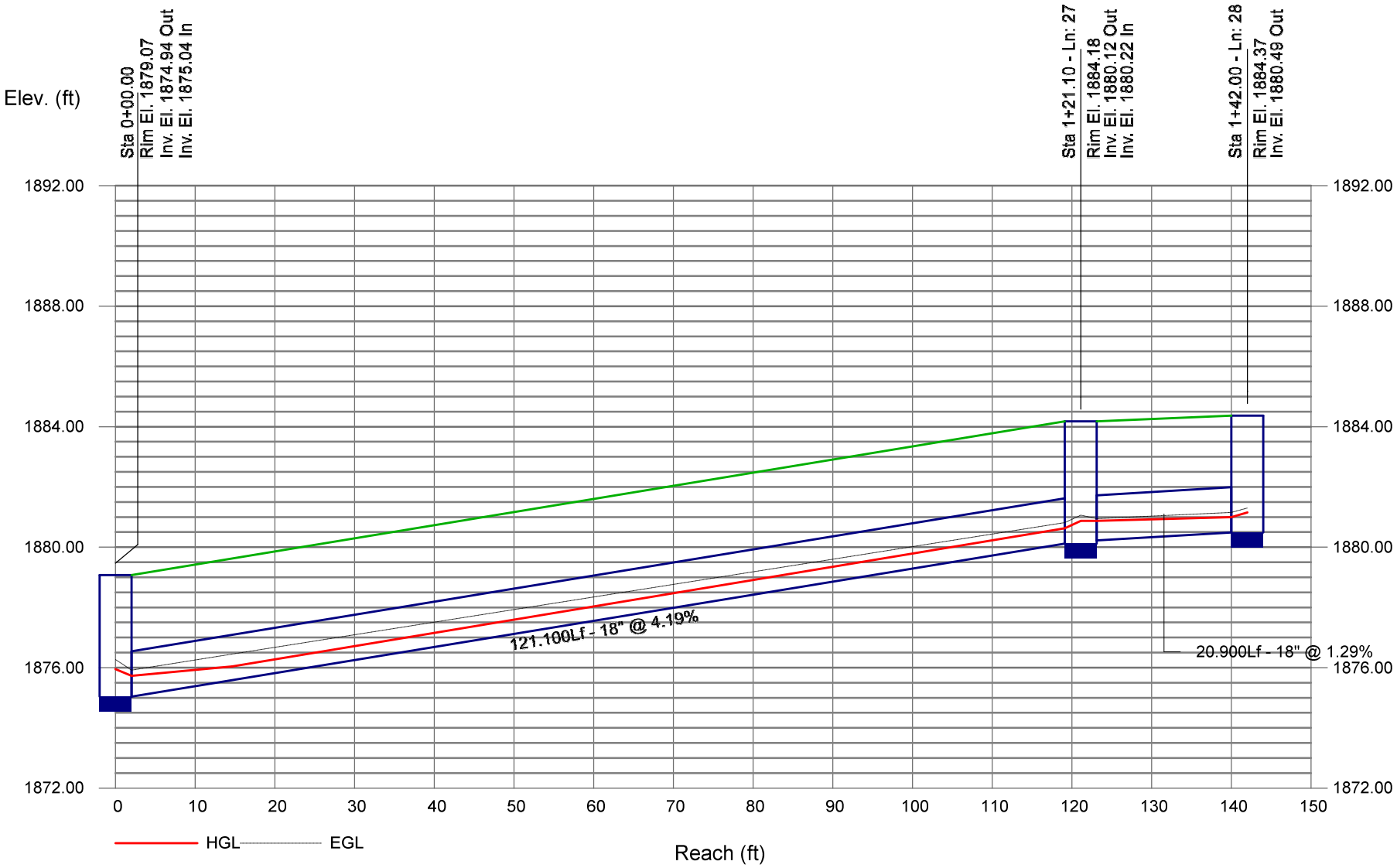
Storm Sewer Profile

Proj. file: DS - 6,7,8,9,10,11,12 (water main reroute).stm



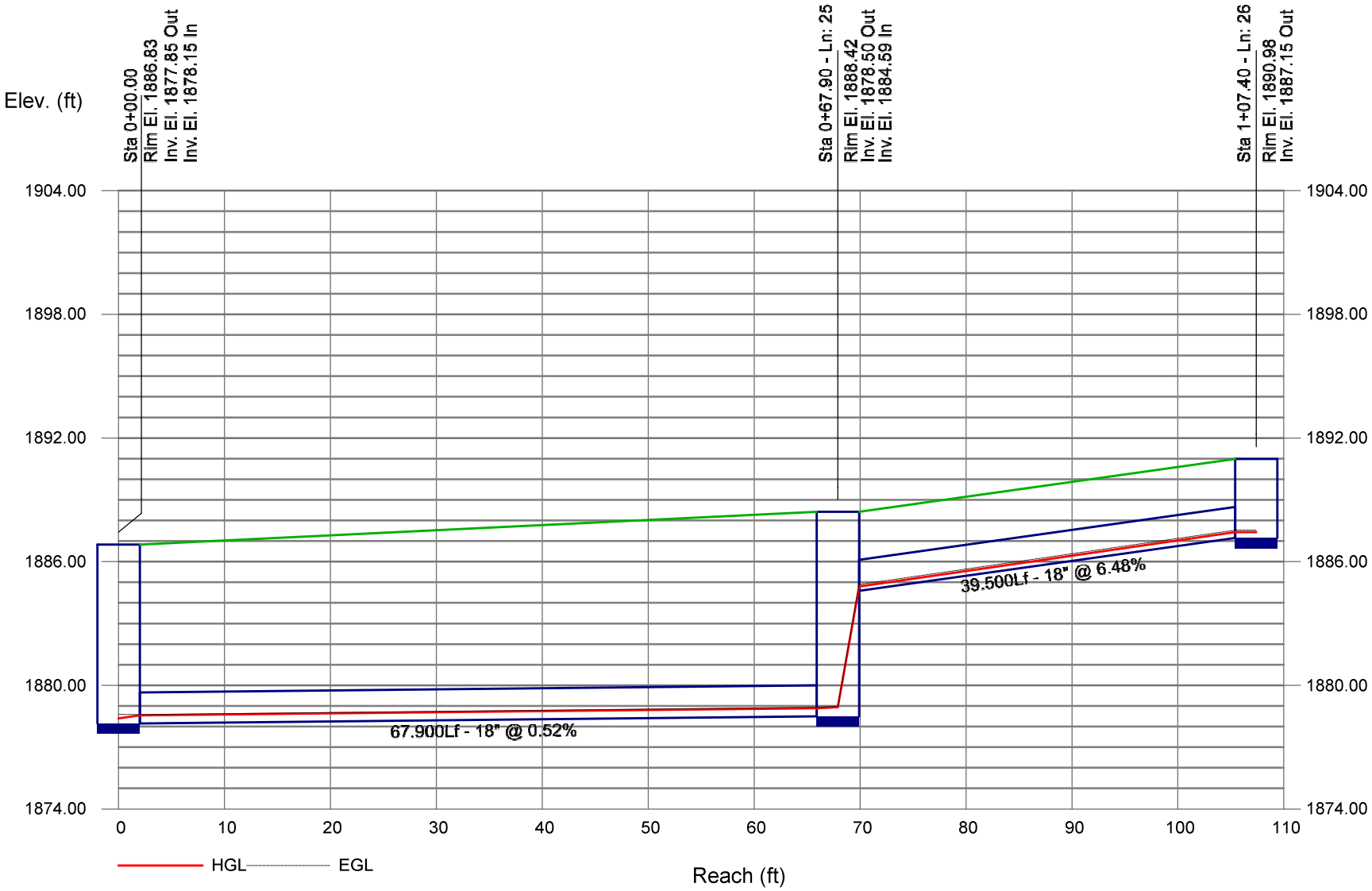
Storm Sewer Profile

Proj. file: DS - 6,7,8,9,10,11,12 (water main reroute).stm

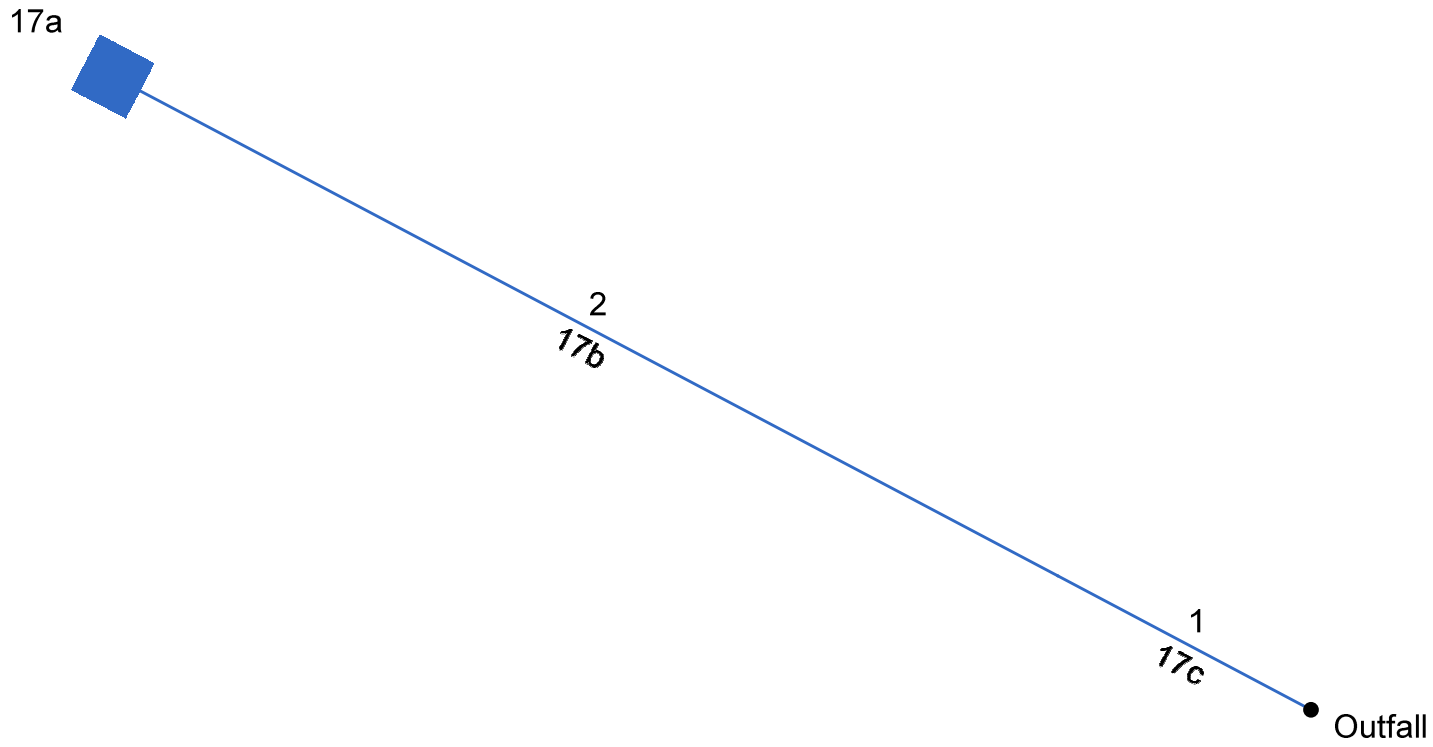


Storm Sewer Profile

Proj. file: DS - 6,7,8,9,10,11,12 (water main reroute).stm



Drainage System 17



Project File: DS-17.stm	Number of lines: 2	Date: 8/1/2017

Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/ Rim El (ft)	
1	End	18.800	-152.366	None	0.00	0.00	0.00	0.0	1874.00	42.55	1882.00	18	Cir	0.024	0.15	1883.50	17c
2	1	70.100	0.000	DrGrt	0.00	0.38	1.00	5.0	1882.00	1.18	1882.83	18	Cir	0.024	1.00	1886.67	17b

Drainage System 17 | Number of lines: 2 | Date: 8/1/2017

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	18.800	0.00	0.38	0.00	0.00	0.38	0.0	6.6	3.0	1.13	37.11	6.22	18	42.55	1874.00	1882.00	1874.18	1882.40	1874.00	1883.50	17c
2	1	70.100	0.38	0.38	1.00	0.38	0.38	5.0	5.0	3.4	1.29	6.19	2.76	18	1.18	1882.00	1882.83	1882.47	1883.30	1883.50	1886.67	17b

Drainage System 17 | Number of lines: 2 | Run Date: 8/1/2017

NOTES:Intensity = 7.60 / (Inlet time + 0.10) ^ 0.49; Return period =Yrs. 25 ; c = cir e = ellip b = box

Hydraulic Grade Line Computations

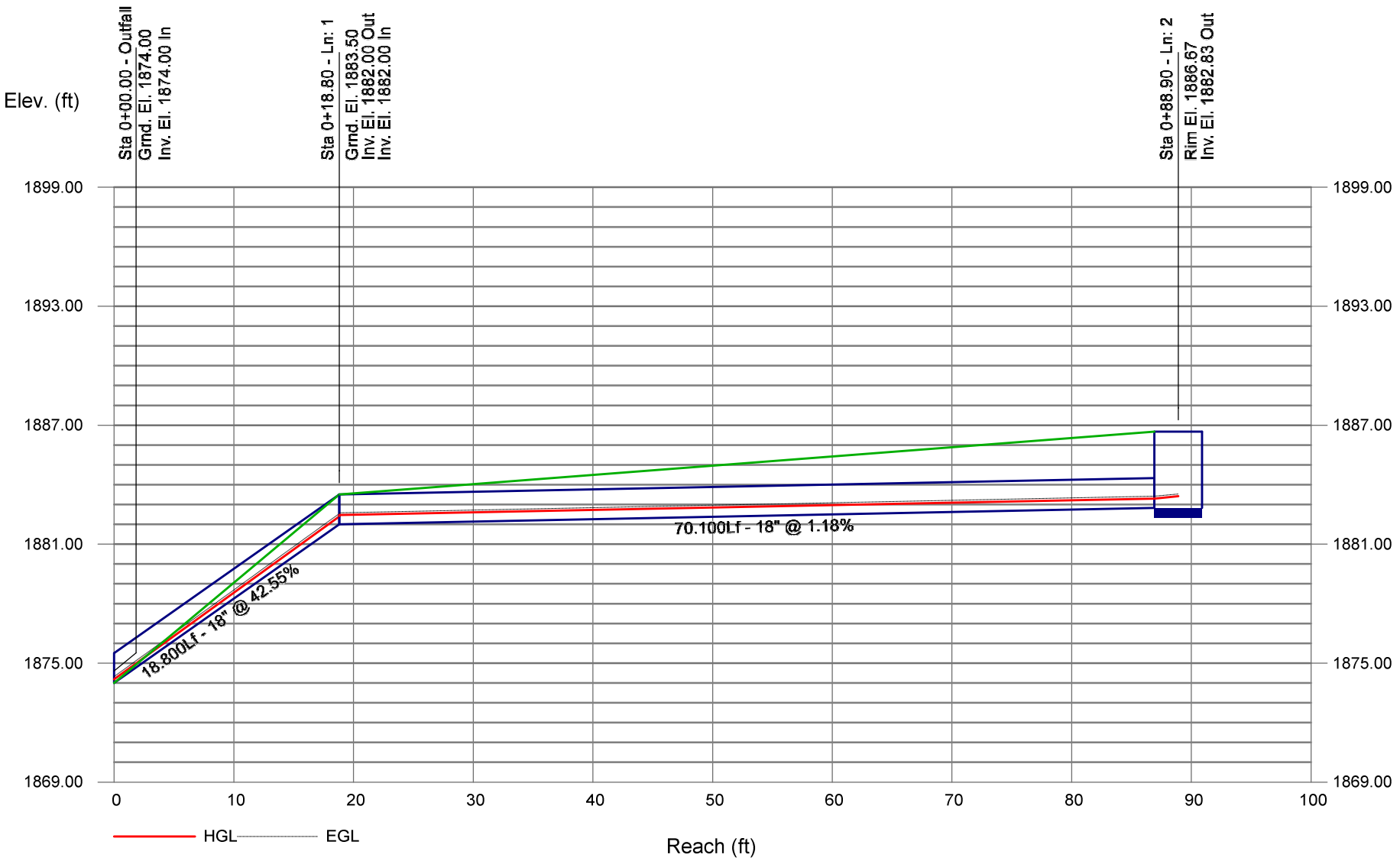
Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf		Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf	Ave Sf	Enrgy loss		
	(in)	(cfs)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(ft)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(%)	(ft)	(K)	(ft)
1	18	1.13	1874.00	1874.18	0.18	0.12	9.42	0.14	1874.32	0.000	18.800	1882.00	1882.40	0.40**	0.37	3.02	0.14	1882.54	0.000	0.000	n/a	0.15	0.02
2	18	1.29	1882.00	1882.47	0.47*	0.47	2.77	0.12	1882.59	1.183	70.100	1882.83	1883.30	0.47	0.47	2.76	0.12	1883.42	1.172	1.177	0.825	1.00	0.12

Drainage System 17 | Number of lines: 2 | Run Date: 8/1/2017

Notes: * Normal depth assumed.; ** Critical depth. ; c = cir e = ellip b = box

Storm Sewer Profile

Proj. file: DS-17.stm



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Appendix F Drainage Inlet Calculations

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US-50/Ray Lawyer Interchange Improvement Project

Caltrans Highway Drainage Inlet Calculations

W. Forni Rd

	Layout Line:		"F"	"F"		"F"	"F"	"F"	"F"
In#	**Inlet number:**		6l	2j		2h	2a	2o	Existing
		(Input Data Required)							
HYDROLOGY COMPUTATION:									ED50 Sta
St	Structure location station:	>>	28+70	26+73		24+87	24+19	22+70	548+75
N	Notes		>>	>>		>> Adjusted DI	>>	>> Adjusted DI w/ offsite ditch flow	>> Existing DI
	Off-site contributing watershed area (acres):	>>							
	On-site contributing watershed area (acres):	>>	0.19	0.27		0.21	0.07	0.11	0.24
Ar	**Contributing watershed area (acres):**		**0.19**	**0.27**		**0.21**	**0.07**	**0.11**	**0.24**
C	Composite Runoff Coefficient "C":	>>	1.00	1.00		1.00	1.00	1.00	1.00
Ic	Precipitation intensity (in/hr):	>>	2.98	2.98		2.98	2.98	2.98	2.98
Qa	Subarea discharge Q (ft^3/s):		0.57	0.81		0.63	0.21	0.33	0.72
qq	Previous by-pass flow (ft^3/s):	>	0.00	0.02		0.06	0.13	0.03	0.02
Qadd	Discharge added by operator (ft^3/s):	>	0.00						
Qt	**Total discharge Q (ft^3/s):**		**0.57**	**0.83**		**0.68**	**0.34**	**0.36**	**0.74**
SHOULDER AND GUTTER CONFIGURATION:									
n	Manning's n:	>>	0.015	0.015		0.015	0.015	0.015	0.015
S	Longitudinal slope S (ft/ft):	>>	0.040	0.040		0.054	0.054	0.083	0.080
IT	Inlet type (1=grate, 2=curb opening, 3=slotted):	>>	1	1		1	1	1	1
LP	Longitudinal profile (1=on-grade, 2=sag):	>>	1	1		1	1	1	1
ID	Inlet description:	>	G1	G2		G2	G1	G2	G2
	Grate Type:	>>	24-11	24-12		24-12	24-12	24-12	24-12
	Standard Gutter Depression (1=SGD, 2=no SGD)	>	1	1		1	1	1	1
Gw	Grate width (in):	>	24.0	24.0		24.0	24.0	24.0	24.0
Gl	Grate length (in):	>	36.0	36.0		36.0	36.0	36.0	36.0
	3 or 4 sided weir?	>	3	3		3	3	3	3
Lco	Curb opening length provided (ft):	>	10.00	10.00		10.00	10.00	10.00	10.00
Ls	Slotted drain length provided: (ft)	>							
Sx	Shoulder cross-slope Sx (ft/ft):	>>	0.0400	0.0400		0.0200	0.0200	0.0209	0.0200
W	Width of gutter from flowline (in):	>	24.0	24.0		24.0	24.0	24.0	24.0
a(t)	Gutter depression from horizontal (in):	>	0.0	0.0		0.0	0.0	0.0	0.0
Sw	Gutter cross-slope Sw (ft/ft): (S'w=Sw-Sx) (Sw=Sx if no gutter)		0.040	0.040		0.020	0.020	0.021	0.060
	Available Flooded Width (ft)	>	8.00	8.00		8.00	8.00	8.00	8.00
Tu/s	**Flooded Width from flowline (ft): at inlet w/o gutter depression**		**2.85**	**3.28**		**4.45**	**3.41**	**3.13**	**4.26**
Tu/s	**Flooded Width from flowline (ft): at inlet w/ gutter depression**		**2.85**	**3.28**		**4.45**	**3.41**	**3.13**	**2.42**
Du/s	Depth at flowline before inlet (ft):		0.11	0.13		0.09	0.07	0.07	0.13
Au/s	Water cross-area before inlet (ft^2):		0.16	0.22		0.20	0.12	0.10	0.14
Vu/s	Velocity for total discharge before inlet (ft/s):		3.51	3.85		3.46	2.89	3.48	5.33
Eod	Ratio of gutter depression flow to total Q (Eod):		96%	92%		80%	90%	93%	100%
Se	Equivalent cross-slope (ft/ft):		0.040	0.040		0.020	0.020	0.021	0.060
GRATE INLETS ON-GRADE:									
Eog	Ratio of grate frontal flow to total flow:		96%	92%		80%	90%	93%	100%
Qw	Inlet frontal flow in ft^3/s (Qw): at inlet w/ gutter depression		0.55	0.76		0.54	0.30	0.33	0.74
Vo	Vo for effective length (P-50, Chart 5) (ft/s):		RANGEERR	6.88		6.88	6.88	6.88	6.88
Rf	Fraction of frontal flow intercepted (Rf):		1.00	1.00		1.00	1.00	1.00	1.00
Qs	Side flow in ft^3/s (Qs):		0.02	0.07		0.14	0.03	0.02	0.00
Gle	Effective grate length w/ 25% clogging (in):		27	27		27	27	27	27
Rs	Fraction of side flow interception (Rs):		15%	13%		8%	11%	9%	11%
E	Grate Efficiency (E):		97%	93%		81%	92%	94%	100%
Qi	**Total flow intercepted (ft^3/s):**		**0.55**	**0.77**		**0.56**	**0.31**	**0.33**	**0.74**
Qb	**Grate flow-by (ft^3/s):**		**0.02**	**0.06**		**0.13**	**0.03**	**0.02**	**0.00**

US-50/Ray Lawyer Interchange Improvement Project

Caltrans Highway Drainage Inlet Calculations

Forni Rd

In#	Layout Line:		"F"	"F"	"CJ"	"F"	"F"	"F"
	Inlet number:		**10k**	**10i**	**11b**	**10g**	**6r**	**6n**
		(Input Data Required)						
HYDROLOGY COMPUTATION:								
St	Structure location station:	>>	35+89	34+15	11+33	32+25	30+07	29+33
N	Notes		>>	>>	>>	>>	>>	>>
	Off-site contributing watershed area (acres):	>>			**0.170**			**0.190**
	On-site contributing watershed area (acres):	>>	0.31	0.25	0.38	0.30	0.35	0.03
Ar	**Contributing watershed area (acres):**		**0.310**	**0.247**	**0.550**	**0.300**	**0.350**	**0.215**
C	Composite Runoff Coefficient "C":	>>	1.00	1.00	0.86	1.00	1.00	0.59
Ic	Precipitation intensity (in/hr):	>>	2.98	2.98	2.98	2.98	2.98	2.98
Qa	Subarea discharge Q (ft^3/s):		0.92	0.74	1.41	0.89	1.04	0.38
qq	Previous by-pass flow (ft^3/s):	>		0.09	0.00	0.08	0.00	0.06
Qadd	Discharge added by operator (ft^3/s):	>						
Qt	**Total discharge Q (ft^3/s):**		**0.92**	**0.83**	**1.41**	**0.98**	**1.04**	**0.44**
SHOULDER AND GUTTER CONFIGURATION:								
n	Manning's n:	>>	0.015	0.015	0.015	0.015	0.015	0.015
S	Longitudinal slope S (ft/ft):	>>	0.013	0.037	0.020	0.056	0.049	0.028
IT	Inlet type (1=grate, 2=curb opening, 3=slotted):	>>	1	1	1	1	1	1
LP	Longitudinal profile (1=on-grade, 2=sag):	>>	1	1	1	1	1	1
ID	Inlet description:	>	G2	G2	GDO	G2	G2	G2
	Grate Type:	>>	24-12	24-12	24-12	24-12	24-12	24-12
	Standard Gutter Depression (1=SGD, 2=no SGD)	>	1	1	1	1	1	1
Gw	Grate width (in):	>	24.0	24.0	48.0	24.0	24.0	24.0
Gl	Grate length (in):	>	36.0	36.0	36.0	36.0	36.0	36.0
	3 or 4 sided weir?	>	3	3	3	3	3	3
Lco	Curb opening length provided (ft):	>	10.00	10.00	10.00	10.00	10.00	10.00
Ls	Slotted drain length provided: (ft)	>						
Sx	Shoulder cross-slope Sx (ft/ft):	>>	0.0400	0.0400	0.0200	0.0100	0.0363	0.0567
W	Width of gutter from flowline (in):	>	24.0	24.0	24.0	24.0	24.0	24.0
a(t)	Gutter depression from horizontal (in):	>	1.3	1.3	1.3	3.0	1.3	1.3
Sw	Gutter cross-slope Sw (ft/ft): (S'w=Sw-Sx) (Sw=Sx if no gutter)		0.052	0.052	0.052	0.125	0.052	0.052
	Available Flooded Width (ft)	>	8.00	8.00	8.00	8.00	8.00	8.00
Tu/s	**Flooded Width from flowline (ft): at inlet w/o gutter depression**		**4.20**	**3.32**	**7.02**	**7.80**	**3.66**	**2.22**
Tu/s	**Flooded Width from flowline (ft): at inlet w/ gutter depression**		**3.98**	**3.05**	**6.21**	**1.61**	**3.29**	**2.31**
Du/s	Depth at flowline before inlet (ft):		0.18	0.15	0.19	0.20	0.15	0.12
Au/s	Water cross-area before inlet (ft^2):		0.34	0.21	0.45	0.16	0.23	0.14
Vu/s	Velocity for total discharge before inlet (ft/s):		2.71	3.93	3.12	6.05	4.56	3.07
Eod	Ratio of gutter depression flow to total Q (Eod):		87%	95%	74%	100%	94%	99%
Se	Equivalent cross-slope (ft/ft):		0.050	0.052	0.044	0.125	0.051	0.052
GRATE INLETS ON-GRADE:								
Eog	Ratio of grate frontal flow to total flow:		87%	95%	95%	100%	94%	99%
Qw	Inlet frontal flow in ft^3/s (Qw): at inlet w/ gutter depression		0.80	0.79	1.34	0.98	0.98	0.43
Vo	Vo for effective length (P-50, Chart 5) (ft/s):		6.88	6.88	6.88	6.88	6.88	6.88
Rf	Fraction of frontal flow intercepted (Rf):		1.00	1.00	1.00	1.00	1.00	1.00
Qs	Side flow in ft^3/s (Qs):		0.12	0.04	0.06	0.00	0.07	0.00
Gle	Effective grate length w/ 25% clogging (in):		27	27	27	27	27	27
Rs	Fraction of side flow interception (Rs):		26%	16%	20%	0%	13%	23%
E	Grate Efficiency (E):		90%	96%	96%	100%	95%	100%
Qi	**Total flow intercepted (ft^3/s):**		**0.83**	**0.79**	**1.35**	**0.98**	**0.99**	**0.44**
Qb	**Grate flow-by (ft^3/s):**		**0.09**	**0.03**	**0.05**	**0.00**	**0.06**	**0.00**

US-50/Ray Lawyer Interchange Improvement Project

Caltrans Highway Drainage Inlet Calculations

Ray Lawyer Ramp/E. Forni Rd

	Layout Line:		"F-1"	"F-1"	"F-1"	"F-1"	"RL"	"RL"	"RL-2"	"RL-2"	"RL-2"	"RL-2"	"RL-2"	"RL-2"
In#	**Inlet number:**		**7h**	**7f**	**16d**	**16b**	**15d**	**15b**	**7d**	**7b**	**6d**	**5f**	**5d**	**3b**
	(Input Data Required)													
	HYDROLOGY COMPUTATION:													
St	Structure location station:	>>	11+50	10+63	11+50	11+04	39+57.4	39+31	566+33	564+08	562+08	559+49	557+78	556+27
N	Notes		>>		>>		>>	>>	>>	>>	>>	>>	>>	>>
	Off-site contributing watershed area (acres):	>>	**0.79**	**0.09**			**0.17**	**0.05**	**0.03**					
	On-site contributing watershed area (acres):	>>	0.11	0.04	0.17	0.04	0.36	0.05	0.49	0.16	0.17	0.14	0.04	0.17
Ar	**Contributing watershed area (acres):**		**0.90**	**0.13**	**0.17**	**0.04**	**0.53**	**0.10**	**0.52**	**0.16**	**0.17**	**0.14**	**0.04**	**0.17**
C	Composite Runoff Coefficient "C":	>>	0.60	0.68	1	1	0.85	0.77	0.97	1	1	1	1	1
Ic	Precipitation intensity (in/hr):	>>	2.98	2.98	2.98	2.98	2.98	2.98	3.5	3.5	3.5	3.5	3.5	3.5
Qa	Subarea discharge Q (ft^3/s):		1.60	0.26	0.50	0.12	1.35	0.23	1.76	0.57	0.59	0.50	0.14	0.60
qq	Previous by-pass flow (ft^3/s):	>		0.73		0.16		0.36	0.09	0.77	0.39	0.00	0.00	0.00
Qadd	Discharge added by operator (ft^3/s):	>												
Qt	**Total discharge Q (ft^3/s):**		**1.60**	**1.00**	**0.50**	**0.28**	**1.35**	**0.59**	**1.85**	**1.34**	**0.98**	**0.50**	**0.14**	**0.60**
	SHOULDER AND GUTTER CONFIGURATION:													
n	Manning's n:	>>	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015
S	Longitudinal slope S (ft/ft):	>>	0.075	0.024	0.075	0.045	0.007	0.007	0.049	0.064	0.072	0.045	0.028	0.031
IT	Inlet type (1=grate, 2=curb opening, 3=slotted):	>>	1	2	1	2	1	1	1	1	1	1	1	1
LP	Longitudinal profile (1=on-grade, 2=sag):	>>	1	1	1	1	1	1	1	1	1	1	1	1
ID	Inlet description:	>	G1	GO	G1	GO	G2	G2	G2	G2	G2	G2	G2	G2
	Grate Type:	>>	24-12	24-12	24-12	24-12	24-12	24-12	24-12	24-12	24-12	24-12	24-12	24-12
	Standard Gutter Depression (1=SGD, 2=no SGD)	>	1	1	1	1	1	1	1	1	1	1	1	1
Gw	Grate width (in):	>	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
Gl	Grate length (in):	>	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0
	3 or 4 sided weir?	>	3	3	3	3	3	3	3	3	3	3	3	3
Lco	Curb opening length provided (ft):	>	10.00	8.00	10.00	8.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00
Ls	Slotted drain length provided: (ft)	>												
Sx	Shoulder cross-slope Sx (ft/ft):	>>	0.0100	0.0070	0.0100	0.0022	0.0400	0.0400	0.0160	0.0200	0.0822	0.1095	0.0500	0.0500
W	Width of gutter from flowline (in):	>	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
a(t)	Gutter depression from horizontal (in):	>	1.3	3.0	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
Sw	Gutter cross-slope Sw (ft/ft): (S'w=Sw-Sx) (Sw=Sx if no gutter)		0.052	0.125	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052
	Available Flooded Width (ft)	>	8.00	8.00	8.00	8.00	10.00	10.00	8.00	8.00	8.00	8.00	8.00	8.00
Tu/s	**Flooded Width from flowline (ft): at inlet w/o gutter depression**		**8.88**	**11.50**	**5.75**	**13.12**	**5.45**	**4.00**	**7.57**	**5.54**	**1.99**	**1.42**	**1.56**	**2.65**
Tu/s	**Flooded Width from flowline (ft): at inlet w/ gutter depression**		**6.95**	**1.90**	**2.27**	**1.81**	**3.97**	**3.76**	**6.48**	**4.49**	**2.42**	**2.12**	**1.52**	**2.61**
Du/s	Depth at flowline before inlet (ft):		0.15	0.24	0.11	0.09	0.33	0.17	0.18	0.15	0.14	0.12	0.08	0.13
Au/s	Water cross-area before inlet (ft^2):		0.33	0.23	0.11	0.09	0.48	0.31	0.41	0.27	0.18	0.13	0.06	0.17
Vu/s	Velocity for total discharge before inlet (ft/s):		4.92	4.43	4.58	3.28	2.78	1.91	4.53	5.03	5.44	3.81	2.31	3.42
Eod	Ratio of gutter depression flow to total Q (Eod):		79%	100%	100%	100%	93%	89%	75%	88%	98%	100%	100%	98%
Se	Equivalent cross-slope (ft/ft):		0.043	0.125	0.052	0.052	0.119	0.051	0.043	0.048	0.053	0.052	0.052	0.052
	GRATE INLETS ON-GRADE:													
Eog	Ratio of grate frontal flow to total flow:		79%	-----	100%	-----	93%	89%	75%	88%	98%	100%	100%	98%
Qw	Inlet frontal flow in ft^3/s (Qw): at inlet w/ gutter depression		1.27	-----	0.50	-----	1.26	0.52	1.39	1.18	0.96	0.50	0.14	0.58
Qw/o	Inlet frontal flow in ft^3/s (Qw/o): at inlet w/o gutter depression		0.79	-----	0.34	-----	0.95	0.50	1.03	0.93	0.98	0.50	0.14	0.58
Vo	Vo for effective length (P-50, Chart 5) (ft/s):		6.88	-----	6.88	-----	6.88	6.88	6.88	6.88	6.88	6.88	6.88	6.88
Rf	Fraction of frontal flow intercepted (Rf):		1.00	-----	1.00	-----	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Qs	Side flow in ft^3/s (Qs):		0.81	-----	0.00	-----	0.09	0.07	0.45	0.16	0.02	0.00	0.00	0.01
Gle	Effective grate length w/ 25% clogging (in):		27	-----	27	-----	27	27	27	27	27	27	27	27
Rs	Fraction of side flow interception (Rs):		10%	-----	13%	-----	45%	40%	11%	10%	10%	17%	0%	20%
E	Grate Efficiency (E):		81%	-----	100%	-----	96%	93%	78%	89%	99%	100%	100%	98%
Qi	**Total flow intercepted (ft^3/s):**		**0.87**	**-----**	**0.34**	**-----**	**0.99**	**0.52**	**1.08**	**0.95**	**0.98**	**0.50**	**0.14**	**0.58**
Qb	**Grate flow-by (ft^3/s):**		**0.73**	**-----**	**0.16**	**-----**	**0.36**	**0.07**	**0.77**	**0.39**	**0.00**	**0.00**	**0.00**	**0.01**
	SLOTTED DRAINS AND CURB OPENING INLETS ON-GRADE: (No clogging factor)													
Lt	Length required for total interception (ft):			8.47	-----	10.15	-----	-----	-----	-----	-----	-----	-----	-----
Ci	Interception for provided length L (ft^3/s):			1.0	-----	0.3	-----	-----	-----	-----	-----	-----	-----	-----
El	Efficiency for providged length L:			99%	-----	94%	-----	-----	-----	-----	-----	-----	-----	-----
Qs	**Slotted drain or side opening flow-by (ft^3/s):**			**0.01**	**-----**	**0.02**	**-----**	**-----**	**-----**	**-----**	**-----**	**-----**	**-----**	**-----**

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Appendix G Flood Insurance Rate Maps

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NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study Report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction, and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures in this jurisdiction.

The **projection** used in the preparation of this map was California State Plane, Zone III. The **horizontal datum** was NAD83, GRS80 spheroid. Differences in datum, spheroid, projection or State Plane zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey, SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242**, or visit their website at http://www.ngs.noaa.gov/.

Base map information shown on this FIRM was derived from multiple sources. This information was compiled from the U.S. Geological Survey, 1989 and 1993, El Dorado County Surveyor Office, 2005, National Geodetic Survey, 2005, California Department of Forestry, 2004, and U.S. Bureau of Reclamation, 2003. Additional information was photogrammetrically compiled at a scale of 1:12,000 from U.S. Geological Survey aerial photography dated 1997 to 2001.

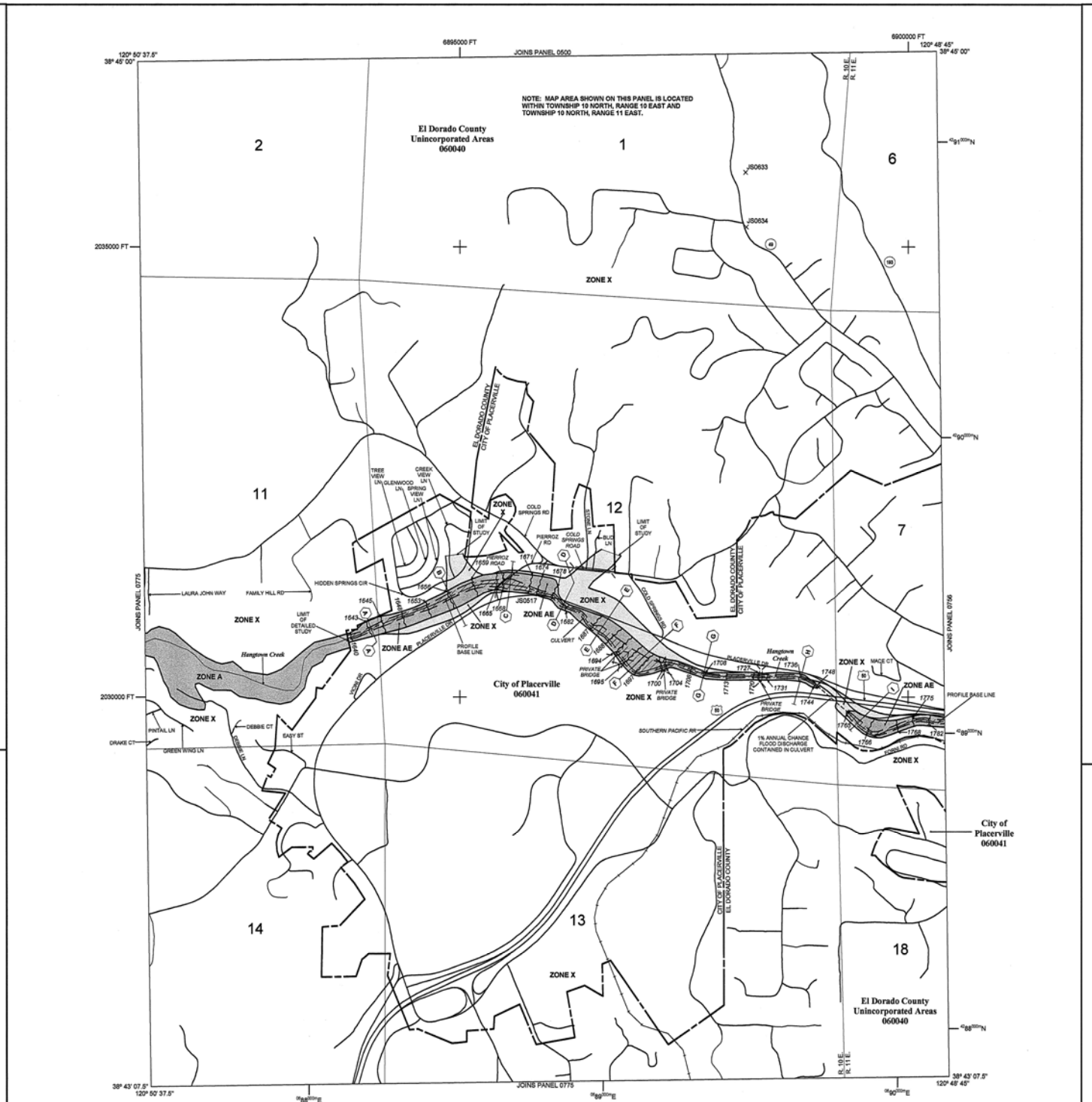
This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and their website at http://www.msc.fema.gov/.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1- 877- FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/.



LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

- **ZONE A** No Base Flood Elevations determined.
- **ZONE AE** Base Flood Elevations determined.
- **ZONE AH** Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
- **ZONE AO** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- **ZONE AR** Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- **ZONE A99** Area to be protected from 1% annual chance flood by a federal flood protection system under construction; no Base Flood Elevations determined.
- **ZONE V** Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- **ZONE VE** Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

- **ZONE X** Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

- **ZONE X** Areas determined to be outside the 0.2% annual chance floodplain.
- **ZONE D** Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- Floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- 513 Base Flood Elevation line and value; elevation in feet*
- (EL 987) Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the North American Vertical Datum of 1988

- A — A Cross section line
- 23 — 23 Transect line
- 97° 07' 30", 32° 22' 30" Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
- 4376000 mE 1000-meter Universal Transverse Mercator grid values, zone 10
- 600000 FT 5000-foot grid ticks: California State Plane coordinate system, zone III (FIPSZONE 0402), Lambert Conformal Conic Projection
- DX5510 Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index.

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP PANEL
SEPTEMBER 26, 2008

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'
250 0 500 1000 FEET
100 0 150 300 METERS

NFIP
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0752E

FIRM
FLOOD INSURANCE RATE MAP
EL DORADO COUNTY, CALIFORNIA AND INCORPORATED AREAS
PANEL 752 OF 1125

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
EL DORADO COUNTY	060040	0752	E
PLACERVILLE, CITY OF	060041	0752	E

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

MAP NUMBER
06017C0752E

EFFECTIVE DATE
SEPTEMBER 26, 2008

Federal Emergency Management Agency

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Appendix H Ditch Capacity Calculations

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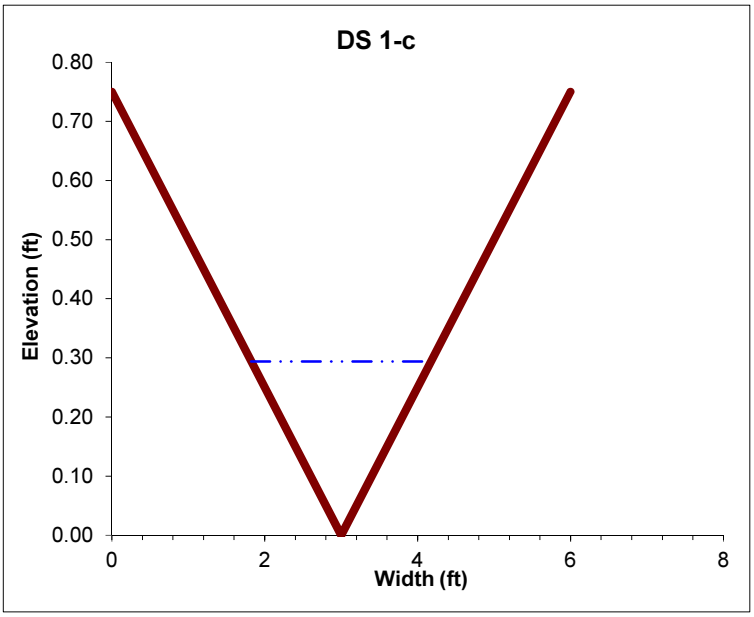
Normal Depth Calculations for Channels using Manning's Equation

City Drainage System Test, Q_{25}, I = 3.5 in/hr

Input Values		
Height	0.75	ft
Width	0	ft
LT Side Slope	4	:1 (h:v)
Rt Side Slope	4	:1 (h:v)
Channel Width	6	ft
Mannings	0.02	
Slope	0.05	ft/ft
Design Flow	1.60	cfs

Normal Depth for Channel		
Depth	0.294	ft
Area	0.35	ft^2
Perimeter	2.42	ft
Rh	0.14	ft
V	4.63	ft/s
Q	1.60	cfs
Goal Seek	0.00	



Ditch Check		
Energy head (He)=	**0.63**	ft
Freeboard (0.2He)=	**0.13**	ft
Required Height (ft)	**0.42**	ft
Passing?	yes	

Ditch Information:

Ditch Distance:	95.8	ft
Ditch Slope	0.05	ft/ft
Travel Time	0.34	min
DS Elevation	1865.00	ft
US Elevation	1870.00	ft

Watershed Information

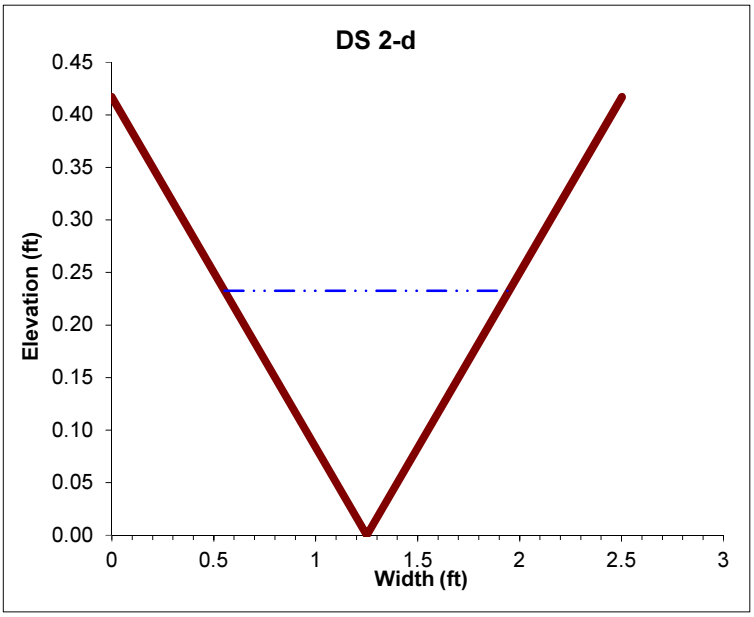
	C	A (ac)	Q (cfs)	Known Q (cfs)
Q_2-Combined	0.77	0.23	0.62	0.98
Q_2-Unpaved	0.54	0.12	0.22	
Q_2-Paved	1.00	0.12	0.40	

Normal Depth Calculations for Channels using Manning's Equation

City Drainage System Test, Q_{10}, I = 2.98 in/hr

Input Values		
Height	0.417	ft
Width	0	ft
LT Side Slope	3	:1 (h:v)
Rt Side Slope	3	:1 (h:v)
Channel Width	2.5	ft
Mannings	0.014	
Slope	0.04	ft/ft
Design Flow	0.82	cfs

Normal Depth for Channel		
Depth	0.233	ft
Area	0.16	ft^2
Perimeter	1.47	ft
Rh	0.11	ft
V	5.06	ft/s
Q	0.82	cfs
Goal Seek	0.00	



Ditch Check		
Energy head (He)=	**0.63**	ft
Freeboard (0.2He)=	**0.13**	ft
Required Height (ft)	**0.36**	ft
Passing?	yes	

Ditch Information:

Ditch Distance:	298	ft
Ditch Slope	0.04	ft/ft
Travel Time	0.98	min
DS Elevation	1832.50	ft
US Elevation	1845.30	ft

Watershed Information

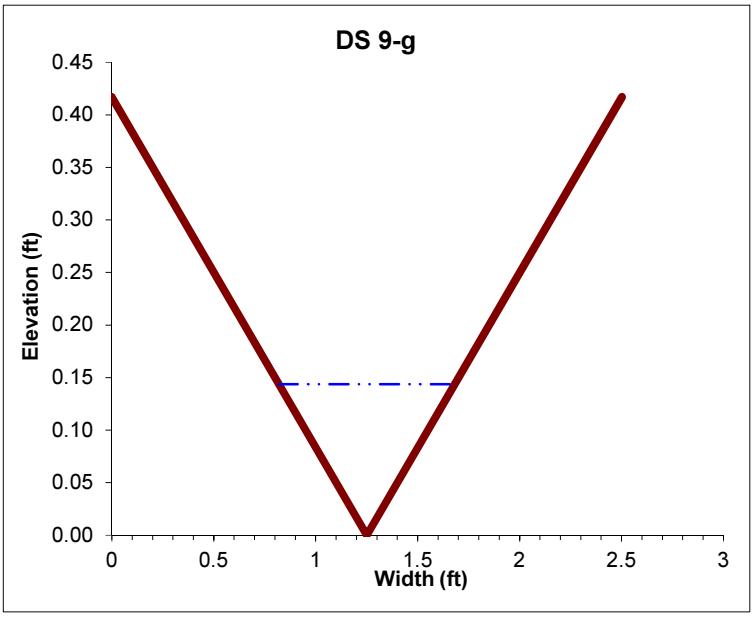
	C	A (ac)	Q (cfs)
Q_2-Combined	0.54	0.51	0.82
Q_2-Unpaved	0.54	0.51	0.82
Q_2-Paved	1.00		0.00

Normal Depth Calculations for Channels using Manning's Equation

City Drainage System Test, Q_{10}, I = 2.98 in/hr

Input Values		
Height	0.417	ft
Width	0	ft
LT Side Slope	3	:1 (h:v)
Rt Side Slope	3	:1 (h:v)
Channel Width	2.5	ft
Mannings	0.014	
Slope	0.02	ft/ft
Design Flow	0.14	cfs

Normal Depth for Channel		
Depth	0.144	ft
Area	0.06	ft^2
Perimeter	0.91	ft
Rh	0.07	ft
V	2.31	ft/s
Q	0.14	cfs
Goal Seek	0.00	



Ditch Check		
Energy head (He)=	**0.23**	ft
Freeboard (0.2He)=	**0.05**	ft
Required Height (ft)	**0.19**	ft
Passing?	yes	

Ditch Information:

Ditch Distance:	236	ft
Ditch Slope	0.02	ft/ft
Travel Time	1.70	min
DS Elevation	1869.00	ft
US Elevation	1873.00	ft

Watershed Information

	C	A (ac)	Q (cfs)
Q_2-Combined	0.60	0.08	0.14
Q_2-Unpaved	0.60	0.08	0.14
Q_2-Paved	1.00		0.00

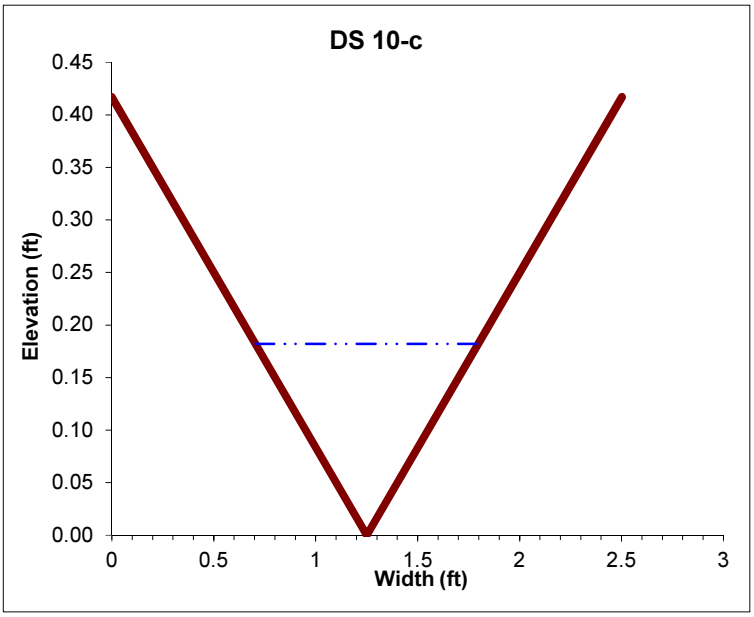
Normal Depth Calculations for Channels using Manning's Equation

City Drainage System Test, Q_{10}, I = 2.98 in/hr

Input Values		
Height	0.417	ft
Width	0	ft
LT Side Slope	3	:1 (h:v)
Rt Side Slope	3	:1 (h:v)
Channel Width	2.5	ft
Mannings	0.014	
Slope	0.04	ft/ft
Design Flow	0.41	cfs

Normal Depth for Channel		
Depth	0.182	ft
Area	0.10	ft^2
Perimeter	1.15	ft
Rh	0.09	ft
V	4.14	ft/s
Q	0.41	cfs
Goal Seek	0.00	

Ditch Check		
Energy head (He)=	**0.45**	ft
Freeboard (0.2He)=	**0.09**	ft
Required Height (ft)	**0.27**	ft
Passing?	yes	



Ditch Information:

Ditch Distance:	264	ft
Ditch Slope	0.04	ft/ft
Travel Time	1.06	min
DS Elevation	1854.00	ft
US Elevation	1864.50	ft

Watershed Information

	C	A (ac)	Q (cfs)
Q_2-Combined	0.60	0.23	0.41
Q_2-Unpaved	0.60	0.23	0.41
Q_2-Paved	1.00		0.00

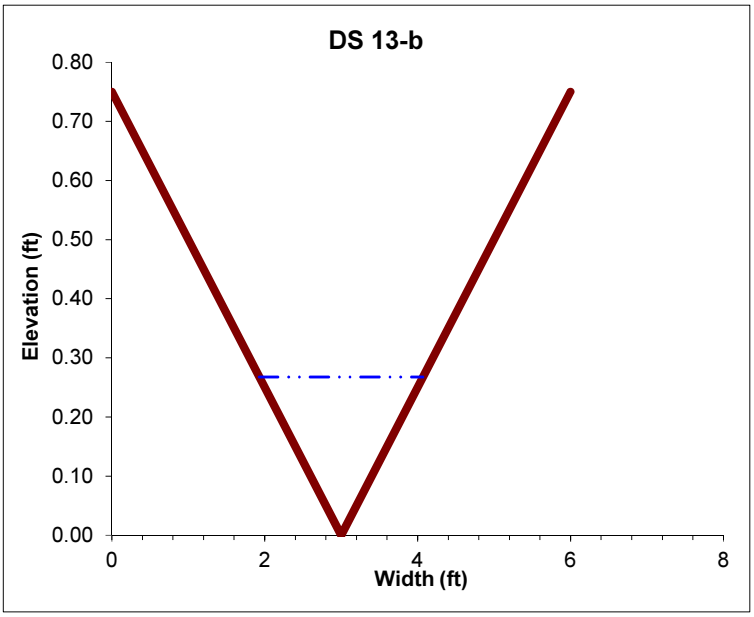
Normal Depth Calculations for Channels using Manning's Equation

City Drainage System Test, Q_{25}, I = 3.5 in/hr

Input Values		
Height	0.75	ft
Width	0	ft
LT Side Slope	4	:1 (h:v)
Rt Side Slope	4	:1 (h:v)
Channel Width	6	ft
Mannings	0.02	
Slope	0.11	ft/ft
Design Flow	1.85	cfs

Normal Depth for Channel		
Depth	0.268	ft
Area	0.29	ft^2
Perimeter	2.21	ft
Rh	0.13	ft
V	6.45	ft/s
Q	1.85	cfs
Goal Seek	0.00	

Ditch Check		
Energy head (He)=	**0.91**	ft
Freeboard (0.2He)=	**0.18**	ft
Required Height (ft)	**0.45**	ft
Passing?	yes	



Ditch Information:

Ditch Distance:	192	ft
Ditch Slope	0.11	ft/ft
Travel Time	0.50	min
DS Elevation	1835.00	ft
US Elevation	1857.00	ft

Watershed Information

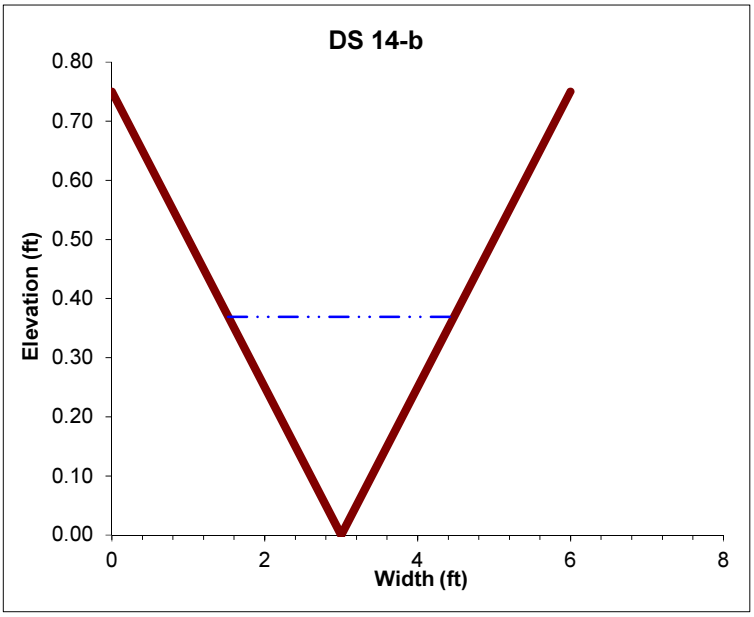
	C	A (ac)	Q (cfs)
Q_2-Combined	0.60	0.88	1.85
Q_2-Unpaved	0.60	0.88	1.85
Q_2-Paved	1.00		

Normal Depth Calculations for Channels using Manning's Equation

City Drainage System Test, Q_{25}, I = 3.5 in/hr

Input Values		
Height	0.75	ft
Width	0	ft
LT Side Slope	4	:1 (h:v)
Rt Side Slope	4	:1 (h:v)
Channel Width	6	ft
Mannings	0.02	
Slope	0.05	ft/ft
Design Flow	2.94	cfs

Normal Depth for Channel		
Depth	0.369	ft
Area	0.55	ft^2
Perimeter	3.04	ft
Rh	0.18	ft
V	5.39	ft/s
Q	2.94	cfs
Goal Seek	0.00	



Ditch Check		
Energy head (He)=	**0.82**	ft
Freeboard (0.2He)=	**0.16**	ft
Required Height (ft)	**0.53**	ft
Passing?	yes	

Ditch Information:

Ditch Distance:	95.8	ft
Ditch Slope	0.05	ft/ft
Travel Time	0.30	min
DS Elevation	1865.00	ft
US Elevation	1870.00	ft

Watershed Information

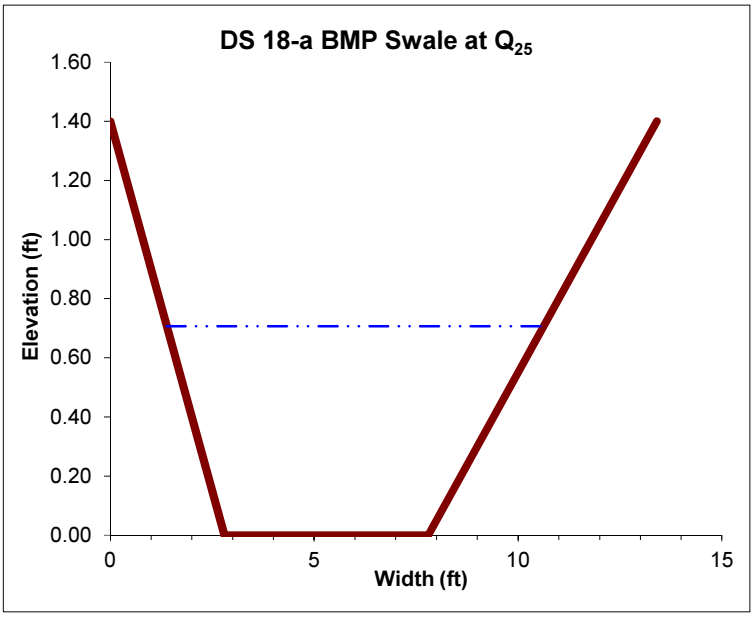
	C	A (ac)	Q (cfs)
Q_2-Combined	0.60	1.40	2.94
Q_2-Unpaved	0.60	1.40	2.94
Q_2-Paved	1.00		0.00

Normal Depth Calculations for Channels using Manning's Equation

City Drainage System Test, Q_{25}, I = 3.5 in/hr

Input Values		
Height	1.4	ft
Width	5	ft
LT Side Slope	2	:1 (h:v)
Rt Side Slope	4	:1 (h:v)
Channel Width	8	ft
Mannings	0.24	
Slope	0.02	ft/ft
Design Flow	3.11	cfs

Normal Depth for Channel		
Depth	0.707	ft
Area	5.03	ft^2
Perimeter	9.49	ft
Rh	0.53	ft
V	0.62	ft/s
Q	3.11	cfs
Goal Seek	0.00	



Ditch Check		
Energy head (He)=	**0.71**	ft
Freeboard (0.2He)=	**0.14**	ft
Required Height (ft)	**0.85**	ft
Passing?	yes	

Ditch Information:

Ditch Distance:	158	ft
Ditch Slope	0.02	ft/ft
Travel Time	4.27	min
DS Elevation	1826.84	ft
US Elevation	1830.50	ft

Watershed Information

	C	A (ac)	Q (cfs)	Known Q (cfs)
Q_2-Combined	0.63	0.97	2.13	0.98
Q_2-Unpaved	0.54	0.79	1.50	
Q_2-Paved	1.00	0.18	0.63	

Appendix I Cost Estimate Spreadsheet

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Dist-Co-Rte-PM

03-ED-50

PM 16.0-16.6

US 50 & Forni Rd - Western Placerville

DRAINAGE , EROSION AND TEMPORARY WATER POLLUTION CONTROL ESTIMATE

Final PS&E Submittal

8/4/2017

Item No.	Item Code			Item Description	Unit	Estimated Quantity	Unit Price	Item Total
1	130100			Job Site Management	LS	1	$ 10,000.00	$ 10,000
2	130300			Prepare Storm Water Pollution Prevention Plan	LS	1	$ 9,000.00	$ 9,000
3	130310			Rain Event Action Plan	EA	55	$ 500.00	$ 27,500
4	130320			Storm Water Sampling and Analysis Day	EA	30	$ 1,000.00	$ 30,000
5	130330			Storm Water Annual Report	EA	2	$ 2,000.00	$ 4,000
6	130620			Temporary Drainage Inlet Protection	EA	41	$ 330.00	$ 13,530
7	210350			Fiber Roll	LF	22,500	$ 3.00	$ 67,500
8	130680			Temporary Silt Fence	LF	3,600	$ 3.70	$ 13,320
9	130710			Temporary Construction Entrance	EA	2	$ 3,500.00	$ 7,000
10	130730			Street Sweeping	LS	1	$ 20,000.00	$ 20,000
11	130900			Temporary Concrete Washout	LS	1	$ 10,000.00	$ 10,000
12	130520			Temporary Hydraulic Mulch	SY	76,000	$ 0.70	$ 53,200
13	130610			Temporary Check Dam	LF	350	$ 14.00	$ 4,900
14	210600			Compost	CY	980	$ 70.00	$ 68,600
15	210420			Straw	SF	317,000	$ 0.10	$ 31,700
16	210630			Incorporate Materials	SF	317,000	$ 0.07	$ 22,190
17	210270			Rolled Erosion Control Product (Netting)	SF	340,000	$ 0.30	$ 102,000
18	210430			Hydroseed	SF	340,000	$ 0.10	$ 34,000
19	202006			Soil Amendment	CY	1,750	$ 40.00	$ 70,000
20	150809			Remove Culvert (LF)	LF	193	$ 85.00	$ 16,405
21	152430			Adjust Inlet	EA	1	$ 2,360.00	$ 2,360
22	194001			Ditch Excavation	CY	171	$ 205.00	$ 35,055
23	390132			Hot Mix Asphalt (Type A)	TON	142	$ 300.00	$ 42,600
24	394090			Place Hot Mix Asphalt	SY	550	$ 45.00	$ 24,750
25	721017			Rock Slope Protection (300 lb Class IV, Method B)	CY	35	$ 165.00	$ 5,775
26	729011			Rock Slope Protection Fabric (Class 8)	SY	105	$ 17.00	$ 1,785
27	510094			Structural Concrete (Drainage Inlet)	CY	108	$ 2,500.00	$ 270,000
28	731502			Minor Concrete (Miscellaneous Construction)	CY	63	$ 700.00	$ 44,100
29	750001			Miscellaneous Iron And Steel	LB	13,600	$ 3.50	$ 47,600
30	650014			18" Alternative Pipe Culvert	LF	4,015	$ 109.00	$ 437,635
31	705311			18" Alternative Flared End Section	EA	3	$ 750.00	$ 2,250
32	620140			24" Alternative Pipe Culvert	LF	460	$ 150.00	$ 69,000
33	650018			24" Reinforced Concrete Pipe	LF	35	$ 175.00	$ 6,125
34	705315			24" Alternative Flared End Section	EA	1	$ 1,300.00	$ 1,300
35	650026			36" RCP Pipe Inlet	LF	24	$ 260.00	$ 6,240
36	665018			18" Corrugated Steel Pipe	LF	90	$ 215.00	$ 19,350
37	690118			18" CSP TEE	LF	5	$ 70.00	$ 315
38	700639			CMP Riser	EA	1	$ 815.00	$ 815
39	066595			Water Pollution Control Maintenance Sharing	LS	1	$ 4,400.00	$ 4,400
40	066596			Additional Water pollution Control	LS	1	$ 2,300.00	$ 2,300
41	066916			Annual Construction General Permit Fee	LS	1	$ 4,400.00	$ 3,000
				TOTAL				**$ 1,641,600**

Source: Caltrans

ATTACHMENT 14

Dist-County-Route: 03-ED-50

Post Mile Limits: 16.0/16.6

Type of Work: New off-ramp, Park'n'Ride, frontage road re-alignment

Project ID (EA): 0314000301 (03-37281)

Program Identification: RTIP & CMAQ

Phase: ☐ PID ☐ PA/ED ☒ PS&E

Regional Water Quality Control Board(s): Region 5S - Central Valley

Total Disturbed Soil Area: 10.24 acres (Caltrans), 5.85 (City)

Post Construction Treatment Area: 3.10 acres (Caltrans), 2.48 (City)

Alternative Compliance (acres): 0

Estimated Const. Start Date: 03/2018 Estimated Const. Completion Date: 03/2019

Risk Level: RL 1 ☐ RL 2 ☒ RL 3 ☐ WPCP ☐ Other: _____

Is the Project within a TMDL watershed? Yes ☐ No ☒

TMDL Compliance Units (acres): _____

Notification of ADL reuse (if yes, provide date): Yes ☒ Date: _____ No ☐

This Report has been prepared under the direction of the following Licensed Person. The Licensed Person attests to the technical information contained herein and the date upon which recommendations, conclusions, and decisions are based. Professional Engineer or Landscape Architect stamp required at PS&E.

8/3/2017

Chris Sewell, P.E., Registered Project Engineer — Date

I have reviewed the stormwater quality design issues and find this report to be complete, current and accurate:

REGISTERED PROFESSIONAL ENGINEER
CHRISTOPHER J. SEWELL
C 64807
EXP. 06/30/19
CIVIL
STATE OF CALIFORNIA

[Stamp Required at PS&E only]

Jess Avila, Project Manager — *Date*

Byron Pierce, Designated Maintenance Representative — *Date*

T. Chris Johnson, Designated Landscape Architect Representative — *Date*

Wesley Faubel, District/Regional Design SW Coordinator or Designee — *Date*

STORMWATER DATA INFORMATION

1. Project Description

The proposed Western Placerville Interchange Project – Phase 2 (Project) is located within the limits of the City of Placerville (City) in El Dorado County (County), California. The City proposes an eastbound direct access from United States Route 50 (US 50) onto Ray Lawyer Drive with an eastbound auxiliary lane between the existing eastbound access ramp at Forni Road in addition to a proposed eastbound off-ramp at Ray Lawyer Drive. Also proposed is a retaining wall along Forni Road, resurfacing of the existing number one lane mainline US 50, and a park-and-ride facility located between the proposed off-ramp and Forni Road.

The Project's Project Approval/Environmental Document (PA/ED) phase was completed in fall 2005, and the Project Report was approved in January 2008. Because both of these dates were prior to the July 1, 2013 effective date of the current Caltrans municipal separate storm sewer systems (MS4s) Permit, the Project treatment best management practices (BMP) thresholds are covered under the previous Caltrans MS4 Permit (Order No. 99–06-DWQ).

The disturbed soil area (DSA) and impervious area values within the Project are listed in Table 1. The areas are broken down by right-of-way (R/W). The Project area straddles the R/W of Caltrans and the City. Caltrans R/W encompasses US 50 and the Ray Lawyer Drive ramps and interchanges, as well as the City of Placerville limits contain Forni Road and the El Dorado County Jail. These land desginations create complexity in regard to stormwater treatment. The runoff exclusive to Caltrans' R/W will be treated per Caltrans MS4 Permit. Some of the runoff generated from the City's R/W is combined with the runoff from Caltrans' R/W. That runoff will be treated per the Phase II Small MS4 permit (Order No. 2013-0001-DWQ). The runoff exclusive to the City's R/W will be treated per the Phase II Small MS4 permit.

The DSA includes the proposed impervious area improvements, areas of cut and fill, and areas of earthwork. The net new impervious (NNI) area is the difference between the pre- and post-Project impervious areas, considering new and removed impervious surfaces. The replaced impervious surface (RIS) area is where existing impervious surface will be removed to an erodible layer and replaced with new impervious material. The sum of the NNI and RIS equals the Project's new impervious surface (NIS). Because the NIS is greater than 1 acre, this Project is required to consider implementation of permanent stormwater treatment BMPs. Treatment BMPs to address total maximum daily loads (TMDLs) are not required and are not being incorporated.

Table 1. Project Disturbed Soil and Impervious Areas

Right of Way (R/W)	DSA (acre)	Impervious Area (acre)				
		Pre-Project	Post-Project	NNI	RIS	NIS
Caltrans	10.24	0.86	3.96	3.10	—	3.10
Placerville	5.85	1.62	2.75	1.13	1.35	2.48
Total	**16.09**	**2.48**	**6.71**	**4.23**	**1.35**	**5.58**

One infiltration basin currently exists within the Project area. This facility will be replaced with a larger detention basin which will treat more impervious area runoff than is currently treated. The 2.48 acres of NIS within the City of Placerville's R/W will be treated per the Phase II Small MS4 permit. The Caltrans' total post-construction treatment area for the Project is 3.10 acres.

2. Site Data and Stormwater Quality Design Issues

The Project is located within the Caltrans District 3 and the Central Valley Regional Water Quality Control Board (RWQCB)-Region 5S.

Hydrologic Watershed

The Project limits are within the Hangtown Creek watershed and of the larger Weber Creek watershed. Table 2 lists the hydrologic watershed classifications of the Project site.

Table 2. Project Hydrologic Unit Summary

Hydrologic Unit	Hydrologic Area	Hydrologic Sub-Area	Planning Watershed
American River	South Fork American River	Weber Creek - 514.31	5514310201

Source: Caltrans

Receiving Water Bodies

Hangtown Creek is the only named receiving water body for Project runoff. Two culverts convey channel flow collected from upland areas (area around the jail, along Gold Nugget Way, and around the auto dealerships) under US 50, and outlet to Hangtown Creek. These two unnamed channels are considered waters of the U.S. Hangtown Creek flows into Weber Creek, and Weber Creek flows into the South Fork American River.

Clean Water Act 303(d) list / Pollutants of Concern

The 2012 California Integrated Report (Clean Water Act Section 303(d) List / 305(b) Report) identifies Hangtown and Weber creeks as Category 3 water bodies, which are described as "waters with insufficient information to assess beneficial uses." The creeks are on the report for municipal and domestic drinking water supply with pollutant-specific conductivity and aquatic life support of cold freshwater habitat with pollutant of pH.

Drinking Water Reservoirs / Recharge Facilities

The Caltrans District 3 Work Plan does not identify any drinking water reservoirs or recharge facilities within the Project limits.

Beneficial Uses

The Central Valley RWQCB Basin Plan (revised October 2011 with approved amendments) identifies narrative and numerical water quality objectives for the region. The general water quality objectives established within the Central Valley region include: bacteria, biostimulatory substances, chemical constituents, color, dissolved oxygen, floating material, mercury, methylmercury, oil and grease, pesticides, pH, radioactivity, salinity, sediment, settleable material, suspended material, tastes and odors, temperature, toxicity, and turbidity. The Basin Plan lists beneficial uses for hydrologic unit number 514.31, which are listed in Table 3.

Table 3. Beneficial Uses for Hydrologic Unit 514.31

Beneficial Uses										
MUN	AGR	IND	REC-1	REC-2	WARM	COLD	MIGR	SPWN	WILD	NAV
E			E	E	E	E		E	E	

Notes:

AGR — Agricultural Supply
COLD — Cold Freshwater Habitat
IND — Industrial Service Supply
E — Existing Beneficial Uses
MIGR — Fish Migration
MUN — Municipal & Domestic Water Supply
NAV—Navigation
REC-1 — Water Contact Recreation
REC-2 — Non-contact Water Recreation
SPWN — Fish Spawning
WARM — Warm Freshwater Habitat
WILD — Wildlife Habitat

Source: Central Valley RWQCB

401 / 404 Certification

Section 401 and 404 Water Quality Certifications are required and have been received for the Project.

Local Agency Requirements / Concerns

This Project discharges to and proposes improvements within the County and the City MS4s. The County and City are traditional permittees under the Statewide Phase II Small MS4 General Permit (Order No. 2013-0001-DWQ). Therefore, this Project will be required to comply with this permit's requirements for post-construction stormwater management.

All non-stormwater discharges leaving the site and entering the City's stormwater conveyance system are subject to Placerville Municipal Code Chapter 7-15.

Climate

The Project area is marked by hot summers and moderately cold winters. The average monthly temperature ranges from 42°F in December to 74.4°F in July. The average maximum monthly temperature ranges from 53°F in December to 92.2°F in July.

The growing season ranges from 175 to 200 days. The average date of the last freezing temperature is the first of March, and the average date of the first freezing temperature is the end of October. The average monthly precipitation ranges from 0.09 inches in August to 7.14 inches in January. The average annual precipitation is 38.63 inches. Approximately 93 percent of precipitation is rainfall and 7 percent is snow.

The Caltrans *Project Planning and Design Guide* (PPDG, 2016) identifies the rainfall intensity to calculate the water quality flow for treatment BMPs is 0.20 inches per hour. Precipitation data was accessed from the National Oceanic and Atmospheric Administration (NOAA) Atlas Precipitation Frequency Data Server (PFDS) web application. The location chosen was Placerville, California, with latitude 38.7275 and longitude -120.8248. The intensity-duration-frequency for this location is summarized in Table 4.

Table 4. Intensity-Duration-Frequency (inches per hour)

	Recurrence Interval		
Duration	10 year	25 year	100 year
5 minute	2.98	3.50	4.36
10 minute	2.13	2.51	3.12
1 hour	0.85	1.01	1.25

Source: NOAA

Soil

The Natural Resources Conservation Service (NRCS) *Web Soil Survey* classifies the soils in the Project area are as being within hydrologic soil group (HSG) C. Soils in HSG C have a slow infiltration rate when thoroughly wet. They consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture to fine texture. These soils have a slow rate of water transmission.

The soil erosion potential, dependent on landscape, climate, and soil properties, is estimated by the K factor derived for the Universal Soil Loss Equation. Determined using the NRCS *Web Soil Survey*, the K factor for this site ranges from 0.10 to 0.43, with the majority of the soils having a K factor of 0.15 (~62%) and a little more than a third having a K factor of 0.43, indicating that the soils within the Project have a low to moderate susceptibility to water erosion.

Geology

The following geologic information was obtained from the Initial Site Assessment (ISA) for the Project (Dokken Engineering 2010). The Project site is on the gentle western slope of the Sierra Nevada fault block, which eventually disappears under the sediments of the Great Valley. The deep river canyons that cut into the western slope give the area its great relief. Eruptions from andesitic volcanoes high in the Sierra Nevada sent lava, ash, and mud flows down the tertiary streams on the western slope. These igneous deposits have withstood the elements and erosion and now exist as ridges and outcrops in the foothills.

The Project area is located along a belt of northwest-trending metamorphic rocks, which are distributed within three major faults bounded lithologic terrains that extend along the length of the metamorphic belt. The terrains are composed of thick accumulations of Paleozoic and Mesozoic marine sedimentary and volcanic rocks of varying lithologies that have been deformed, intruded, and metamorphosed. The rock sequences have been isoclinally folded and faulted to such an extent that true stratigraphic thicknesses cannot be accurately measured. Bedding, foliation, and major structural features throughout the metamorphic belt generally trend northwest and dip steeply to the east.

Groundwater

Groundwater in the Project area has been measured to be 7 feet and 13 feet below ground surface at two different locations in 2012. The current Geotechnical Design Report indicated no signs of groundwater in Project related explorations. Seasonal fluctuations in groundwater and rainfall contributions, however, may cause variation in the level of the water table (GEOCON 2016).

Hazardous Materials

Yellow traffic stripes contain lead and chromium above hazardous waste thresholds and may produce toxic fumes when heated. Caltrans Hazardous Waste provisions will be followed for removal of any yellow traffic striping.

Aerially Deposited Lead

It is expected that soils containing aerially deposited lead will be encountered during construction; however, these soils will not be reused if the levels are higher than allowable reuse limits stated in the Standard Specifications. An Aerially Deposited Lead Site Investigation Report concluded that the

upper 0.5 feet of earthen material is classified as a California hazardous waste and may be used on-site in accordance with the Department of Toxic Substances Control (DTSC) Variance (as Caltrans Type Y2 material). The underlying soils are not classified as such and will be managed separately (GEOCON 2009).

It is recommended that the contractor conduct all grading operations with the awareness that lead-impacted soil is present on the site and conduct all operations in accordance with applicable Cal-OSHA requirements, including a project-specific worker Health and Safety Plan and Lead Compliance Plan.

Topography

The Project is located in a hilly and relatively rural area. The Project site elevations range between 1,800 and 1,900 feet, North American Datum of 1983.

Right-of-Way Requirements

The Project extends through and proposes improvements within both Caltrans and the City's R/W. There are no additional R/W requirements proposed for BMPs.

Slope Stabilization

The Caltrans District 3 Work Plan does not identify any slopes prone to erosion within or near the Project area. The steep topography of the site necessitates the use of appropriate slope stabilization techniques to minimize erosion in the Project area. The following precautions have or will be taken to minimize slope instability and reduce of the impacts of stormwater:

- Only disturbing existing slopes when necessary
- Minimization of cut and fill areas to reduce the slope lengths
- Use of retaining wall(s) to reduce steepness and length of slopes
- Use of benched slopes to reduce concentrated flow
- Collection of concentrated flows into stabilized drains and channels
- Construction scheduling to install permanent measures such as biofiltration swales, vegetated slopes, basins, and conveyance systems to collect and minimize the impact of construction stormwater

Land Use

The Project area consists of paved roads and grassy and wooded pervious areas between the roads. Surrounding land use includes government facilities, residences, and commercial developments. The majority of the land in the upland watershed is undeveloped woodland with shrub growth.

Measures for Avoiding or Reducing Potential Stormwater Impacts

The Project cannot be relocated or realigned to avoid or reduce impacts to receiving water bodies or other problematic areas due to the limited space available along US 50 and because the terrain steepens to the southeast of the freeway.

Where possible, slopes were designed to be less than 2:1 (H:V) and will be compacted as specified in the Caltrans Standard Specifications. New and disturbed slopes will be stabilized using permanent erosion control measures, and concentrated flows will be collected into stabilized drains and channels. The plans identify the drainage and erosion control types and locations, and Section 6 of this report summarizes the permanent BMP methods used for this Project.

Measures will be used to prevent any construction material from entering the receiving water body. The construction site BMP strategy is discussed in Section 3 of this report.

Existing Treatment BMPs

There are two existing treatment BMPs in the Project area according to the Caltrans Integrated Maintenance Management System (IMMS). The IMMS lists these BMPs as infiltration basins at the same post mile (PM) number (16.26). These basins will be considered to be the same facility, which is located between Forni Road and US 50 with an outlet structure at the approximate station number 559+70 on the "RL-2" Line. This basin will be replaced with a larger volume detention basin located upstream at the approximate station number 562+15 of the "RL-2" Line. This basin will be sized to treat the NIS and detain peak flows for the NNI.

3. Construction Site BMPs to be used on Project

This Project will be constructed under the City of Placerville Notice of Intent (NOI); therefore, the City of Placerville's policies will govern the construction-site BMP strategy. The temporary water pollution control plans have been submitted to the City for review and concurrence.

Risk Level Determination

The Project will disturb more than 1acre of soil, therefore it is required to comply with the Construction General Permit (CGP), Order No. 2009-0009-DWQ and subsequent amendments. Projects subject to the CGP must complete a risk-level determination to determine the level of monitoring, sampling, and requirements for discharges from the Project.

The sediment risk is determined from the product of the rainfall runoff erosivity factor (R), the soil erodibility factor (K), and the length-slope factor (LS). Based on the estimated construction schedule and location of the Project, the U.S. Environmental Protection Agency (EPA) erosivity calculator calculated an R factor value of 90.18. The Caltrans "Water Quality Planning Tool" identifies the maximum K and LS values within the Project area as 0.32 and 4.5, respectively. The product of the R, K, and LS values is 130, which greater than 75, so the sediment risk is classified as high.

Hangtown Creek, Weber Creek, and the South Fork American River are all classified as having a low receiving water risk because they don't have the combined existing beneficial uses of MIGR, COLD, and SPWN, and because they are not identified as being impaired for sediment.

The high sediment risk and low receiving water risk results in the Project being classified as risk level 2.

Construction Site BMP Quantities

The quantities of temporary construction-site BMPs are provided in Table 5.

Table 5. Construction Site BMP Quantities

Item Code	Item Description	Unit	Quantity
130100	Job Site Management	LS	1
130300	Prepare Storm Water Pollution Prevention Plan	LS	1
130310	Rain Event Action Plan	EA	55
130320	Storm Water Sampling and Analysis Day	EA	30
130330	Storm Water Annual Report	EA	2
130520	Temporary Hydraulic Mulch	SY	82,400
130610	Temporary Check Dam	LF	350
130620	Temporary Drainage Inlet Protection	EA	41
130680	Temporary Silt Fence	LF	3,500
130710	Temporary Construction Entrance	EA	2
130730	Street Sweeping	LS	1
130900	Temporary Concrete Washout	LS	1
210350	Fiber Roll	LF	21,500
066595	Water Pollution Control Maintenance Sharing	LS	1
066596	Additional Water Pollution Control	LS	1
066916	Annual Construction General Permit Fee	LS	1

Storm Water Pollution Prevention Plan

A Storm Water Pollution Prevention Plan (SWPPP) is required for this Project because the Project's DSA is greater than 1 acre. The SWPPP will be prepared by the Contractor for approval by Caltrans and the City.

Rain Event Action Plans are prepared by the Contractor prior to an anticipated rain event to describe the strategy for implementation of construction-site BMPs and the method to ensure runoff from the Project does not impact receiving waters. Stormwater sampling analysis is performed at discharge locations during qualifying storm events. The samples collected are tested for compliance with pH and turbidity numeric action levels. Storm Water Annual Reports are a collection and summary of all SWPPP-related activities; the reports include results of sampling and monitoring, corrective actions, and any other activities to demonstrate compliance with the CGP.

Temporary Soil Stabilization BMPs

Temporary hydraulic mulch will be placed on disturbed soils and stockpiles to provide temporary stabilization during construction and areas of temporary inactivity.

Temporary Sediment Control BMPs

Temporary check dams will be placed within the proposed unlined ditches and swales to reduce flow velocity and prevent scouring. Temporary drainage inlet protection will be placed at all proposed drainage inlets and existing inlets near work areas to prevent debris from entering drainage facilities. Temporary silt fencing will be placed along the limits of grading work to prevent sediment from running to and from the Project. Fiber rolls will be placed along disturbed slopes to reduce sheet flow velocities and around stockpiles to prevent runoff of sediment-laden flows.

An active treatment system will not be used for stormwater or non-stormwater discharges.

Temporary Tracking Control BMPs

Temporary construction entrances will be located at all staging locations to prevent sediment or debris from being tracked onto the roadway. Street sweeping is provided to remove debris from the roadway during construction.

Non-Stormwater Management

Dewatering will not be needed during Project construction. Temporary creek or clear water diversion is not anticipated to be necessary because the channels are expected to be dry during construction. Non-stormwater management measures necessary for the Project are covered under the lump sum for job site management.

Waste Management & Materials Pollution Control

Temporary concrete washout will be used to address waste from concrete placement and mortar mixing. All other waste management and materials pollution control needs are addressed by the other BMPs proposed for the Project and by the lump sum for job site management.

Job Site Management

A lump sum for job site management is provided to cover additional BMPs needed for the Project, including spill prevention and control, material management, waste management, and non-stormwater management. The job site management lump sum, along with the additional water pollution control lump sum, can also be used as contingency if additional line-item BMPs beyond those quantified are needed.

4. Maintenance BMPs (Drain Inlet Stenciling)

Drainage inlet markers are required for this Project because proposed inlets on Forni Road and Ray Lawyer Drive are in areas accessible to pedestrian and bicycle traffic. The Project does not include maintenance-vehicle pullouts because of the short length of the Project and the limited potential locations for installation.

5. Other Water Quality Requirements and Agreements

The 401 Certification has WDID 5A09CR00171 and is effective June 13, 2017. The 404 permit is under number SPK-2004-00958 and was issued July 10, 2017. The Project also meets the California Department of Fish and Wildlife's (CDFW) Lake or Streambed Alteration (LSA) Program according to Fish and Game Code Section 1602 (CDFW 2016). This agreement was issued on June 15, 2017 and has Notification Number 1600-2017-0084-R2.

6. Permanent BMPs

Rapid Stream Assessment

A rapid stream assessment is not required for this Project because the Project's PID date preceeds July 1, 2013 and thus is not subject to the hydromodification requirements of the current Caltrans MS4 Permit.

Design Pollution Prevention (DPP) BMP Strategy

Downstream Effects Related to Potentially Increased Flow, Checklist DPP-1, Parts 1 and 2

There are two waters of the U.S. that cross the Project, but the Project does not propose to realign or modify the crossings associated with these waters. The Project proposes to construct a new eastbound off-ramp on US 50 at Ray Lawyer Drive and widen and realign Forni Road just west of the Ray Lawyer Drive interchange, adding 4.23 acres of NNI. With an increase in impervious area, there will also be an increase in the volume of downstream flow from the roadway. DPP BMPs will be implemented to prevent downstream erosion, minimize potential velocity increases, stabilize slopes, and minimize erosion potential.

The DPP BMP strategy includes using the proposed permanent stormwater treatment BMPs to address increases in the volume and velocity of flows. The proposed biofiltration swale is designed to promote infiltration, retention, and dispersion of runoff; these efforts address and prevent increases in flow velocity and volume. The proposed detention basin is also designed to infiltrate stormwater and meter excess flows from a raised outlet. The basin is sized to prevent any increase of flow during the 10, 25, and 100-year flood for a 3- and 24-hour duration at two downstream junctions north of US 50. These efforts will reduce peak flows below existing conditions downstream of the Project area.

Concrete-lined ditches and gutters are proposed due to the channel steepness and resulting velocities. Flared end sections and downdrain tees with rock slope protection are provided to slow and disperse runoff. These measures ensure smooth transitions between culvert outfalls and channels to reduce turbulence and prevent scour.

Slope/Surface Protection Systems, Checklist DPP-1, Parts 1 and 3

Existing slopes within the Project limits will be modified due to the proposed widening. Of the Project's 16.09 acres of DSA, 3.47 acres consist of slopes 4:1 (H:V) or flatter, 0.58 acres consist of slopes greater than 4:1 (H:V) and less than 2:1 (H:V), and 2.15 acres consist of slopes 2:1 (H:V) or steeper. Concentrated flows will be managed by benching and terracing slopes and collecting flows in new or modified stabilized drains or channels. A retaining wall is proposed on the north edge of Forni Road just west of the park-and-ride driveway.

Permanent slope and soil stabilization is achieved through the use of standard erosion control measures. The erosion control types and locations are shown on the Erosion Control Plans included in the contract plan set. Disturbed soils will be stabilized by incorporating compost and straw into the soil, placing rolled erosion product netting and fiber rolls, and applying a mixture of hydroseed and hydromulch. Biofiltration swales will be stabilized by placing erosion control netting over the swale and side slopes and applying a mixture of hydroseed and hydromulch. The hydroseed seed mix includes a mixture of native annual wildflowers, annual and perennial grasslands, mixed lowland pioneers, and mixed montane pioneers, which were identified using Caltrans' TransPlant database as appropriate for the Project corridor. Permanent irrigation is not proposed.

Beyond the roadway surface, the only hard surfaces proposed are rock slope protection at drainage facility outfalls and lined ditches and gutters. Other hard surfaces, such as slope paving and concreted rock slope protection, are not proposed.

Concentrated Flow Conveyance Systems, Checklist DPP-1, Parts 1 and 4

New drainage facilities and modifications to existing drainage facilities are necessary to direct or intercept surface flow because the Project will create or modify ditches, dikes, and swales, plus create new slopes. These drainage improvements include placing new drainage inlets and outfalls and relocating or adding inlets where roadway widening is proposed. New drainage inlets and outfalls at locations along Forni Road, the Forni Road extension, Ray Lawyer Drive, and the Ray Lawyer Drive off-ramp are proposed to prevent cross flow and the spread of stormwater beyond the shoulder during the design storm.

New drainage facilities are designed to be steep enough to achieve self-cleaning velocities, but flat enough to prevent downstream erosion. Flared end sections with outlet protection and velocity dissipation devices (e.g. tee outfalls and rock slope protection) are placed at outfalls to reduce flow velocities and prevent erosion. A significant portion of the Project drainage area will flow to the detention basin between the eastbound Ray Lawyer Drive off-ramp and the eastbound lanes of US 50. The proposed drainage improvements are shown on the Drainage Plans included in the contract plan set.

Preservation of Existing Vegetation, Checklist DPP-1, Parts 1 and 5

Within the Project area there are existing terrestrial plant communities/habitat types, riparian, constructed drainage ditches, and constructed drainage channels. Some of these areas are

designated as environmentally sensitive and must be protected during construction. A qualified biologist will clearly delineate the limited construction areas and environmentally sensitive areas that will be avoided due to vernal pools and wetlands. These environmentally sensitive areas are identified on the plans and will be delineated prior to the start of construction with temporary fencing (type ESA) to ensure no work or staging is performed within these areas, and confine workers and equipment to the designated construction areas.

Treatment BMP Strategy

This Project is required to consider implementation of treatment BMPs because the Project directly discharges to surface waters and results in an increase of 1 acre or more of NIS. Under the Caltrans MS4 permit applicable to this Project, a goal of the Project is to treat impervious surface to the maximum extent practicable.

Treatment BMPs: Summary of Checklist T-1, Part 1

The following is a summary of the checklist answers:

- The Project's treatment facilities (detention basin and swale) will replace an existing infiltration basin. The proposed treatment facilities will treat the equivalent or greater of the existing treated runoff plus the required treatment volume necessary to mitigate the Project's NIS, or up to the Maximum Extent Practicable.
- The Project's watershed does not have a prescriptive treatment BMP requirement or a TMDL for litter/trash.
- Traction sand is not used more than twice a year, so sand trap inlets are not being considered.
- The detention basin may be used as a flood control basin and may be considered a dual-purpose facility. The basin and bioswale are design to treat 100 percent of the Post Construction Treatment Area.
- There are no targeted design constituents associated with the Project receiving waters.

The Project will use a biofiltration swale and an earthen detention basin, both with compost amended soils, to detain, settle and infiltrate to treat the water quality volumes (WQV) for their respective watersheds. The proposed detention basin is located between the eastbound Ray Lawyer Drive off-ramp and the eastbound lanes of US 50. Caltrans will provide maintenance for the detention basin and basin outlet structures. The basin meets the feasibility and design elements outlined in the Checklist T-1, Part 5 and the PPDG. These include: having adequate capacity to capture the WQV, providing access to the invert of the basin, having adequate freeboard above the overflow event, having interior side slopes less than 4:1, establishing vegetation at the invert and on the side slopes, providing a diversion for flows greater than the WQV, and installing a gravity-fed maintenance drain.

The existing infiltration basin treats 3.62 acres of impervious area. The total proposed NIS is 5.58 acres. The Project detention basin treats flow from the 6.55 acres of impervious surface, and the biofiltration swale treats flow from 0.18 acres of impervious surface, treating a total of 6.73 acres. Although the Project does not treat the total of sum of the existing treatment area and the NIS, it does treat more than 1 acre over the NIS and it provides treatment to the Maximum Extent Practicable. Furthermore, the vast majority of the proposed treated area is the RIS of the impervious area currently treated by the existing basin.

Biofiltration Swales/Strips, Checklist T-1, Parts 1 and 2

The proposed biofiltration swale is located just west of the park-and-ride driveway between Forni Road and US 50. While biofiltration swale(s) are not the ideal treatment BMP for most of the Project area because of the steepness of the terrain, the proposed swale is located in a depressed area that receives concentrated flows. The swale is within an area that allows vegetation to be established, is designed with slopes between 0.25 and 6 percent in the direction of flow, has side slopes of 2:1 (H:V) on the southeast side and 4:1 side slopes on the northwest side (road side), and the existing soils are not known to be contaminated.

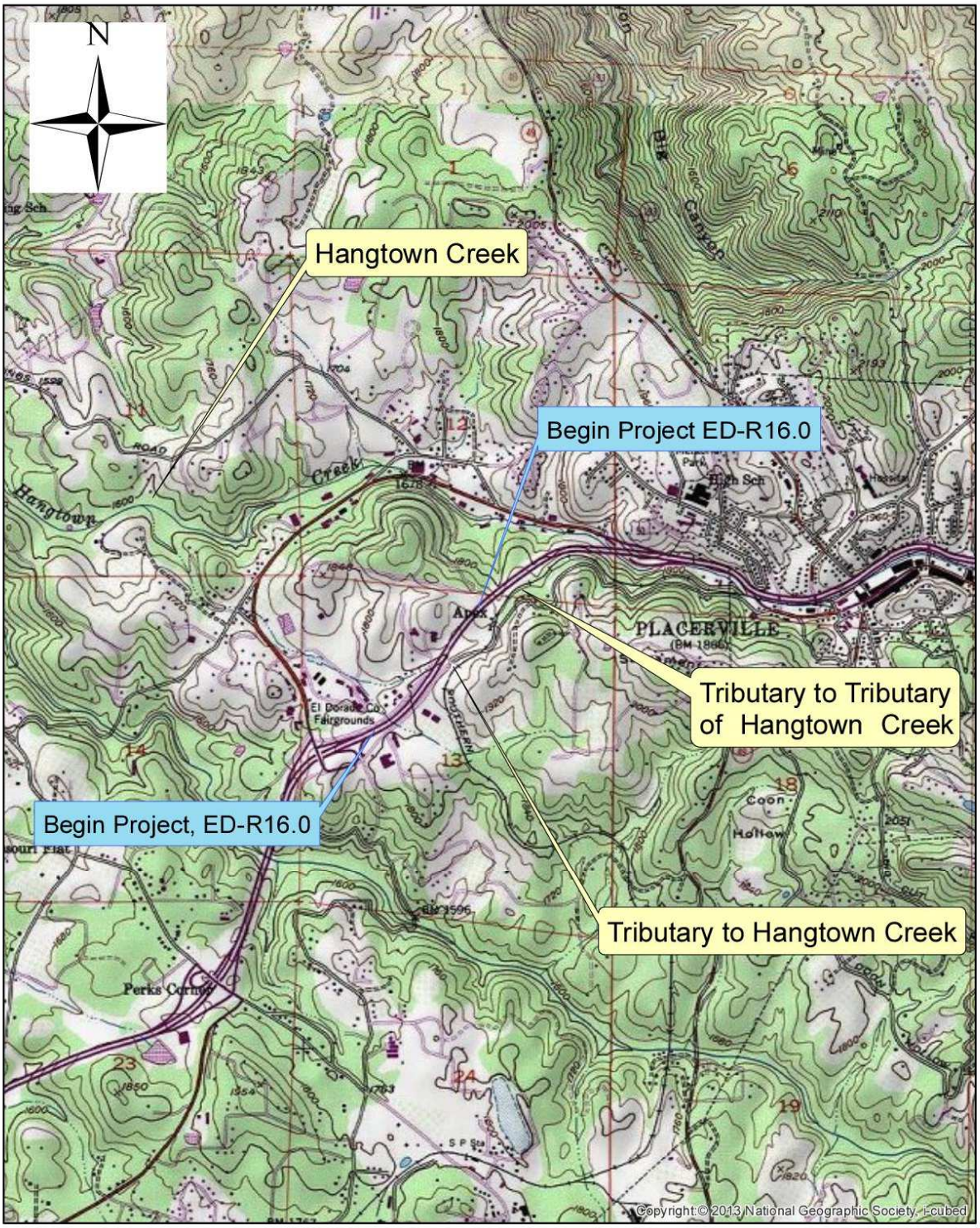
The biofiltration swale is compost-amended to infiltrate the WQV, and have a minimum hydraulic residence time of 5 minutes, a 6-inch maximum depth of flow, and a maximum flow velocity of 1 foot per second during the water quality flow (WQF) event; the WQF intensity at the Project location is 0.20 inches per hour. The biofiltration swale also acts as a vegetated channel to convey design storm flows without scouring. The bottom width of the biofiltration swale is 5 feet to allow for ease of maintenance, and Caltrans' TransPlant database was used to determine the appropriate vegetation within the Project area.

Required Attachments

- Vicinity Map
- Evaluation Documentation Form (EDF)
- Risk Level Determination Documentation
- RUSLE2 Summary Sheet
- SWDR Attachment for SMARTS Input
- SWDR Summary Spreadsheets

Supplemental Attachments

- Checklist SW-1, Site Data Sources
- Checklist T-1, Part 1 (Treatment BMPs)
- Checklist SW-2, Stormwater Quality Issues Summary
- Checklist SW-3, Measures for Avoiding or Reducing Potential Stormwater Impacts
- Checklist DPP-1, Parts 1–5 (Design Pollution Prevention BMPs)
- Checklist T-1, Part 3 and 4 (Treatment BMPs)
- Construction Site BMP Consideration Form
- Checklist CS-1, Parts 1–6 (Construction Site BMPs)
- Calculations and supporting information for sizing Treatment BMPs
- Plans showing BMP deployment


N
Hangtown Creek
Begin Project ED-R16.0
Tributary to Tributary of Hangtown Creek
Begin Project, ED-R16.0
Tributary to Hangtown Creek
Apex
PLACERVILLE
Perks Corner
Coon Hollow
Copyright © 2013 National Geographic Society, i-cubed
0 0.125 0.25 0.5 0.75 1
Miles

DATE: August 2017

Project ID (or EA): 0314000301 (03-37281)

No.	Criteria	Yes ✓	No ✓	Supplemental Information for Evaluation
1.	Begin Project evaluation regarding requirement for implementation of Treatment BMPs	✓		See Figure 4-1, Project Evaluation Process for Consideration of Treatment BMPs. Continue to 2.
2.	Is the scope of the Project to install Treatment BMPs (e.g., Alternative Compliance or TMDL Compliance Units)?		✓	If **Yes**, go to 8. If **No**, continue to 3.
3.	Is there a direct or indirect discharge to surface waters?	✓		If **Yes**, continue to 4. If **No**, go to 9.
4.	As defined in the WQAR or ED, does the project: a. discharge to areas of Special Biological Significance (ASBS), or b. discharge to a TMDL watershed where Caltrans is named stakeholder, or c. have other pollution control requirements for surface waters within the project limits?		✓ ✓ ✓	If **Yes to any**, contact the District/Regional Design Stormwater Coordinator or District/Regional NPDES Coordinator to discuss the Department's obligations, go to 8 or 5. _____*(Dist./Reg. Coordinator initials)* If **No** to all, continue to 5.
5.	Are any existing Treatment BMPs partially or completely removed? (ATA condition #1, Section 4.4.1)	✓		If **Yes**, go to 8 **AND** continue to 6. If **No**, continue to 6.
6.	Is this a Routine Maintenance Project?		✓	If **Yes**, go to 9. If **No**, continue to 7.
7.	Does the project result in an increase of one acre or more of new impervious surface (NIS)?	✓		If **Yes**, go to 8. If **No**, go to 9.
8.	Project is required to implement Treatment BMPs.	Complete Checklist T-1, Part 1.		
9.	Project is not required to implement Treatment BMPs. _____*(Dist./Reg. Design SW Coord. Initials)* _____*(Project Engineer Initials)* _____ *(Date)*	Document for Project Files by completing this form and attaching it to the SWDR.		

R Factor

Facility Information

- Start Date: 03/01/2018
- End Date: 03/31/2019
- Latitude: 38.7275
- Longitude: -120.8248

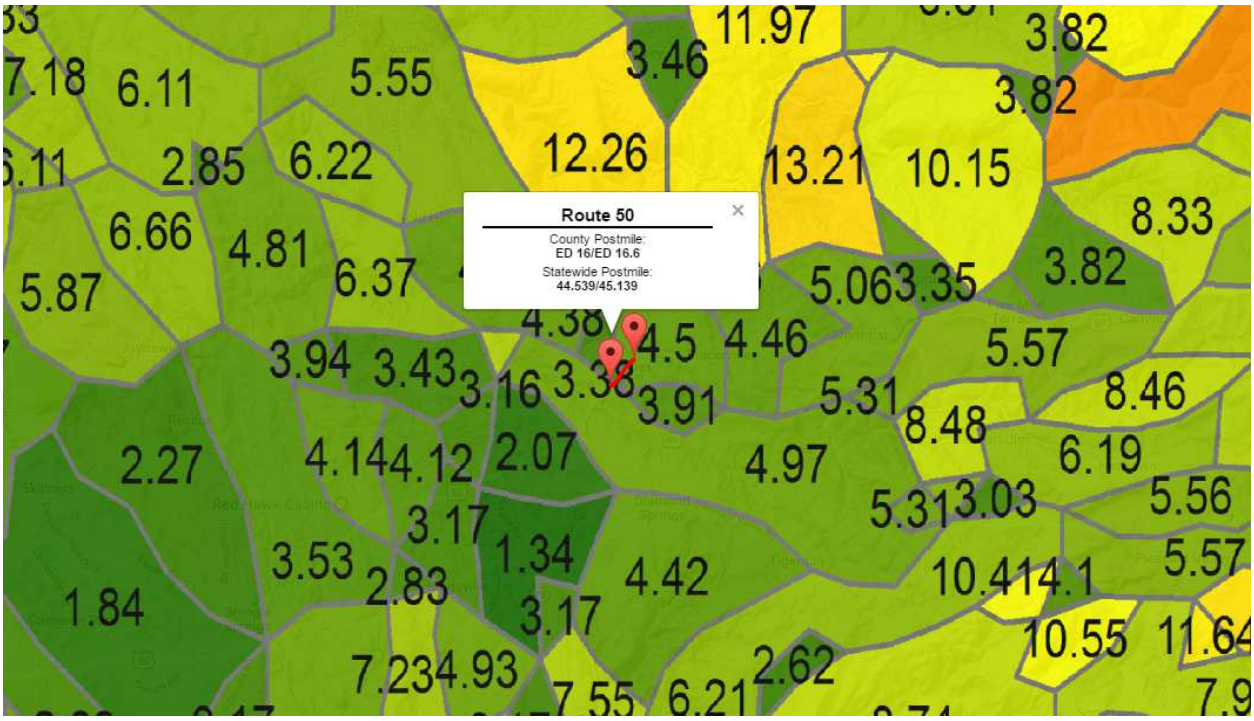
Erosivity Index Calculator Results

An erosivity index value Of **90.18** has been determined for the construction period of **03/01/2018 - 03/31/2019.**

A rainfall erosivity factor of 5.0 or greater has been calculated for your site and period of construction. **You do NOT qualify for a waiver from NPDES permitting requirements.**

K Factor

LS Factor


Route 50
County Postmile:
ED 16/ED 16.6
Statewide Postmile:
44.539/45.139
11.97
3.46
5.55
6.11
7.18
12.26
13.21
10.15
3.82
3.82
2.85
6.22
6.66
4.81
6.37
5.87
8.33
5.06
3.35
3.82
3.94
3.43
3.16
3.38
3.91
4.5
4.46
5.57
5.31
8.46
8.48
6.19
2.27
4.14
4.12
2.07
4.97
5.31
3.03
5.56
3.17
1.34
3.53
2.83
4.42
10.41
4.1
5.57
1.84
3.17
10.55
11.64
7.23
4.93
2.62
6.21
7.55
7.9

Sediment Risk Factor Worksheet	**Entry**
A) R Factor	
Analyses of data indicated that when factors other than rainfall are held constant, soil loss is directly proportional to a rainfall factor composed of total storm kinetic energy (E) times the maximum 30-min intensity (I30) (Wischmeier and Smith, 1958). The numerical value of R is the average annual sum of EI30 for storm events during a rainfall record of at least 22 years. "Isoerodent" maps were developed based on R values calculated for more than 1000 locations in the Western U.S. Refer to the link below to determine the R factor for the project site.	
http://cfpub.epa.gov/npdes/stormwater/LEW/lewCalculator.cfm	
R Factor Value	90.18
B) K Factor (weighted average, by area, for all site soils)	
The soil-erodibility factor K represents: (1) susceptibility of soil or surface material to erosion, (2) transportability of the sediment, and (3) the amount and rate of runoff given a particular rainfall input, as measured under a standard condition. Fine-textured soils that are high in clay have low K values (about 0.05 to 0.15) because the particles are resistant to detachment. Coarse-textured soils, such as sandy soils, also have low K values (about 0.05 to 0.2) because of high infiltration resulting in low runoff even though these particles are easily detached. Medium-textured soils, such as a silt loam, have moderate K values (about 0.25 to 0.45) because they are moderately susceptible to particle detachment and they produce runoff at moderate rates. Soils having a high silt content are especially susceptible to erosion and have high K values, which can exceed 0.45 and can be as large as 0.65. Silt-size particles are easily detached and tend to crust, producing high rates and large volumes of runoff. Use Site-specific data must be submitted.	
Site-specific K factor guidance	
K Factor Value	0.32
C) LS Factor (weighted average, by area, for all slopes)	
The effect of topography on erosion is accounted for by the LS factor, which combines the effects of a hillslope-length factor, L, and a hillslope-gradient factor, S. Generally speaking, as hillslope length and/or hillslope gradient increase, soil loss increases. As hillslope length increases, total soil loss and soil loss per unit area increase due to the progressive accumulation of runoff in the downslope direction. As the hillslope gradient increases, the velocity and erosivity of runoff increases. Use the LS table located in separate tab of this spreadsheet to determine LS factors. Estimate the weighted LS for the site prior to construction.	
LS Table	
LS Factor Value	4.5
Watershed Erosion Estimate (=RxKxLS) in tons/acre	130
Site Sediment Risk Factor Low Sediment Risk: < 15 tons/acre Medium Sediment Risk: >=15 and <75 tons/acre High Sediment Risk: >= 75 tons/acre	**High**

Receiving Water (RW) Risk Factor Worksheet	Entry	Score
A. Watershed Characteristics	**yes/no**	
A.1. Does the disturbed area discharge (either directly or indirectly) to a **303(d)-listed waterbody impaired by sediment** (For help with impaired waterbodies please visit the link below) or has a **USEPA approved TMDL implementation plan for sediment**?: http://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2010.shtml	**No**	**Low**
OR		
A.2. Does the disturbed area discharge to a waterbody with designated beneficial uses of SPAWN & COLD & MIGRATORY? (For help please review the appropriate Regional Board Basin Plan) http://www.waterboards.ca.gov/waterboards_map.shtml		

Combined Risk Level Matrix

Receiving Water Risk	Sediment Risk: Low	Sediment Risk: Medium	Sediment Risk: High
Low	Level 1	Level 2	
High	Level 2		Level 3

Project Sediment Risk:	**High**
Project RW Risk:	**Low**
Project Combined Risk:	**Level 2**

RUSLE2 Worksheet

Project: Project ID 0314000301 (EA 03-37281)

Location: 03-ED-50, PM 16.0/16.6

Site Characteristics

CLIMATE		SOIL		TOPOGRAPHY	
Rainfall Erosivity (R):	USA\California\DIST-03\El dorado County\CA_El Dorado_R32-36	Soil type:	El Dorado Area, Ca\BhD BOOMER GRAVELLY LOAM, 15 TO 30 PERCENT SLOPES\BOOMER gravelly loam 85%	Slope % factor (S):	50
34		Soil erodibility (K):	0.37	Slope length factor (L):	100

RUSLE2 Program Runs

PROJECT PHASE	RUSLE2 Run no.	COVER (C) and PRACTICE (P)		OUTPUT	
		Management (Vegetation type / % cover / BMP)	Permeable Barrier	Soil loss (t/ac/yr)	Sediment delivery (t/ac/yr)
Existing	1	Existing Undisturbed Vegetative Cover\Mixed Grass and shrubs, existing, greater than 70 pct Canopy Cover		20.5	20.5
Construction without BMPs	2	Highly disturbed\Construction With Temporary Practices\Construction With No Practices\bare cut slope, track walked		143	143
Construction with BMPs	3	Highly disturbed\Construction With Temporary Practices\Erosion Control Blankets and Mulch Materials\Hydraulic Mulch 2500 lbs		16.5	16.5
Final Stabilization	4	Highly disturbed\Post Construction Cut / Fill Surfaces\Practices With Vegetation\Hydroseeding + fiber + tackifier + 2000lb blown straw		12.7	12.7

DESIGN INFORMATION FOR CONSTRUCTION

The following information is based on the PS&E design plans and specifications. If contract amendments or change orders are made after the design is complete, then the information should be updated by construction, as appropriate.

Project ID (EA): 0314000301 (03-37281)

Enter the following data into the CGP SMARTS Notice of Intent-Site Information page.

1. **Total site size** (acres); for project area use Caltrans RW x post mile limits (begin-end) on plan sheets.

Total site size 71.03 acres

2. Enter **latitude and longitude** in decimal degrees to 5 significant figures. Use a location from the center of the project. This information can be obtained from Survey information, GPS units, Google earth, CT Earth, or other mapping software.

Latitude: 38.7275

Longitude: -120.8248

3. **Total Area to be Disturbed** (total Disturbed Soil Area (DSA)): This information is already calculated and can be taken from SWDR Section 1. It is should be described in acres.

DSA 16.09 (10.24 in CT RW, 5.85 outside CT RW) acres

4. **Imperviousness before Construction (percentage)** - This is calculated as the total impervious area of the project area divided by the total project area (see total site size), multiplied by 100. The impervious area is all paved areas or hard surfaces within the project limits.

Impervious area before construction % 15.4

5. **Percent of total disturbed (percentage)**; This should be calculated by dividing the total disturbed soil area by the total project area and multiply by 100.

Percent of Total disturbed area % 100

6. **Imperviousness after Construction (percentage)**, This should be calculated by adding all impervious area paved and hard surfaces based on the final design within project limits from above and dividing by the total project area from above multiply by 100.

Impervious area after construction % 41.7

7. **Mile Post Marker**, enter the approximate post mile at the center of the project or take the average of the “begin” and “end” post mile markers from the title sheet.
Mile post Marker 16.3

8. **Is the construction site part of a larger common plan of development?** Yes or No; in most cases mark no for Caltrans projects, as this is intended for developers (in accordance with the EPA definitions referenced by the CGP in 40 CFR title 22). This clarification is based on direction from the State Board. Get a confirmation with the Design Stormwater coordinator to determine if there is a special case project where the "common plan of development" may apply. No X

9. **Name of development.** Mark "Not Applicable (N/A)" in most cases.

Name of plan or development: Western Placerville Interchange Project

10. **Estimated Construction Commencement Date**, mm/dd/yyyy. The PE provides the estimated construction start date from the cover of the SWDR. The actual construction start date should be used to input into SMARTS. After the contract is awarded, the RE will use an updated start date (if different) when entering in SMARTS. The RE needs to be aware of the original date provided by Design, as this date was used to calculate the design information including the Risk Level Determination. If the actual start date is different, construction should coordinate with the PE to determine if the Risk Level has changed.

Estimated Construction Commencement Date, 03/01/2018.

11. **Estimated Complete Grading Date/Complete Project Date**; The PE provides the estimated construction completion date from the cover of the SWDR to be used for both of these inputs. After the contract is awarded, the RE will use an updated completion date (if different) when entering in SMARTS. The RE needs to be aware of the original completion date provided by Design, as this date was used to calculate the design information including the Risk Level Determination. If the completion date is different, construction should coordinate with the PE to determine if the Risk Level has changed.

Estimated Complete Grading Date/Complete Project: 03/31/2019. Use the same date for both inputs, unless instructed otherwise.

12. **Does the Stormwater from the construction site discharge directly or indirectly into waters of the United States.**

Indirect discharge (N) - If yes, list name(s) of receiving water(s) _____

Direct discharge (Y) - If yes, list name(s) of receiving water(s) Hangtown Creek

13. **Risk Level**; the combined project risk level is calculated using the sediment risk factor and the water body risk factor to give one overall project risk level. Use the Caltrans risk level determination guidance, (see the Stormwater design web page). Attach all risk calculations.

R factor value 90.18

K factor value 0.32

LS factor value 4.50

Receiving water risk comes from the state water resources control board mapping of water bodies for 303-d listing or TMDLs for sediment or water body with the beneficial use of cold and spawn and migratory. The input will either be high= yes and low=no;

Receiving water risk no, (yes or no)

The dates used for determining the project risk level and other design elements of the project required for CGP compliance are dependent on having the same sediment risk factor. This is a critical element for compliance, as modifying the estimated construction dates may cause the sediment risk factor to change and ultimately modify the overall project risk factor. This could impact the projects CGP compliance requirements and the assumptions used for the design documents and engineers estimate.

14. Provide electronic copy of plan sheets in .pdf format that can be loaded to SMARTS, burn a CD for the RE to use for the project. The Title sheet can be used as the site map.

15. Methodology for obtaining the CGP NOT decided by the PDT, see SWDR Section 6 text for methodology text and computational proof as appropriate, circle one. See SWRCB bulletin for details: http://www.waterboards.ca.gov/water_issues/programs/stormwater/docs/bulletin_2013_1.pdf

a. 70% final cover method: Attach photo documentation _____

b. RUSLE II: Attach computational proof and photo documentation See RUSLE2 Worksheet

c. Other custom method if coordinated with local regional board, attach photo documentation or other proof as necessary.

SWDR Signed Date	District	EA/Project ID	County	Route	Beg_PM	End_PM	Project Description	Project Phase	Long SWDR	Risk Level	DSA (ac)
	3	03-37281/0314000301	ED	50	16.00	16.60	New off-ramp, Park'n'Ride, frontage road re-alignment	PS&E	Yes	RL2	16.1

TMDL Waterbody	Biofiltration Strips and Swales	Detention	Infiltration Devices	GSRD	TST	MedFilter	DPPIA	SA	Other BMP
No	1	1	0	0	0	0	0	0	0

Est. Const_Start	Est. Const_Comp	SW Comment	Post Const Treatment Area (ac)	Treated Impervious Area (ac)	Treated Impervious Area Balance (ac)	Treated Pervious Area (ac)	Stabilized Area (ac)	MWELO	RSA
3/1/2017	10/31/2017		6.71	6.73	0.02	19.68	0.00	No	No

IDNO	EA / Project ID	BMP Type	District	County	Route
03-37281/0314000301-1	03-37281/0314000301	BioSwale	3	ED	50
03-37281/0314000301-2	03-37281/0314000301	Detention	3	ED	50

LocBPM	Begin Latitude (d.d)	Begin Longitude (d.d)	LocEPM	End Latitude (d.d)	End Longitude (d.d)	Direction
16.256	38.725307	-120.826447	16.323	38.725554	-120.826228	E
16.436	38.726670	-120.825043	16.490	38.727248	-120.824450	E

Trash/Sand Capacity (cyd)	BMP Specific Comments	Treated Impervious Area (ac CT R/W)	Treated Pervious Area (ac CT R/W)	WQV Capacity (cf)	WQF Capacity (cfs)
0.0		0.18	0.79	701	0.16
0.0		6.55	5.84	17,683	3.98

Basis of BMP Requirement (non 402)	Stabilized Area (ac)	TMDL Waterbody	BMP Capital Cost	Watershed	RWB
	0.00	Non-TMDL		5514310201	Central Valley (Region 5)
	0.00	Non-TMDL		5514310201	Central Valley (Region 5)

Checklist SW-1, Site Data Sources

Prepared by: WRECO Date: August 2017 District-Co-Route: 03-ED-50

PM : 16.0/16.6 Project ID/EA: 0314000301 (03-37281) RWQCB: Central Valley 5S

Information for the following data categories should be obtained, reviewed and referenced as necessary throughout the project planning phase. Collect available project reports and any available documents pertaining to the category and list them and reference your data source. For specific examples of documents within these categories, refer to Section 6.4.3.2. Example categories have been listed below; add additional categories, as needed. Summarize pertinent information in Section 2 of the SWDR.

DATA CATEGORY/SOURCES	Date
Topographic	
• Dokken. Topographic survey file. Project ID 0314000301 (EA 03-37281)	January 2016
• National Geographic Holdings. *TOPO Version 2.6.8.* Map Name: Placerville, CA.	1973
Hydraulic	
• WRECO. *Draft Drainage Report.* Project ID 0314000301 (EA 03-37281)	August 2017
Soils	
• Dokken. *Initial Site Assessment.*	2010
• Geocon Consultants, Inc. *Geotechnical Design Report*. GEOCON Project No. S9420-05-04.	March 2016
• Natural Resources Conservation Service. *Web Soil Survey. <https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm>*	Accessed: February 2017
Climatic	
• Caltrans. *Stormwater Quality Handbooks Project Planning and Design Guide.* CTSW-RT-16-314.11.1.	February 2016
• National Oceanic and Atmospheric Administration. *Climatography of the United States No. 20.*	February 2004
• National Oceanic and Atmospheric Administration. *NOAA Atlas 14 Point Precipitation Frequency Estimates.* <http://hdsc.nws.noaa.gov/hdsc/pfds/pfds_map_cont.html?bkmrk=ca>	Accessed: February 2017
• Western Regional Climate Center.	2003
Water Quality	
• Caltrans. Water Quality Planning Tool <http://svctenvims.dot.ca.gov/wqpt/wqpt.aspx>	Accessed: February 2017
• Cetral Valley Regional Water Quality Control Board. *Water Quality Control Plan for the Sacramento and San Joaquin River Basins*.	Revised July 2016
• State Water Resources Control Board. 2012 California Integrated Report (Clean Water Act Section 303(d) List / 305(b) Report).	Accessed: February 2017

<http://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2012.shtml>	
• State Water Resources Control Board. Statewide Phase II Small MS4 General Permit. Order No. 2013-0001-DWQ.	July 1, 2013
• United States Environmental Protection Agency. *Rainfall Erosivity Factor Calculator for Small Construction Sites*. <https://www.epa.gov/npdes/rainfall-erosivity-factor-calculator-small-construction-sites>	Accessed February 2017
Other Data Categories	
• Caltrans. *District 3 Work Plan, Fiscal Year 2017-2018*. CTSW-RT-16-316.11.1.	October 2016
• Caltrans. *Storm Water Quality Handbooks, Construction Site Best Management Practices (BMPs) Manual.*	March 2003
• Caltrans. *Storm Water Quality Handbooks, Storm Water Pollution Prevention Plan (SWPPP) and Water Pollution Control Program (WPCP) Preparation Manual.* CTSW-RT-10-255.08.01.	June 2011
• State Water Resources Control Board. *National Pollutant Discharge Elimination System (NPDES) Permit for Storm Water Discharges from the State of California, Department of Transportation (Caltrans) Properties, Facilities, and Activities.* Order No. 99-06-DWQ.	July 1999
• State Water Resources Control Board. *National Pollutant Discharge Elimination System (NPDES) Statewide Storm Water Permit for State of California Department of Transportation.* Order No. 2014-0077-DWQ.	July 2014
• State Water Resources Control Board. *National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities.* Order No. 2012-0006-DWQ, NPDES No. CAS000002.	July 2012

Treatment BMPs
Checklist T-1, Part 1

Prepared by: WRECO Date: August 2017 District-Co-Route: 03-ED-50

PM : 16.0/16.6 Project ID/EA: 0314000301 (03-37281) RWQCB: Central Valley 5S

Consideration of Treatment BMPs

This checklist is used for projects that require the consideration of Approved Treatment BMPs, as determined from the process described in Section 4 (Treatment Consideration) and the Evaluation Documentation Form (EDF). This checklist will be used to determine which Treatment BMPs should be considered for each BMP contributing drainage area within the project. Supplemental data will be needed to verify siting and design applicability for final incorporation into a project.

Complete this checklist for each phase of the project. This will help to determine if any changes to the BMP strategy are necessary, based on site specific information gathered during later phases. Use the responses to the questions as the basis of developing the narrative in Section 6 of the Stormwater Data Report to document that Treatment BMPs have been appropriately considered and/or incorporated.

Before evaluating an area for treatment capabilities or to incorporate a Treatment BMP, calculate the numeric sizing requirement for each contributing drainage area (WQV from the 85th percentile 24 hour storm event or WQF rate). Soil and geometric information for the project area will be necessary to use this Checklist.

Identify the overall project Post Construction Treatment Area

Refer to Section 4.4 Treatment Areas for more information on defining these areas.

Post Construction Treatment Area = NNI + RIS + ATA (1) + ATA (2)

NNI = Net New Impervious Area

RIS = Replaced Impervious Surface

ATA (1) = Additional Treatment Area required for existing Treatment BMPs that were removed as part of the project

ATA (2) = Additional Treatment Area required when NNI is 50 percent or greater than total project impervious

What is the Post Construction Treatment Area for the project? 3.1 (Caltrans), 2.48 (City) **Acres**

The Post Construction Treatment Area is the impervious area required to be treated by the project. The PE is to incorporate BMPs until the summation of the treated impervious area of all the BMPs is equivalent to the Post Construction Treatment Area for the Project.

Once this area has been treated, the project is in compliance with the post construction treatment requirement.

Total Maximum Daily Load (TMDL) Retrofit Projects

If the project is installing Treatment BMPs to only address TMDL requirements, then there is no required Post Construction Treatment Area. The Treatment BMPs for a TMDL retrofit project should be designed to treat the impervious and pervious contributing drainage areas, as they are both eligible for compliance unit (CU) credits.

Overall Project Evaluation

Answer all questions, unless otherwise directed.

A. Overall Project Consideration

1. Is the project in a watershed with prescriptive Treatment BMP requirements in an adopted TMDL implementation plan or are there any other requirements for project area (e.g., District, Regional Board, Lawsuit)? ☐ Yes ☒ No

   If Yes, consult the District/Regional Design Stormwater Coordinator or NPDES Coordinator to determine if there are written agreements related to specific Treatment BMPs. In this case, determine if the rest of this checklist needs to be followed to address other post construction requirements. If not, document BMP(s) in the Individual Treatment BMP Summary Table, provide information on the basis of the BMP requirement and any regulatory coordination in the SWDR narrative, and complete the SWDR Summary Spreadsheets. Otherwise, continue.

   If No, continue.

2. Does the receiving water have a TMDL for litter/trash, or is there a region specific requirement related to trash? ☐ Yes ☒ No

   If Yes, first evaluate BMPs that can treat other pollutants and are considered to be full capture devices (GSRDs or other) for litter/trash. If other BMPs cannot be sited, consult with the District/Regional Design Stormwater Coordinator or NPDES Coordinator to determine if standalone full capture devices (GSRDs or other) are required to be incorporated. If standalone devices are required and no other Treatment BMPs are being considered, go to question 6 of "Individual BMP Evaluation".

   If No, continue.

3. Is the project located in an area that uses traction sand more than twice a year? ☐ Yes ☒ No

   If Yes, first consider BMPs that can treat other pollutants and can capture traction sand. If other BMPs cannot be sited, consult the District/Regional Design Stormwater Coordinator to determine if standalone traction sand trap devices should be incorporated.

   If standalone devices are required and no other Treatment BMPs are being considered, go to question 6 of "Individual BMP Evaluation". Otherwise, continue with this checklist to identify Treatment BMPs that provide traction sand and other pollutant removal, or to design Treatment BMPs in series.

   If No, continue.

B. Dual Purpose Facilities

Does the project have (or propose to include) any dual purpose facilities that could meet treatment requirements (e.g., Dry Weather Flow Diversion, flood control basins, etc.)? ☒ Yes ☐ No

If Yes and 100 percent of the Post Construction Treatment Area will be treated by the dual-purpose facility, go to question 6 of "Individual BMP Evaluation". Document the basis of treatment in the SWDR narrative and complete the SWDR Summary Spreadsheets.

If Yes, but 100 percent of the Post Construction Treatment Area has not been addressed, continue.

If No, continue.

C. Evaluate overall project area for infiltration opportunities using existing and proposed roadside surfaces (DPP Infiltration Areas). Assure the DPP Infiltration Area is stabilized to handle highway drainage design flows, for both sheet and concentrated flows (See HDM Section 800).

Document DPP Infiltration Areas on the "Individual Treatment BMP Summary Table" located at the end of this checklist.

1. Based on site conditions, do the DPP Infiltration Areas infiltrate 100 percent of the WQV generated by the Post Construction Treatment Area for the project? ☐ Yes ☒ No

   Yes, go to question 6 of "Individual BMP Evaluation".

   If No, account for area infiltrated and continue.

2. Can infiltration for these areas be increased by using soil amendments or other means? ☐ Yes ☒ No

   If Yes, and 100 percent of the WQV generated by the Post Construction Treatment Area is infiltrated, go to question 6 of "Individual BMP Evaluation".

   If Yes, but 100 percent of the WQV generated by the Post Construction Treatment Area is not infiltrated, continue with this checklist to identify Treatment BMPs that will treat the remaining Post Construction Treatment Area.

   If No, continue.

Individual BMP Evaluation

Answer the following questions for each Treatment BMP location being considered. The following process must be followed until the Post Construction Treatment Area or desired treatment area (Alternative Compliance or TMDL CUs) has been achieved; for TMDL CUs, consider both impervious and pervious contributing drainage areas. Use the Individual Treatment BMP Summary Table at the end of the checklist to summarize the selected BMP(s) based on the findings of the following questions for each BMP contributing drainage area.

1. Infiltration Devices (Infiltration Basin, Trench, or other device)

   a. Can 100 percent of the BMP contributing drainage area WQV (or remaining WQV, if in series with a DPP Infiltration Area or other BMP) be infiltrated? ☐ Yes ☒ No

      If Yes, go to question 6.

      If No, continue.

2. Biofiltration Devices (Biofiltration Strips and Swales)

   a. Is this a TMDL retrofit project or is the project within a TMDL watershed or 303(d) impaired receiving water body area? ☐ Yes ☒ No

      If Yes, when designing the biofiltration device, determine the percent WQV infiltrated from both the impervious and pervious BMP contributing drainage areas. Consider using existing or amended soils:

      i. If infiltration is >50 percent, continue to b.

      ii. If infiltration is ≤50 percent, go to question 3.

      If No, continue to b.

   b. Can biofiltration devices be designed to: ☒ Yes ☐ No

      i. Treat 100 percent of the WQF/WQV (or remainder, if in series with a DPP Infiltration Area or other BMP) from the BMP contributing drainage area, and

      ii. Meet the siting and design criteria of the Caltrans biofiltration device design guidance.

      If Yes, continue to c.

      If No, go to question 3.

   c. Biofiltration devices are considered to be an effective method of treatment, go to question 6.

3. Earthen type BMPs (Detention Devices, Media Filters, or other devices)

   a. Is this a TMDL retrofit project or is the project within a TMDL watershed or 303(d) impaired receiving water body area? ☐ Yes ☒ No

   If Yes, when designing the earthen type BMP, determine the percent WQV infiltrated from both the impervious and pervious BMP contributing drainage area. Consider using existing or amended soils:

   i. If infiltration is >50 percent, continue to b.

   ii. If infiltration is ≤50 percent, go to question 4.

   If No, continue to b.

   b. Can earthen type BMPs (standalone or in series with other approved Treatment BMPs) be designed to: ☒ Yes ☐ No

   iii. Treat 100 percent of the WQV (or remainder, if in series with a DPP Infiltration Area or other BMP) from the BMP contributing drainage area, and

   iv. Meet the criteria of the Caltrans design guidance for the treatment device being considered.

   If Yes, continue to c.

   If No, go to question 4.

   c. Earthen type BMPs are considered to be an effective method of treatment, go to question 6.

4. Targeted Design Constituent (TDC)

   This approach will compare the effectiveness of individual BMPs and allow the project engineer to use judgment when evaluating BMP feasibility (site constraints, safety, maintenance requirements, life-cycle costs, etc.).

   a. Does the project discharge to a 303(d) impaired receiving water or a receiving water in a TMDL watershed where Caltrans is a named stakeholder? ☐ Yes ☒ No

      If Yes, is the identified pollutant(s) considered to be a TDC (check all that apply below)? Continue to b. ☐ Yes ☐ No

      ☐ sediments
      ☐ phosphorus
      ☐ nitrogen
      ☐ copper (dissolved or total)
      ☐ lead (dissolved or total)
      ☐ zinc (dissolved or total)
      ☐ general metals (dissolved or total)[1]

      If No or if no TDC is identified, use Matrix A to select BMPs and go to question 5.

   b. Treating Only Sediment. Is sediment a TDC? ☐ Yes ☐ No

      If Yes, use Matrix A to select BMPs and go to question 5.

      If No, continue to c.

   c. Treating Only Metals. Are copper, lead, zinc, or general metals listed TDCs? ☐ Yes ☐ No

      If Yes, use Matrix B to select BMPs, and go to question 5.

      If No, continue to d.

   d. Treating Only Nutrients. Are nitrogen and/or phosphorus listed TDCs? ☐ Yes ☐ No

      If Yes, use Matrix C to select BMPs, and go to question 5.

      If No, continue e.

   e. Treating both Metals and Nutrients. Is copper, lead, zinc, or general metals AND nitrogen or phosphorous a TDC? ☐ Yes ☐ No

      If yes, use Matrix D to select BMPs, and go to question 5.

      If No, continue.

[1] General metals is a designation used by Regional Water Boards when specific metals have not yet been identified as causing the impairment.

BMP Selection Matrix A: General Purpose Pollutant Removal			
Consider BMPs (or combinations of) to treat the contributing drainage area WQV with BMPs listed in this table. First evaluate Tier 1 BMPs, followed by Tier 2 BMPs when Tier 1 BMPs are not feasible. Within each Tier, BMP selection will be determined by the site-specific determination of feasibility. BMPs are chosen based on the infiltration category determined for BMP contributing drainage area. BMPs in other infiltration categories should be ignored.			
	BMP ranking for infiltration category:		
	Infiltration < 20%	Infiltration 20% - 50%	Infiltration > 50%
Tier 1	Strip: HRT > 5 Austin filter (concrete) Austin filter (earthen) Delaware filter	Austin filter (earthen) Detention (unlined) Infiltration basins Infiltration trenches Biofiltration Strip	Austin filter (earthen) Detention (unlined) Infiltration basins Infiltration trenches Biofiltration Strip Biofiltration Swale
Tier 2	Strip: HRT < 5 Biofiltration Swale Detention (unlined)	Austin filter (concrete) Delaware filter Biofiltration Swale	Austin filter (concrete) Delaware filter
HRT = hydraulic residence time (min) All BMPs shown are considered to be effective, but some more than others. The project engineer should use professional judgment when selecting BMPs based on overall feasibility. All BMPs are shown to demonstrate equivalent effectiveness.			

BMP Selection Matrix B: Any metal is the TDC, but not nitrogen or phosphorous			
Consider BMPs (or combinations of) to treat the contributing drainage area WQV with BMPs listed in this table. First evaluate Tier 1 BMPs, followed by Tier 2 BMPs when Tier 1 BMPs are not feasible. Within each Tier, BMP selection will be determined by the site-specific determination of feasibility. BMPs are chosen based on the infiltration category determined for BMP contributing drainage area. BMPs in other infiltration categories should be ignored.			
	BMP ranking for infiltration category:		
	Infiltration < 20%	Infiltration 20% - 50%	Infiltration > 50%
Tier 1	Austin filter (earthen) Austin filter (concrete) Delaware filter	Austin filter (earthen) Detention (unlined) Infiltration basins Infiltration trenches	Austin filter (earthen) Detention (unlined) Infiltration basins Infiltration trenches Biofiltration Strip Biofiltration Swale
Tier 2	Strip: HRT > 5 Strip: HRT < 5 Biofiltration Swale Detention (unlined)	Austin filter (concrete) Delaware filter Biofiltration Strip Biofiltration Swale	Austin filter (concrete) Delaware filter
HRT = hydraulic residence time (min) All BMPs shown are considered to be effective, but some more than others. The project engineer should use professional judgment when selecting BMPs based on overall feasibility. All BMPs are shown to demonstrate equivalent effectiveness.			

BMP Selection Matrix C: Phosphorous and / or nitrogen is the TDC, but no metals are the TDC			
Consider BMPs (or combinations of) to treat the contributing drainage area WQV with BMPs listed in this table. First evaluate Tier 1 BMPs, followed by Tier 2 BMPs when Tier 1 BMPs are not feasible. Within each Tier, BMP selection will be determined by the site-specific determination of feasibility. BMPs are chosen based on the infiltration category determined for BMP contributing drainage area. BMPs in other infiltration categories should be ignored.			
	BMP ranking for infiltration category:		
	Infiltration < 20%	Infiltration 20% - 50%	Infiltration > 50%
Tier 1	Austin filter (earthen) Austin filter (concrete) Delaware filter*	Austin filter (earthen) Detention (unlined) Infiltration basins Infiltration trenches	Austin filter (earthen) Detention (unlined) Infiltration basins Infiltration trenches Biofiltration Strip Biofiltration Swale
Tier 2	Biofiltration Strip Biofiltration Swale Detention (unlined)	Austin filter (concrete) Delaware filter Biofiltration Strip Biofiltration Swale	Austin filter (concrete) Delaware filter
All BMPs shown are considered to be effective, but some more than others. The project engineer should use professional judgment when selecting BMPs based on overall feasibility. All BMPs are shown to demonstrate equivalent effectiveness.			
*Delaware filters would be ranked in Tier 2 if the TDC is nitrogen only, as opposed to phosphorous only or both nitrogen and phosphorous.			

BMP Selection Matrix D: Any metal, plus phosphorous and / or nitrogen are the TDCs			
Consider BMPs (or combinations of) to treat the contributing drainage area WQV with BMPs listed in this table. First evaluate Tier 1 BMPs, followed by Tier 2 BMPs when Tier 1 BMPs are not feasible. Within each Tier, BMP selection will be determined by the site-specific determination of feasibility. BMPs are chosen based on the infiltration category determined for BMP contributing drainage area. BMPs in other infiltration categories should be ignored.			
	BMP ranking for infiltration category:		
	Infiltration < 20%	Infiltration 20% - 50%	Infiltration > 50%
Tier 1	Austin filter (earthen) Austin filter (concrete) Delaware filter*	Austin filter (earthen) Detention (unlined) Infiltration basins Infiltration trenches	Austin filter (earthen) Detention (unlined) Infiltration basins Infiltration trenches Biofiltration Strip Biofiltration Swale
Tier 2	Biofiltration Strip Biofiltration Swale Detention (unlined)	Austin filter (concrete) Delaware filter Biofiltration Strip Biofiltration Swale	Austin filter (concrete) Delaware filter
All BMPs shown are considered to be effective, but some more than others. The project engineer should use professional judgment when selecting BMPs based on overall feasibility. All BMPs are shown to demonstrate equivalent effectiveness.			
*In cases where earthen BMPs also infiltrate, Delaware filters are ranked in Tier 2 if the TDC is nitrogen only, but they are Tier 1 for phosphorous only or both nitrogen and phosphorous.			

5. Does the project discharge to a 303(d) receiving water that is listed for mercury or low dissolved oxygen? ☐ Yes ☒ No

   If Yes, contact the District/Regional NPDES Coordinator to determine if standing water in a Delaware Media Filter or Wet Basin would be a risk to downstream water quality. Continue to question 6.

   If No, continue to question 6.

6. Identify the Treatment BMPs being considered and complete the Individual Treatment BMP Summary Table and Overall Project Treatment Summary Table on the following pages. Refer to Appendix B of the PPDG and review the checklists identified below for every Treatment BMP under consideration. ☒ Complete

   Document the basis of design in the SWDR narrative and complete the SWDR Summary Spreadsheets.

   ____ DPP Infiltration Areas: Checklist T-1, Part 11

   ____ Infiltration Devices: Checklist T-1, Part 2

   __X_ Biofiltration Strips and Biofiltration Swales: Checklist T-1, Part 3

   __X_ Detention Devices: Checklist T-1, Part 4

   ____ Traction Sand Traps: Checklist T-1, Part 5

   ____ Dry Weather Diversion: Checklist T-1, Part 6

   ____ GSRDs: Checklist T-1, Part 7

   ____ Media Filter [Austin Sand Filter and Delaware Filter]: Checklist T-1, Part 8

   Note:

   Multi-Chamber Treatment Train (MCTT) is not listed here because Caltrans has found that other approved BMPs are equally effective and more sustainable due to lower life cycle costs.

   Wet Basins are not listed here due to feasibility issues due to site feasibility and issues with long term operation and maintenance.

   MCTT and Wet Basins may be considered or implemented upon the recommendation of the District/Regional Design Stormwater Coordinator.

7. Prepare cost estimate, including right-of-way, and identify any pertinent site specific determination of feasibility for selected Treatment BMPs and include in the SWDR for approval. ☒ Complete

Individual Treatment BMP Summary Table

☒ Complete

List the selected BMPs based on the findings of this checklist and the treated areas associated with each BMP in Table E-2. For projects with multiple BMPs, add rows (if needed), or attach a separate sheet displaying the following information.

Each BMP must be tracked in the SWDR Summary Spreadsheets, including additional information related to each BMP.

Table E-2: Individual Treatment BMP Summary Table

BMP Identifier Number	BMP Type	Treated Impervious Area (CT RW) (ac)	Treated Impervious Area (Outside CT RW) (ac)	Treated Pervious Area (CT RW) (CUs) (ac)	Treated Pervious Area (Outside CT RW) (CUs) (ac)	WQV Infiltrated (%)
03-37281/ 0314000301-1	Biofiltration Swale	0.19	0	0.79	0	100
03-37281/ 0314000301-2	Detention Basin	2.87	1.92	5.84	13.05	100
Total Treated Area (acre):		3.06	1.92	6.63	13.05	

Checklist SW-2, Stormwater Quality Issues Summary

Prepared by: WRECO Date: August 2017 District-Co-Route: 03-ED-50

PM : 16.0/16.6 Project ID/EA: 0314000301 (03-37281) RWQCB: Central Valley 5S

The following questions provide a guide to collecting critical information relevant to project stormwater quality issues. Consult other Caltrans functional units (Environmental, Landscape Architecture, Maintenance, etc.) and the District/Regional Design Stormwater Coordinator as necessary. Summarize pertinent responses in Section 2 of the SWDR; do not discuss items identified as not applicable.

1.	Determine the receiving waters for the project	☒Complete	☐NA
2.	For the project limits, list the 303(d) impaired receiving water bodies and their constituents of concern.	☐Complete	☒NA
3.	Determine if there are any municipal or domestic water supply reservoirs or groundwater percolation facilities within the project limits, as shown by DWP.	☒Complete	☐NA
4.	Determine the RWQCB special requirements, including TMDLs, effluent limits, etc.	☒Complete	☐NA
5.	Determine regulatory agencies seasonal construction and construction exclusion dates or restrictions required by federal, state, or local agencies.	☒Complete	☐NA
6.	Determine if a 401 certification will be required.	☒Complete	☐NA
7.	Identify rainy season.	☒Complete	☐NA
8.	If applicable, determine the general climate of the project area. Identify annual rainfall and rainfall intensity curves.	☒Complete	☐NA
9.	If considering Treatment BMPs, determine the soil classification, permeability, erodibility and depth to groundwater.	☒Complete	☐NA
10.	Determine contaminated soils within the project area.	☒Complete	☐NA
11.	Determine the total disturbed soil area of the project.	☒Complete	☐NA
12.	Describe the topography of the project site.	☒Complete	☐NA
13.	List any areas outside of the Caltrans right-of-way that will be included in the project (e.g., contractor's staging yard, work from barges, easements for staging).	☒Complete	☐NA
14.	Determine if additional right-of-way acquisition or easements and right-of-entry will be required for design, construction and maintenance of BMPs. If so, how much?	☒Complete	☐NA
15.	Determine the estimated unit costs for right-of-way should it be needed for Treatment BMPs, stabilized conveyance systems, lay-back slopes, or interception ditches.	☐Complete	☒NA
16.	Determine if project area has any slope stabilization concerns.	☒Complete	☐NA
17.	Describe the local land use within the project area and adjacent areas.	☒Complete	☐NA
18.	Evaluate the presence of dry weather flow.	☐Complete	☒NA

Checklist SW-3, Measures for Avoiding or Reducing Potential Stormwater Impacts

Prepared by: WRECO Date: August 2017 District-Co-Route: 03-ED-50

PM : 16.0/16.6 Project ID/EA: 0314000301 (03-37281) RWQCB: Central Valley 5S

The PE should confer with other functional units, such as Landscape Architecture, Hydraulics, Environmental, Materials, Construction and Maintenance, as needed to assess these issues. Summarize pertinent responses in Section 2 of the SWDR; do not discuss items identified as not applicable.

Options for avoiding or reducing potential impacts during project planning include the following:

1.	Can the project be relocated or realigned to avoid/reduce impacts to receiving waters or to increase the preservation of critical (or problematic) areas such as floodplains, steep slopes, wetlands, and areas with erosive or unstable soil conditions?	☐Yes	☒No	☐NA
2.	Can structures and bridges be designed or located to reduce work in live streams and minimize construction impacts?	☐Yes	☒No	☐NA
3.	Can any of the following methods be utilized to minimize erosion from slopes:			
	a. Disturbing existing slopes only when necessary?	☒Yes	☐No	☐NA
	b. Minimizing cut and fill areas to reduce slope lengths?	☒Yes	☐No	☐NA
	c. Incorporating retaining walls to reduce steepness of slopes or to shorten slopes?	☒Yes	☐No	☐NA
	d. Acquiring right-of-way easements (such as grading easements) to reduce steepness of slopes?	☐Yes	☐No	☒NA
	e. Avoiding soils or formations that will be particularly difficult to re-stabilize?	☐Yes	☐No	☒NA
	f. Providing cut and fill slopes flat enough to allow re-vegetation and limit erosion to pre-construction rates?	☒Yes	☐No	☐NA
	g. Providing benches or terraces on high cut and fill slopes to reduce concentration of flows?	☒Yes	☐No	☐NA
	h. Rounding and shaping slopes to reduce concentrated flow?	☒Yes	☐No	☐NA
	i. Collecting concentrated flows in stabilized drains and channels?	☒Yes	☐No	☐NA
4.	Does the project design allow for the ease of maintaining all BMPs?	☒Yes	☐No	
5.	Can the project be scheduled or phased to minimize soil-disturbing work during the rainy season?	☒Yes	☐No	
6.	Can permanent stormwater pollution controls such as paved slopes, vegetated slopes, basins, and conveyance systems be installed early in the construction process to provide additional protection and to possibly utilize them in addressing construction stormwater impacts?	☒Yes	☐No	☐NA

Design Pollution Prevention BMPs
Checklist DPP-1, Part 1

Prepared by: WRECO Date: August 2017 District-Co-Route: 03-ED-50

PM : 16.0/16.6 Project ID/EA: 0314000301 (03-37281) RWQCB: Central Valley 5S

Consideration of Design Pollution Prevention BMPs

Consideration of Downstream Effects Related to Potentially Increased Flow [to streams or channels]

Will the project increase velocity or volume of downstream flow?	☒Yes	☐No	☐NA
Will the project discharge to unlined channels?	☒Yes	☐No	☐NA
Will the project encroach, cross, realign, or cause other hydraulic changes to a stream that may affect downstream channel stability?	☒Yes	☐No	☐NA

If Yes was answered to any of the above questions, consider ***Downstream Effects Related to Potentially Increased Flow***, complete the Checklist DPP-1, Part 2.

Slope/Surface Protection Systems

Will the project create new slopes or modify existing slopes?	☒Yes	☐No	☐NA

If Yes was answered to the above question, consider ***Slope/Surface Protection Systems***, complete the Checklist DPP-1, Part 3.

Concentrated Flow Conveyance Systems

Will the project create or modify ditches, dikes, berms, or swales?	☒Yes	☐No	☐NA
Will project create new slopes or modify existing slopes?	☒Yes	☐No	☐NA
Will it be necessary to direct or intercept surface runoff?	☒Yes	☐No	☐NA
Will cross drains be modified?	☐Yes	☒No	☐NA

If Yes was answered to any of the above questions, consider ***Concentrated Flow Conveyance Systems***; complete the Checklist DPP-1, Part 4.

Preservation of Existing Vegetation, Soils, and Stream Buffer Areas

It is the goal of the Stormwater Program to maximize the protection of desirable existing vegetation, soils, and stream buffer areas to provide erosion and sediment control benefits on all projects. ☒Complete

Consider ***Preservation of Existing Vegetation, soils, and stream buffer areas***, complete the Checklist DPP-1, Part 5.

Design Pollution Prevention BMPs
Checklist DPP-1, Part 2

Prepared by: WRECO Date: August 2017 District-Co-Route: 03-ED-50

PM : 16.0/16.6 Project ID/EA: 0314000301 (03-37281) RWQCB: Central Valley 5S

Downstream Effects Related to Potentially Increased Flow

1. Review total paved area and reduce to the maximum extent practicable. ☒Complete
2. Review channel lining materials and design for stream bank erosion control. ☒Complete
   (a) See Chapters 860 and 870 of the HDM. ☒Complete
   (b) Consider channel erosion control measures within the construction limits as well as downstream. Consider scour velocity. If erosion control measures are required downstream of construction limits obtain the appropriate permits and right of way documents to include work within the construction limits. ☒Complete
3. Include, where appropriate, energy dissipation devices at culvert outlets. ☒Complete
4. Ensure all transitions between culvert outlets/headwalls/wingwalls and channels are smooth to reduce turbulence and scour. ☒Complete
5. Include, if appropriate, peak flow attenuation basins or devices to reduce peak discharges.
6. Calculate the water quality volume infiltrated within the project limits. These calculations will be used in the Checklist T-1, Part 1. ☒Complete

Design Pollution Prevention BMPs
Checklist DPP-1, Part 3

Prepared by: WRECO Date: August 2017 District-Co-Route: 03-ED-50

PM : 16.0/16.6 Project ID/EA: 0314000301 (03-37281) RWQCB: Central Valley 5S

Slope / Surface Protection Systems

1.	What are the proposed areas of cut and fill? (attach plan or map)	☒Complete
2.	Were benches or terraces provided on high cut and fill slopes to shorten slope length?	☒Yes ☐No
3.	Were concentrated flows collected in stabilized drains or channels?	☒Yes ☐No
4.	Are new or disturbed slopes > 4:1 horizontal:vertical (h:v)?	☒Yes ☐No
	If Yes, District Landscape Architect is responsible for an erosion control strategy and may prepare an erosion control plan.	
5.	Are new or disturbed slopes > 2:1 (h:v)?	☐Yes ☒No
	If Yes, DES Geotechnical Design unit must prepare a Geotechnical Design Report, and the District Landscape Architect should prepare or approve an erosion control plan. Concurrence must be obtained from the District Maintenance Stormwater Coordinator for slopes steeper than 2:1 (h:v).	

VEGETATED SURFACES

1.	Identify existing vegetation.	☒Complete
2.	Evaluate site to determine soil types, appropriate vegetation and planting strategies.	☒Complete
3.	How long will it take for permanent vegetation to establish?	☒Complete
4.	Plan transition BMPs from construction to permanent establishment.	☒Complete
5.	Have vegetated areas and supporting permanent irrigation systems been designed to comply with the Model Water Efficient Landscape Ordinance (MWELO)?	☒Yes ☐No
6.	Minimize overland and concentrated flow depths and velocities.	☒Complete

HARD SURFACES

1.	Are hard surfaces minimized?	☒Yes ☐No
	Review appropriate SSPs for Vegetated Surface and Hard Surface Protection Systems.	☒Complete

Design Pollution Prevention BMPs
Checklist DPP-1, Part 4

Prepared by: WRECO Date: August 2017 District-Co-Route: 03-ED-50

PM : 16.0/16.6 Project ID/EA: 0314000301 (03-37281) RWQCB: Central Valley 5S

Concentrated Flow Conveyance Systems

Ditches, Berms, Dikes and Swales

1. Consider Ditches, Berms, Dikes, and Swales as per Topics 813, 834.3, 835, and Chapter 860 of the HDM. ☒Complete
2. Review existing and proposed conditions to remove any dike not required for slope stability, erosion control, and water conveyance. ☒Complete
3. Evaluate risks due to erosion, overtopping, flow backups or washout. ☒Complete
4. Consider outlet protection where localized scour is anticipated. ☒Complete
5. Examine the site for run-on from off-site sources. ☒Complete
6. Consider permissible shear and velocity when selecting lining material (See Table 865.2 in the HDM). ☒Complete

Overside Drains

1. Consider downdrains, as per Index 834.4 of the HDM. ☒Complete
2. Consider paved spillways for side slopes flatter than 4:1 h:v. ☒Complete

Flared Culvert End Sections

1. Consider flared end sections on culvert inlets and outlets as per Chapter 827 of the HDM. ☒Complete

Outlet Protection/Velocity Dissipation Devices

1. Consider outlet protection/velocity dissipation devices at outlets, including cross drains, as per Chapters 827 and 870 of the HDM. ☒Complete

Review appropriate SSPs for Concentrated Flow Conveyance Systems. ☒Complete

Design Pollution Prevention BMPs
Checklist DPP-1, Part 5

Prepared by: WRECO Date: August 2017 District-Co-Route: 03-ED-50

PM : 16.0/16.6 Project ID/EA: 0314000301 (03-37281) RWQCB: Central Valley 5S

Preservation of Existing Vegetation, Soils, and Stream Buffer Areas

1.	Review Preservation of Property, (Clearing and Grubbing) to reduce clearing and grubbing and maximize preservation of existing vegetation, soils, and stream buffer areas.	☒Complete
2.	Has all vegetation, soils, and stream buffer areas to be retained been coordinated with Environmental, and identified and defined in the contract plans?	☒Yes ☐No
3.	Have steps been taken to minimize disturbed areas, such as locating temporary roadways to avoid stands of trees and shrubs and to follow existing contours to reduce cutting and filling?	☒Complete
4.	Have impacts to preserved vegetation, soils, and stream buffer areas been considered while work is occurring in disturbed areas?	☒Yes ☐No
5.	Are all areas to be preserved delineated on the plans?	☒Yes ☐No

Treatment BMPs

Checklist T-1, Part 3

Prepared by: WRECO Date: August 2017 District-Co-Route: 03-ED-50

PM : 16.0/16.6 Project ID/EA: 0314000301 (03-37281) RWQCB: Central Valley 5S

Biofiltration Swales / Biofiltration Strips

Feasibility

1. Do the climate and site conditions allow vegetation to be established? ☒Yes ☐No
   If "No", evaluate other BMPs.
2. Can biofiltration swale be designed with a slope between 0.25 and 6 percent (with 1 to 2 percent preferred)? ☒Yes ☐No
   If "No", Biofiltration Swales are not feasible.
3. Can biofiltration strips be designed with a maximum slope of 2H:1V (with 4H:1V or flatter preferred)? ☒Yes ☐No
   If "No", Biofiltration Strips are not feasible.
4. Are Biofiltration device(s) proposed at sites where known contaminated soils exist? ☐Yes ☒No
   If "Yes", consult with District/Regional NPDES Coordinator about how to proceed.
5. Does adequate area exist within the RW to place Biofiltration device(s)? ☒Yes ☐No
   If "Yes", continue to Design Elements section. If "No", continue to Question 5.
6. If adequate area does not exist within RW, can suitable, additional RW be acquired to site Biofiltration devices and how much RW would be needed to treat WQF? ☐Yes ☐No
   _____ acres
   If "Yes", continue to Design Elements section. If "No", continue to Question 6.
7. If adequate area cannot be obtained, document in Section 6 of the SWDR that the inability to obtain adequate area prevents the incorporation of these Treatment BMPs into the project. ☐Complete

Design Elements

* **Required** Design Element – A "Yes" response to these questions is required to further the consideration of this BMP into the project design. Document a "No" response in Section 6 of the SWDR to describe why this Treatment BMP cannot be included into the project design.

** **Recommended** Design Element – A "Yes" response is preferred for these questions, but not required for incorporation into a project design.

1.	Has the District Landscape Architect provided vegetation mixes appropriate for climate and location? *	☐Yes	☐No
2.	Can the biofiltration swale be designed as a conveyance system under any expected flows > the WQF event, as per HDM Chapter 800? * (e.g., freeboard, minimum slope)	☒Yes	☐No
3.	Can the biofiltration swale be designed as a water quality treatment device under the WQF while meeting the required HRT, depth, and velocity criteria? (Reference Appendix B, Section B.4.3)*	☒Yes	☐No
4.	Is the maximum length of a biofiltration strip ≤ 100 ft? Strips > 100 ft. may still be considered as long as potential erosion issues have been addressed. **	☐Yes	☒No
5.	Has the minimum width (perpendicular to flow) of the invert of the biofiltration swale received the concurrence of District Maintenance? *	☒Yes	☐No
6.	Can biofiltration swales be located in natural or low cut sections to reduce maintenance problems caused by animals burrowing through the berm of the swale? **	☒Yes	☐No
7.	Has the infiltration rate of the bio-filtration device been calculated and maximized through amendments where appropriate. **	☒Yes	☐No
8.	Have Biofiltration Systems been considered for locations upstream of other Treatment BMPs, as part of a treatment train or pretreatment? ** If "Yes", document the amount of runoff treated (WQV/WQF).	☐Yes	☒No
9.	Has the lining material been selected based on the permissible shear and velocity (refer to HDM Chapter 860 and Table 865.2)?*	☒Yes	☐No

Treatment BMPs

Checklist T-1, Part 4

Prepared by: WRECO Date: August 2017 District-Co-Route: 03-ED-50

PM : 16.0/16.6 Project ID/EA: 0314000301 (03-37281) RWQCB: Central Valley 5S

Detention Devices

Feasibility

1. Is there sufficient head to prevent objectionable backwater conditions in the upstream drainage systems? ☒Yes ☐No

2. Is basin invert ≥ 5 ft above seasonally high groundwater or can it be designed with an impermeable liner? (Note: If an impermeable liner is used, the seasonally high groundwater elevation must not encroach within 12 inches of the invert.) ☒Yes ☐No

   If No to any question above, then Detention Devices are not feasible.

3. If the Detention Device is being used to capture traction sand, is the total volume of the device at least equal to the WQV designed to be treated plus the anticipated volume of traction sand, while maintaining a minimum 12 inch freeboard (1 ft)? ☐Yes ☐No

   If No, then Detention Devices are not feasible.

4. Does adequate area exist within the RW to place Detention Device(s)? ☒Yes ☐No

   If Yes, continue to the Design Elements section. If No, continue to Question 5.

5. If adequate area does not exist within RW, can suitable, additional RW be acquired to site Detention Device(s) and how much RW would be needed to treat WQV? _____ acres ☐Yes ☐No

   If Yes, continue to the Design Elements section. If No, continue to Question 6.

6. If adequate area cannot be obtained, document in Section 6 of the SWDR that the inability to obtain adequate area prevents the incorporation of this Treatment BMP into the project. ☐Complete

Design Elements

* **Required** Design Element – A "Yes" response to these questions is required to further the consideration of this BMP into the project design. Document a "No" response in Section 6 of the SWDR to describe why this Treatment BMP cannot be included into the project design.

** **Recommended** Design Element – A "Yes" response is preferred for these questions, but not required for incorporation into a project design.

1.	Has the location of the Detention Device been evaluated for any effects to the adjacent roadway and subgrade? *	☒Yes	☐No
2.	Can a minimum freeboard of 12 inches be provided above the overflow event elevation? *	☒Yes	☐No
3.	Is an upstream bypass or overflow outlet provided? *	☒Yes	☐No
4.	Is the drawdown time of the Detention Device a maximum of 96 hours? *	☒Yes	☐No
5.	Is the basin outlet designed to minimize clogging (minimum outlet orifice diameter of 0.5 inches)? *	☒Yes	☐No
6.	Are the inlet and outlet structures designed to prevent scour and re-suspension of settled materials, and to enhance quiescent conditions? *	☒Yes	☐No
7.	Can vegetation be established in an earthen basin at the invert and on the side slopes for erosion control and to minimize re-suspension? Otherwise include rock or similar protective system. Note: Detention Basins may be lined, in which case no vegetation would be required for lined areas.*	☒Yes	☐No
8.	Has sufficient access for maintenance been provided? *	☒Yes	☐No
9.	Is the side slope 4:1 (h:v) or flatter for interior slopes? ** (Note: Side slopes up to 3:1 (h:v) allowed with approval by District Maintenance.)	☒Yes	☐No
10.	If significant sediment is expected from nearby slopes, can the Detention Device be designed with additional volume equal to the expected annual loading? **	☐Yes	☐No
11.	Is flow path as long as possible (> 2:1 length to width ratio at WQV elevation is recommended)? **	☒Yes	☐No

DATE: August 2017

Project ID / EA: 0314000301 / 03-37281

Project Evaluation Process for the Consideration of Construction Site BMPs

No.	Criteria	Yes ✓	No ✓	Supplemental Information
1.	Will construction of the project result in areas of disturbed soil as defined by the Project Planning and Design Guide (PPDG)?	✓		If Yes, Construction Site BMPs for Soil Stabilization (SS) will be required. Review CS-1, Part 1. Continue to 2. If No, Continue to 3.
2.	Is there a potential for disturbed soil areas within the project to discharge to storm drain inlets, drainage ditches, areas outside the RW, etc.?	✓		If Yes, Construction Site BMPs for Sediment Control (SC) will be required. Review CS-1, Part 2. Continue to 3.
3.	Is there a potential for sediment or construction related materials and wastes to be tracked offsite and deposited on private or public paved roads by construction vehicles and equipment?	✓		If Yes, Construction Site BMPs for Tracking Control (TC) will be required. Review CS-1, Part 3. Continue to 4.
4.	Is there a potential for wind to transport soil and dust offsite during the period of construction?	✓		If Yes, Construction Site BMPs for Wind Erosion Control (WE) will be required. Review CS-1, Part 4. Continue to 5.
5.	Is dewatering anticipated or will construction activities occur within or adjacent to a live channel or stream?		✓	If Yes, Construction Site BMPs for Non-Stormwater Management (NS) will be required. Review CS-1, Part 5. Continue to 6.
6.	Will construction include saw-cutting, grinding, drilling, concrete or mortar mixing, hydro-demolition, blasting, sandblasting, painting, paving, or other activities that produce residues?	✓		If Yes, Construction Site BMPs for Non-Stormwater Management (NS) will be required. Review CS-1, Parts 5 & 6. Continue to 7.
7.	Are stockpiles of soil, construction related materials, and/or wastes anticipated?	✓		If Yes, Construction Site BMPs for Waste Management and Materials Pollution Control (WM) will be required. Review CS-1, Part 6. Continue to 8.
8.	Is there a potential for construction related materials and wastes to have direct contact with precipitation; stormwater run-on, or stormwater runoff; be dispersed by wind; be dumped and/or spilled into storm drain systems?	✓		If Yes, Construction Site BMPs for Waste Management and Materials Pollution Control (WM) will be required. Review CS-1, Part 6.

Construction Site BMPs

Checklist CS-1, Part 1

Prepared by: WRECO Date: August 2017 District-Co-Route: 03-ED-50

PM : 16.0/16.6 Project ID/EA: 0314000301 (03-37281) RWQCB: Central Valley 5S

Temporary Soil Stabilization

General Parameters

1. How many rainy seasons are anticipated between begin and end of construction? 2
2. What is the total disturbed soil area for the project? (ac) 16.09
3. Consult your District/Regional Design Stormwater Coordinator for the minimum required combination of temporary soil stabilization and temporary sediment controls and barriers for area, slope inclinations, rainy and non-rainy season, and active and non-active disturbed soil areas. ☐ Complete

Scheduling

4. Does the project have a duration of more than one rainy season and have disturbed soil area in excess of 25 acres? ☐ Yes ☒ No

   (a) Include multiple mobilizations (Move-in/Move-out) as a separate contract bid line item to implement permanent erosion control or revegetation work on slopes that are substantially complete. (Estimate at least 6 mobilizations for each additional rainy season. Designated Construction Representative may suggest an alternate number of mobilizations.) ☐ Complete

   (b) Edit Order of Work specifications for permanent erosion control or revegetation work to be implemented on slopes that are substantially complete. ☐ Complete

   (c) Edit permanent erosion control or revegetation specifications to require seeding and planting work to be performed when optimal. ☐ Complete

Preservation of Existing Vegetation

5. Do Environmentally Sensitive Areas (ESAs) exist within or adjacent to the construction limits? (Verify the completion of DPP-1, Part 5) ☒ Yes ☐ No

   (a) Verify the protection of ESAs through delineation on all project plans. ☒ Complete

   (b) Protect from clearing and grubbing and other construction disturbance by enclosing the ESA perimeter with high visibility plastic fence or other BMP. ☒ Complete

6. Are there areas of existing vegetation (mature trees, native vegetation, landscape planting, etc.) that need not be disturbed by project construction? Will areas designated for proposed or existing Treatment BMPs need protection (infiltration characteristics, vegetative cover, etc.)? (Coordinate with District Environmental and Construction to determine limits of work necessary to preserve existing vegetation to the maximum extent practicable.) ☒Yes ☐No

   (a) Designate as outside of limits of work (or designate as ESAs) and show on all project plans. ☒Complete

   (b) Protect with high visibility plastic fence or other BMP. ☒Complete

7. If yes for 6, 7, or both, then designate ESA fencing as a separate contract bid line item, *if not already incorporated as part of design pollution prevention work (See DPP-1, Part 5).* ☒Complete

Slope Protection

8. Provide a temporary soil stabilization BMP(s) appropriate for the DSA, slope steepness, slope length, and soil erodibility. (Consult with District Landscape Architect.)

   (a) Select Hydraulic Mulch, Hydroseeding, Soil Binders, Straw Mulch, Geotextiles, Mats, Plastic Covers, and Erosion Control Blankets, Wood Mulching, other BMPs or a combination to cover the DSA throughout the project's rainy season. ☒Complete

   (b) Increase the quantities by 25 percent for each additional rainy season. (Designated Construction Representative may suggest an alternate increase.) ☒Complete

   (c) Designate as a separate contract bid line item. ☒Complete

Slope Interrupter Devices

9. For projects with temporary erosion control requirements, provide slope interrupter devices for all slopes with slope lengths equal to or greater than of 20 ft in length, in accordance with CGP requirements.

   (a) Select Fiber Rolls or other BMPs to protect slopes throughout the project's rainy season. ☒Complete

   (b) For slope inclination of 4:1 (h:v) and flatter, Fiber Rolls or other BMPs shall be placed along the contour and spaced 20 ft on center. ☒Complete

   (c) For slope inclination between 4:1 (h:v) and 2:1 (h:v), Fiber Rolls or other BMPs shall be placed along the contour and spaced 15 ft on center. ☒Complete

   (d) For slope inclination of 2:1 (h:v) and greater, Fiber Rolls or other BMPs shall be placed along the contour and spaced 10 ft on center. ☐Complete

(e) Increase the quantities by 25 percent for each additional rainy season. (Designated Construction Representative may suggest alternate increase.) ☒Complete

(f) Designate as a separate contract bid line item. ☒Complete

Channelized Flow

10. Identify locations within the project site where concentrated flow from stormwater runoff can erode areas of soil disturbance. Identify locations of concentrated flow that enters the site from outside of the RW (off-site run-on). ☒Complete

(a) Utilize Geotextiles, Mats, Plastic Covers, and Erosion Control Blankets, Earth Dikes/Swales, Ditches, Outlet Protection/Velocity Dissipation, Slope Drains, Check Dams, or other BMPs to convey concentrated flows in a non-erosive manner. ☒Complete

(b) Designate as a separate contract bid line item. ☒Complete

Construction Site BMPs

Checklist CS-1, Part 2

Prepared by: WRECO Date: August 2017 District-Co-Route: 03-ED-50

PM : 16.0/16.6 Project ID/EA: 0314000301 (03-37281) RWQCB: Central Valley 5S

Sediment Control

Perimeter Controls - Run-off Control

1. Is there a potential for sediment laden sheet and concentrated flows to discharge offsite from runoff cleared and grubbed areas, below cut slopes, embankment slopes, etc.? ☒Yes ☐No

   (a) Select linear sediment barrier such as Silt Fence, Fiber Rolls, Gravel Bag Berm, Sand Bag Barrier, Straw Bale Barrier, or a combination to protect wetlands, water courses, roads (paved and unpaved), construction activities, and adjacent properties. (Coordinate with District Construction for selection and preference of linear sediment barrier BMPs.) ☒Complete

   (b) Increase the quantities by 25 percent for each additional rainy season. (Designated Construction Representative may suggest an alternate increase.) ☒Complete

   (c) Designate as a separate contract bid line item. ☒Complete

Perimeter Controls - Run-on Control

2. Do locations exist where sheet flow upslope of the project site and where concentrated flow upstream of the project site may contact DSA and construction activities? ☒Yes ☐No

   (a) Utilize linear sediment barriers such as Earth Dike/Drainage Swales and Lined Ditches, Fiber Rolls, Gravel Bag Berm, Sand Bag Barrier, Straw Bale Barrier, or other BMPs to convey flows through and/or around the project site. (Coordinate with District Construction for selection and preference of perimeter control BMPs.) ☒Complete

   (b) Designate as a separate contract bid line item. ☒Complete

Storm Drain Inlets

3. Do existing or proposed drainage inlets exist within the construction limits? ☒Yes ☐No

   (a) Select Drainage Inlet Protection to protect municipal storm drain systems or receiving waters wetlands at each drainage inlet. (Coordinate with District Construction for selection and preference of inlet protection BMPs.) ☒Complete

   (b) Designate as a separate contract bid line item. ☒Complete

4. Can existing or proposed drainage inlets utilize an excavated sediment trap as described in Drainage Inlet Protection - Type 2? ☒Yes ☐No

   (a) Include with other types of Drainage Inlet Protection. ☒Complete

Sediment/Desilting Basin

5. Does the project lie within a Rainfall Area where the required combination of temporary soil stabilization and sediment control BMPs includes desilting basins? ☐Yes ☒No

   (a) Consider feasibility for desilting basin allowing for available right-of-way within the construction limits, topography, soil type, disturbed soil area within the watershed, and climate conditions. Document if the inclusion of sediment/desilting basins is infeasible. ☐Complete

   (b) If feasible, design desilting basin(s) per the guidance in the *CASQA Construction BMP Guidance Handbook* to maximize capture of sediment-laden runoff. ☐Complete

   (c) Designate as a separate contract bid item ☐Complete

6. Is ATS to be used for controlling sediment? ☐Yes ☒No

   (a) If yes, then will desilting basin or other means of natural storage be used? ☐Yes ☐No

   (b) If no, then plan for storage tanks sufficient to hold treatment volume. ☐Complete

7. Will the project benefit from the early implementation of proposed permanent Treatment BMPs? (Coordinate with District Construction.) ☒Yes ☐No

   (a) Edit Order of Work specifications for permanent Treatment BMP work to be implemented in a manner that will allow its use as a Construction Site BMP. ☒Complete

Sediment Trap

8. Can sediment traps be located to collect channelized runoff from disturbed soil areas prior to discharge? ☐Yes ☒No

   (a) Design sediment traps in accordance with the *CASQA Construction BMP Guidance Handbook*. ☐Complete

   (b) Designate as a separate contract bid line item. ☐Complete

Construction Site BMPs

Checklist CS-1, Part 3

Prepared by: WRECO Date: August 2017 District-Co-Route: 03-ED-50

PM : 16.0/16.6 Project ID/EA: 0314000301 (03-37281) RWQCB: Central Valley 5S

Tracking Controls

Stabilized Construction Entrance/Exit

1. Are there points of entrance and exit from the project site to paved roads where mud and dirt could be transported offsite by construction equipment? (Coordinate with District Construction for selection and preference of tracking control BMPs.) ☒Yes ☐No

   (a) Identify and designate these entrance/exit points as stabilized construction entrances. ☒Complete

   (b) Designate as a separate contract bid line item. ☒Complete

Tire/Wheel Wash

2. Are site conditions anticipated that would require additional or modified tracking controls such as entrance/outlet tire wash? (Coordinate with District Construction.) ☐Yes ☒No

   (a) Designate as a separate contract bid line item. ☐Complete

Stabilized Construction Roadway

3. Are temporary access roads necessary to access remote construction activity locations or to transport materials and equipment? (In addition to controlling dust and sediment tracking, access roads limit impact to sensitive areas by limiting ingress, and provide enhanced bearing capacity.) (Coordinate with District Construction.) ☐Yes ☒No

   (a) Designate these temporary access roads as stabilized construction roadways. ☐Complete

   (b) Designate as a separate contract bid line item. ☐Complete

Street Sweeping and Vacuuming

1. Is there a potential for tracked sediment or construction related residues to be transported offsite and deposited on public or private roads? (Coordinate with District Construction for preference of including street sweeping and vacuuming with tracking control BMPs.) ☒Yes ☐No

   (a) Designate as a separate contract bid line item. ☒Complete

Construction Site BMPs

Checklist CS-1, Part 4

Prepared by: WRECO Date: August 2017 District-Co-Route: 03-ED-50

PM : 16.0/16.6 Project ID/EA: 0314000301 (03-37281) RWQCB: Central Valley 5S

Wind Erosion Controls

Wind Erosion Control

1. Is the project located in an area where standard dust control practices in accordance with *Standard Specifications*, Section 14-903: Dust Control, are anticipated to be inadequate during construction to prevent the transport of dust offsite by wind? *(Note: Dust control by water truck application is paid for through the various items of work. Dust palliative, if it is included, is paid for as a separate item.)* ☐ Yes ☒ No

   (a) Select Hydraulic Mulch, Hydroseeding, Soil Binders, Geotextiles, Mats, Plastic Covers, and Erosion Control Blankets, Wood Mulching or a combination to cover the DSA subject to wind erosion year-round, especially when significant wind and dry conditions are anticipated during project construction. (Coordinate with District Construction for selection and preference of wind erosion control BMPs.) ☐ Complete

   (b) Designate as a separate contract bid line item. ☐ Complete

Construction Site BMPs

Checklist CS-1, Part 5

Prepared by: WRECO Date: August 2017 District-Co-Route: 03-ED-50

PM : 16.0/16.6 Project ID/EA: 0314000301 (03-37281) RWQCB: Central Valley 5S

Non-Stormwater Management

Temporary Stream Crossing & Clear Water Diversion

1. Will construction activities occur within a water body or watercourse such as a lake, wetland, or stream? (Coordinate with District Construction for selection and preference for stream crossing and clear water diversion BMPs.) ☐Yes ☒No

   (a) Select from types offered in Temporary Stream Crossing to provide access through watercourses consistent with permits and agreements.[1] ☐Complete

   (b) Select from types offered in Clear Water Diversion to divert watercourse consistent with permits and agreements.[1] ☐Complete

   (c) Designate as a separate contract bid line item(s). ☐Complete

Other Non-Stormwater Management BMPs

2. Are construction activities anticipated that will generate wastes or residues with the potential to discharge pollutants? ☒Yes ☐No

   (a) Identify potential pollutants associated with the anticipated construction activity and select the corresponding BMP such as NS-1 (Water Conservation Practices), NS-2 (Dewatering Operations), NS-3 (Paving and Grinding Operations), NS-7 (Potable Water/Irrigation), NS-8 (Vehicle and Equipment Cleaning), NS-9 (Vehicle and Equipment Fueling), NS-10 (Vehicle and Equipment Maintenance), NS-11 (Pile Driving Operations), NS-12 (Concrete Curing), NS-13 (Material and Equipment Use Over Water), NS-14 (Concrete Finishing), and NS-15 (Structure Demolition/Removal Over or Adjacent to Water).[1] ☒Complete

   (b) Verify that costs for non-stormwater management BMPs are identified in the contract documents. Designate BMP as a separate contract bid line item if the requirements in Job Site Management *Standard Specifications* Section 13 are anticipated to be inadequate or if requested by Construction. ☒Complete

[1] *Coordinate with District Environmental for consistency with US Army Corps of Engineers 404 and 401 permits and Dept. of Fish and Game 1601 Streambed alteration Agreements.*

Construction Site BMPs

Checklist CS-1, Part 6

Prepared by: WRECO Date: August 2017 District-Co-Route: 03-ED-50

PM : 16.0/16.6 Project ID/EA: 0314000301 (03-37281) RWQCB: Central Valley 5S

Waste Management & Materials Pollution Control

Concrete Waste Management

1. Does the project include concrete placement or mortar mixing? ☒Yes ☐No

   (a) Select from types offered in Concrete Waste Management to provide concrete washout facilities. In addition, consider portable concrete washouts and vendor supplied concrete waste management services. (Coordinate with District Construction for selection and preference of waste management and materials pollution control BMPs.) ☒Complete

   (b) Designate as a separate contract bid line item if the quantity of concrete waste and washout are anticipated to exceed 5.2 yd^3 or if requested by Construction. ☒Complete

Other Waste Management and Materials Pollution Controls

2. Are construction activities anticipated that will generate wastes or residues with the potential to discharge pollutants? ☒Yes ☐No

   (a) Identify potential pollutants associated with the anticipated construction activity and select the corresponding BMP such as WM-1 (Material Delivery and Storage), WM-2 (Material Use), WM-4 (Spill Prevention and Control), WM-5 (Solid Waste Management), WM-6 (Hazardous Waste Management), WM-7 (Contaminated Soil Management), WM-9 (Sanitary/Septic Waste Management) and WM-10 (Liquid Waste Management) ☒Complete

   (b) Verify that costs for waste management and materials pollution control BMPs are identified in the contract documents. Designate BMP as a separate contract bid line item if the requirements in Job Site Management *Standard Specifications* Section 13 are anticipated to be inadequate or if requested by Construction. ☒Complete

Temporary Stockpiles (Soil, Materials, and Wastes)

3. Are stockpiles of soil, etc. anticipated during construction? ☒Yes ☐No

   (a) Verify that costs for stockpile management and associated sediment control and temporary soil stabilization BMPs for temporary stockpiles are identified in the contract documents. Designate as a separate contract bid line item if the requirements in Job Site Management *Standard Specifications* Section 13 are anticipated to be inadequate or if requested by Construction. ☒Complete

U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data,
and Information Service

Climatography of the United States No. 20 1971-2000

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, North Carolina 28801
www.ncdc.noaa.gov

Station: PLACERVILLE, CA **COOP ID: 046960**

Climate Division: CA 2 **NWS Call Sign:** **Elevation: 1,850 Feet** **Lat: 38°42N** **Lon: 120°49W**

Precipitation (inches)

Precipitation Totals

Month	Means/ Medians(1) Mean	Means/ Medians(1) Median	Extremes Highest Daily(2)	Year	Day	Highest Monthly(1)	Year	Lowest Monthly(1)	Year
Jan	7.47	6.05	4.40	1997	2	19.22	1997	.42	1984
Feb	6.62	5.24	6.22	2000	14	18.87	1986	.57	1988
Mar	6.03	5.66	3.65	1983	13	15.93	1991	.28	1994
Apr	2.84	2.33	3.43	1958	3	7.98	1982	.15	1985
May	1.56	1.03	2.80	1996	16	8.22	1998	.00+	1992
Jun	.45	.32	1.49	1995	16	2.22	1995	.00+	1990
Jul	.18	.00	2.78	1974	9	3.62	1974	.00+	2000
Aug	.15	.00	1.17	1976	15	1.57	1976	.00+	2000
Sep	.94	.29	2.62	1989	29	8.09	1989	.00+	1995
Oct	2.12	1.46	4.25	1962	14	6.19	2000	.00+	1995
Nov	4.91	3.37	3.57	1983	12	13.13	1983	.33	1995
Dec	5.48	4.43	4.11	1955	22	19.86	1996	.00	1989
Ann	38.75	35.65	6.22	Feb 2000	14	19.86	Dec 1996	.00+	Aug 2000

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	10.3	8.4	5.0	2.6
Feb	10.2	7.8	4.4	2.3
Mar	11.3	9.2	4.3	1.7
Apr	7.2	4.9	2.0	.6
May	4.1	2.8	1.1	.4
Jun	1.9	1.0	.2	.1
Jul	.5	.2	.1	@
Aug	1.0	.3	.1	@
Sep	2.2	1.3	.6	.4
Oct	4.2	3.2	1.5	.7
Nov	9.0	6.8	3.0	1.8
Dec	8.9	7.0	3.6	1.8
Ann	70.8	52.9	25.9	12.4

Precipitation Probabilities (1)

Probability that the monthly/annual precipitation will be equal to or less than the indicated amount

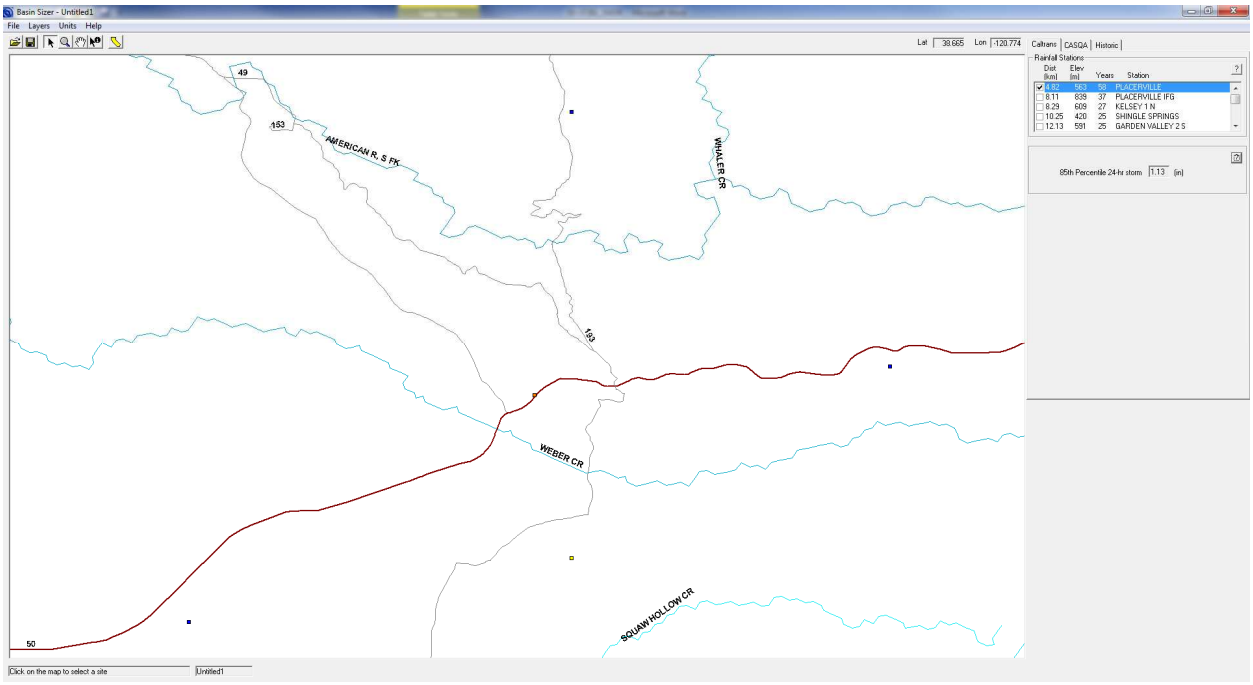
Monthly/Annual Precipitation vs Probability Levels
These values were determined from the incomplete gamma distribution

Month	.05	.10	.20	.30	.40	.50	.60	.70	.80	.90	.95
Jan	.68	1.20	2.20	3.24	4.37	5.66	7.19	9.10	11.73	16.13	20.43
Feb	.83	1.36	2.29	3.22	4.19	5.27	6.53	8.09	10.19	13.65	17.00
Mar	.72	1.19	2.04	2.88	3.77	4.77	5.93	7.37	9.32	12.53	15.66
Apr	.31	.52	.91	1.31	1.74	2.21	2.77	3.47	4.42	6.00	7.54
May	.00	.00	.14	.35	.60	.92	1.32	1.85	2.62	3.95	5.31
Jun	.00	.00	.00	.08	.17	.27	.40	.56	.78	1.15	1.53
Jul	.00	.00	.00	.00	.00	.00	.00	.01	.11	.52	1.02
Aug	.00	.00	.00	.00	.00	.00	.00	.06	.19	.49	.84
Sep	.00	.00	.00	.01	.10	.27	.54	.95	1.58	2.79	4.06
Oct	.00	.00	.43	.78	1.15	1.56	2.05	2.66	3.47	4.84	6.19
Nov	.52	.89	1.57	2.25	2.98	3.81	4.78	5.99	7.64	10.37	13.03
Dec	.23	.68	1.48	2.28	3.15	4.13	5.29	6.74	8.73	12.05	15.30
Ann	18.05	21.44	26.10	29.87	33.37	36.89	40.64	44.93	50.31	58.45	65.77

\+ Also occurred on an earlier date(s)
\# Denotes amounts of a trace
@ Denotes mean number of days greater than 0 but less than .05
** Statistics not computed because less than six years out of thirty had measurable precipitation

(1) From the 1971-2000 Monthly Normals
(2) Derived from station's available digital record: 1948-2001
(3) Derived from 1971-2000 serially complete daily data

Complete documentation available from:
www.ncdc.noaa.gov/oa/climate/normals/usnormals.html



Project: Project ID 0314000301 (EA 03-37281)

Latitude: 38.7259
Longitude: -120.8263

Caltrans Stations
Name: PLACERVILLE
Distance: 4.82
Elevation: 563
Years of data: 58

Water Quality Volumes

85th Percentile 24-hr Storm (in) 1.13

Maximized Volume Method (in)
Drawdown Time (Hours) 48
Runoff Coefficient 0.80
Unit Basin Storage Volume (in) 1.06

Water Quality Flows

Caltrans Water Quality Flows
Region 5, North East counties: below 1000 ft = 0.16 in/hr; between 1000 ft and 4000 ft =0.20 in/hr; above 4000 ft = 0.24 in/hr.

Basin Sizer Version 1.47

Strip and Swale Infiltration Tool Results

Version 3.01.034

PROJECT INFORMATION	
Project	Project ID 0314000301 (EA 03-37281)
Sub-watershed	Swale
BMP type	Swale

USER INPUT AND INTERMEDIATE CALCULATIONS	Units	Existing	Proposed Design	Isolated NNI
Input from Basin Sizer				
Unit basin storage volume from Basin Sizer, where C = 1.0	in	1.13	1.13	1.13
Drawdown time used in Basin Sizer	hr	48	48	48
Rainfall rate from Basin Sizer "Caltrans Water Quality Flows"	in/hr	0.2	0.2	0.2
Drainage and Runoff to the Strip or Swale				
Contributing drainage area (CDA), including all impervious area	ft^2	42688.8	42688.8	8276.4
Total impervious area	ft^2	0	8276.4	8276.4
Net new impervious (NNI) area	ft^2	0	8276.4	8276.4
Additional impervious area seeking treatment credit	ft^2	0	0	0
CDA runoff volume (including WQV)	ft^3	2533	2743	701
WQV	ft^3	0	701	701
Native Soil				
Pervious area for non-amended infiltration	ft^2	0	4125	4125
Native or fill (underlying) HSG soil type	-	C	C	C
Bulk density of native soil or fill	g/cm^3	1.6	1.6	1.6
Specific gravity of soil particles	-	2.65	2.65	2.65
Infiltration rate of native soil or fill	in/hr	0.15	0.15	0.15
Amended Soil				
BMP amendment area	ft^2	0	4125	4125
Depth of amendment placement	in	0	4	4
Depth of incorporation	in	0	18	18
Specific gravity of amendment particles	-	0.80	0.80	0.80
Bulk density of amendment	g/cm^3	0.50	0.50	0.50
Final bulk density of amended soil	g/cm^3	N/A	1.45	1.45
Infiltration rate of amended soil	in/hr	N/A	1.89	1.89

RESULTS: Native Soil or Fill (rate-based calculation)	Units	Existing	Proposed Design	Isolated NNI
Runoff coefficient for downstream BMP with no amendment	-	0.63	0.64	0.68
Volume of total runoff from CDA infiltrated	ft^3	0	0	0
Percentage of WQV from net new impervious area that is infiltrated with native soil or fill (use for T-1, 5b)	-	N/A	**0%**	0%

RESULTS: Amended Soil (volume-based calculation)	Units	Existing	Proposed Design	Isolated NNI
Runoff coefficient for downstream BMP after amendment	-	N/A	0.25	0.00
Volume of total runoff infiltrated, ft^3	ft^3	N/A	1645	701
Percentage of WQV from net new impervious area that is infiltrated with amended soil (use for T-1, 5d)	-	N/A	**100%**	100%

Basin Infiltration Tool Results

Version 3.01.034

PROJECT INFORMATION

Project	Project ID 0314000301 (EA 03-37281)
Sub-watershed	Basin
BMP type	Detention basin

SITE CHARACTERISTICS

Drainage Area Information		
Runoff coefficient for CDA to the basin	0.84	
Contributing drainage area (CDA) to basin	1031500.8	ft²
Basin area to drainage area ratio	0.02	
Total impervious area	208652.4	ft²
Area upstream of the strip or swale		
Runoff coefficient for CDA	0.84	
CDA	1031501	ft²
Runoff volume from CDA	81636	ft³
Water Quality Volume Calculation		
Water quality volume	17683	ft³
Net new impervious area	208652.4	ft²
Additional impervious area seeking	0	ft²

BASIN CHARACTERISTICS

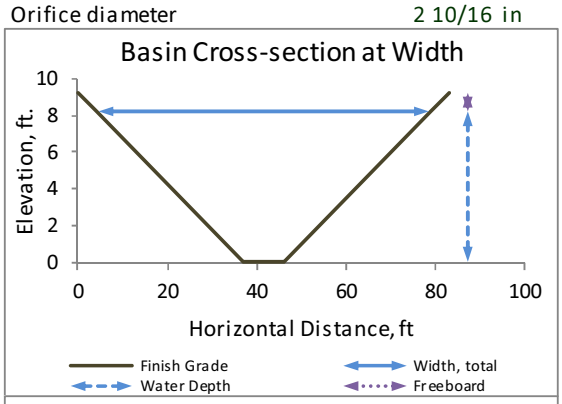
Note: The basin is trapezoidal with a rectangular footprint		
Unit basin storage volume	1.13	in
Drawdown time used in Basin Sizer	48	hr
Target basin capture volume	81636	ft³
Length, basin (at WQV water surface)	260	ft
Width, basin (at WQV water surface)	75	ft
Area, basin (at WQV water surface)	19500	ft²
Side slope	4	:1
Geometry-based volume	81636	ft³
Maximum water level	8	ft
Length, invert	194	ft
Width, invert	9	ft
Area, invert	1759	ft²

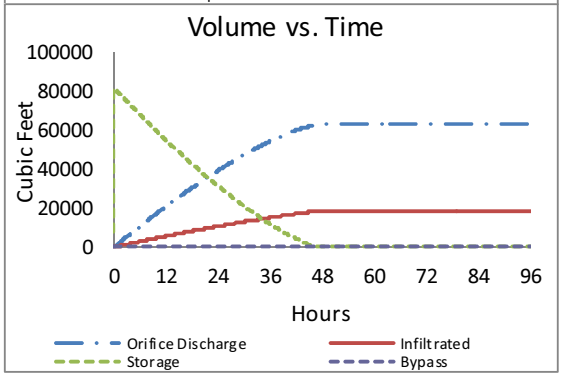
SOIL CHARACTERISTICS

Invert soil infiltration rate	1.89	in/hr
Side slope soil infiltration rate	0.15	in/hr

ORIFICE CHARACTERISTICS

Orifice height above the invert	0.00	ft
Orifice coefficient, C	0.6	
Orifice diameter	2 10/16	in





WATER BALANCE (CUBIC FEET)

Area	Rainfall	Losses prior to the basin	Runoff infiltrated in the basin	Total discharge (including bypass)
Basin CDA	97133	15497	18778	62858
Impervious area	19648	1965	17683	0
NNI area	19648	1965	17683	0

WATER QUALITY VOLUME RESULTS

Drawdown time	48 hours
Impervious runoff infiltrated upstream of the basin expressed as a percentage of WQV	0%
Impervious runoff infiltrated in the basin expressed as a percentage of WQV	100%
Total impervious runoff infiltrated expressed as a percentage of WQV (Use for T-1, 7c)	**100%**
% of the WQV treated in the basin only	100%

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
03	ED	50	16.0-16.6	25	135

REGISTERED CIVIL ENGINEER — DATE 8-4-17

REGISTERED PROFESSIONAL ENGINEER — CHRISTOPHER SEWELL — No. 64807 — Exp. 06/30/19 — STATE OF CALIFORNIA

PLANS APPROVAL DATE

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DEPARTMENT
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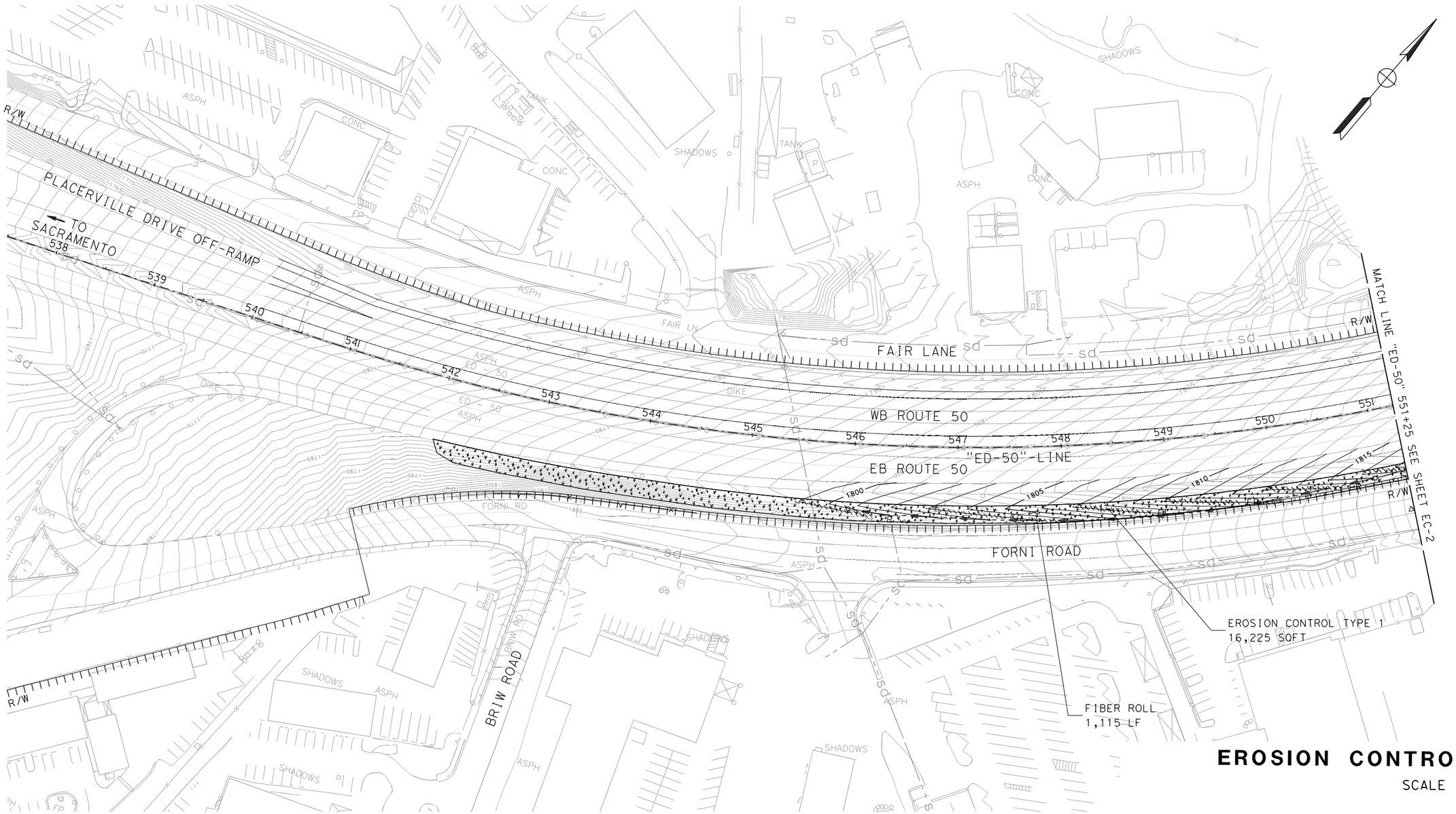
2. FOR UTILITIES, SEE LAYOUT SHEETS.
3. STATION & OFFSET TIES TO DRAINAGE STRUCTURES ARE MEASURED PER DETAILS ON SHEET ECD-1.

LEGEND:

EROSION CONTROL TYPE 1 CUT AND FILL SLOPES

EROSION CONTROL TYPE 2 BIOFILTRATION SWALES

FR FIBER ROLL



EROSION CONTROL PLAN

SCALE 1"=50'

EC-1

APPROVED FOR EROSION CONTROL WORK ONLY

REVISED BY	DATE REVISED

CALCULATED-DESIGNED BY
CHECKED BY

JEREMY MILLER-SCHULZE
CHRIS SEWELL

CONSULTANT FUNCTIONAL SUPERVISOR
HAN-BIN LIANG

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EA 37280

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
03	ED	50	16.0-16.6	26	135

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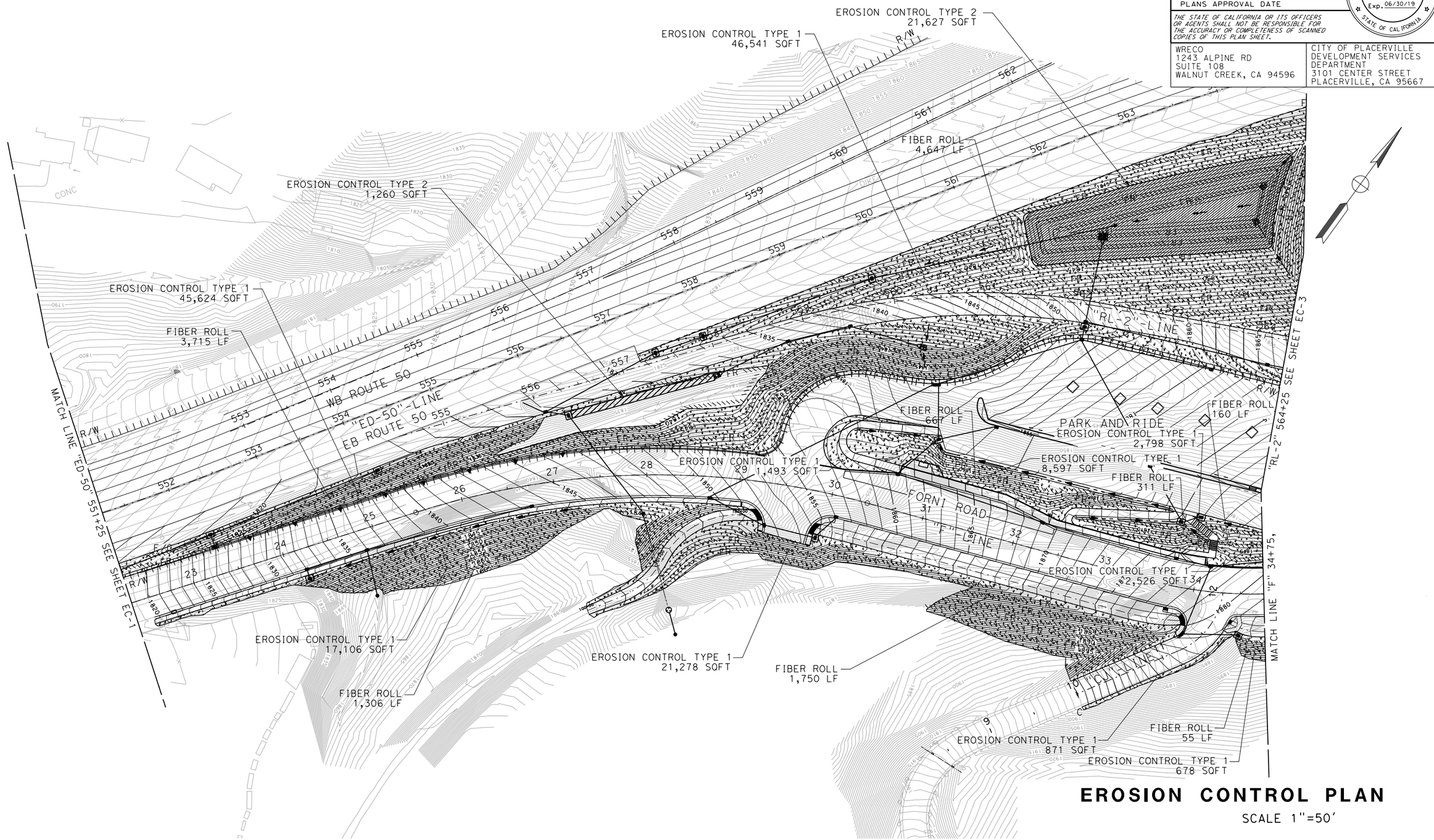

EROSION CONTROL PLAN

SCALE 1"=50'

EC-2

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
03	ED	50	16.0-16.6	27	135

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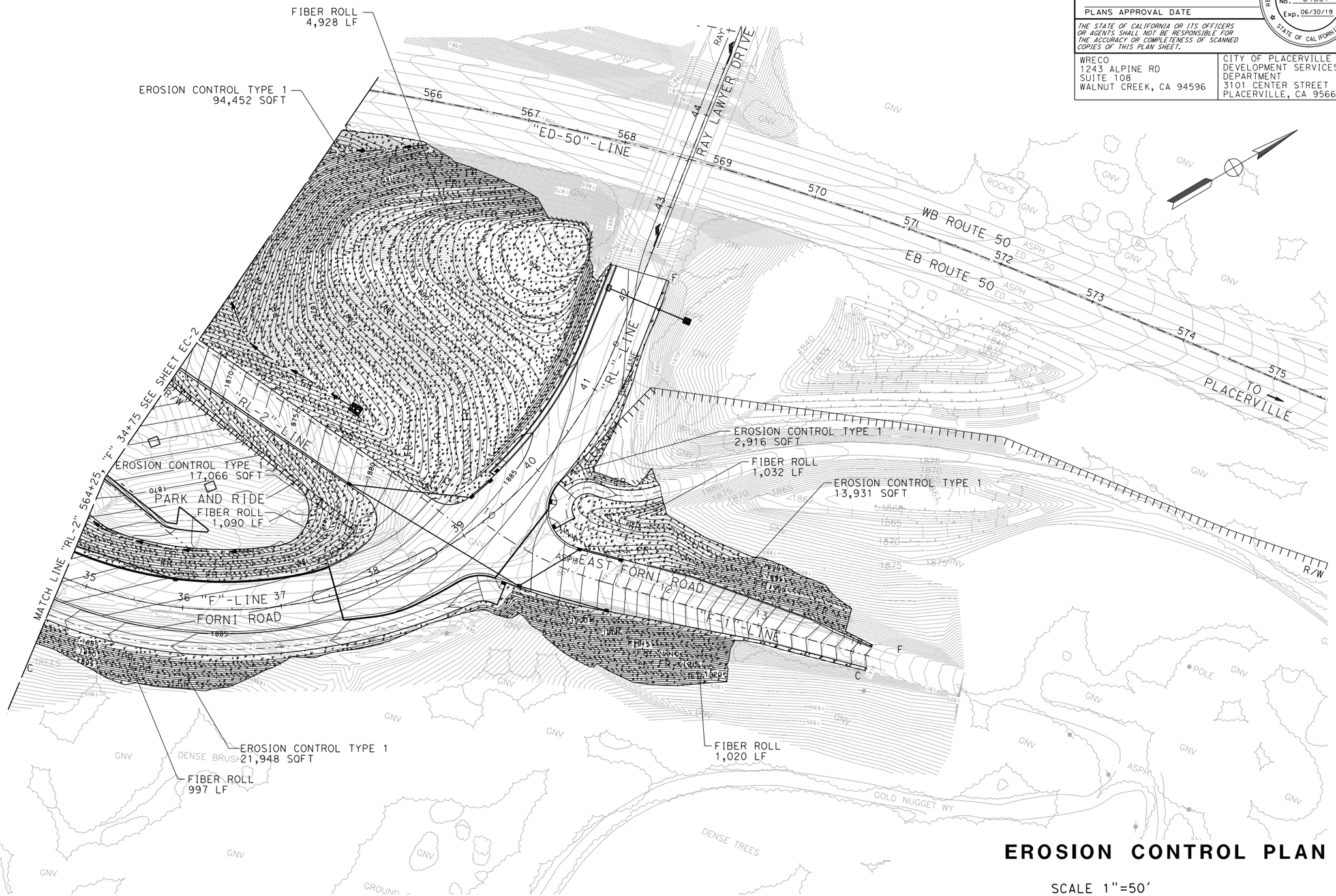

EROSION CONTROL PLAN

SCALE 1"=50'

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EC-3

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03	ED	50	16.0-16.6	28	135

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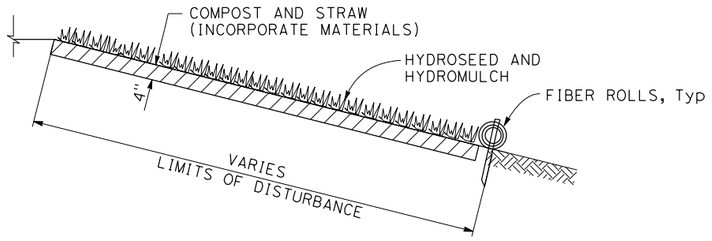
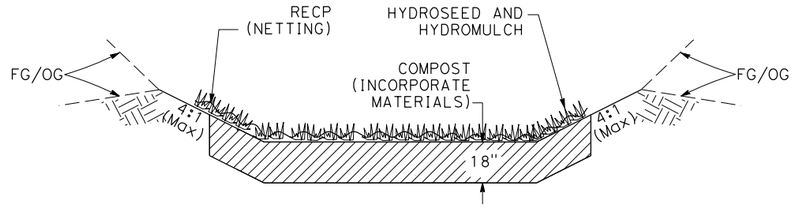


EROSION CONTROL TYPE 1



EROSION CONTROL TYPE 2 (TREATMENT AREA)

EROSION CONTROL DETAILS

ECD-1

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03	ED	50	16.0-16.6	29	135

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EROSION CONTROL TYPE 1

REMARKS	DEPTH	APPLICATION RATE	MATERIAL TYPE	MATERIAL DESCRIPTION	ITEM	SEQUENCE
	1"	130 CY/ACRE	MEDIUM	COMPOST	COMPOST	STEP 1
	-	1.75 TONS/ACRE	RICE	STRAW	STRAW	STEP 2
	4"	-	-	COMPOST/STRAW	INCORPORATE MATERIALS	STEP 3
INSTALLATION TYPE 1	-	-	8 TO 10 INCHES IN Dia	RICE STRAW FILLED AND JUTE COVERED	FIBER ROLLS	STEP 4
	-	56 LB/ACRE	MIX	SEED	HYDROSEED	STEP 5
		1000 LB/ACRE	COMBINATION	FIBER		
		600 LB/ACRE	ORGANIC	FERTILIZER		
	-	1000 LB/ACRE	COMBINATION	FIBER	HYDROMULCH	STEP 6
		200 LB/ACRE	PLANT BASED	TACKIFIER		

EROSION CONTROL TYPE 2

REMARKS	DEPTH	APPLICATION RATE	MATERIAL TYPE	MATERIAL DESCRIPTION	ITEM	SEQUENCE
	4"	540 CY/ACRE	MEDIUM	COMPOST	COMPOST	STEP 1
	18"	-	-	COMPOST	INCORPORATE MATERIALS	STEP 2
	-	-	TYPE A	NETTING	ROLLED EROSION CONTROL PRODUCT (NETTING)	STEP 3
INSTALLATION TYPE 1	-	-	8 TO 10 INCHES IN Dia	RICE STRAW FILLED AND JUTE COVERED	FIBER ROLLS	STEP 4
	-	56 LB/ACRE	MIX	SEED	HYDROSEED	STEP 5
		1000 LB/ACRE	COMBINATION	FIBER		
		600 LB/ACRE	ORGANIC	FERTILIZER		
	-	1000 LB/ACRE	COMBINATION	FIBER	HYDROMULCH	STEP 6
		200 LB/ACRE	PLANT BASED	TACKIFIER		

SEED MIX

BOTANICAL NAME (COMMON NAME)	PERCENT GERMINATION (MINIMUM)	POUNDS PURE LIVE SEED PER ACRE (SLOPE MEASUREMENT)
ACHILLEA MILLEFOLIUM (WESTERN YARROW)	55	1
CAREX PRAEGRACILIS (CLUSTERED FIELD SEDGE)	35	4
BROMUS CARINATUS (CALIFORNIA BROME)	55	11
ELYMUS GLAUCUS (BLUE WILDRYE)	55	9
ERIOGONUM FASCICULATUM (CALIFORNIA BUCKWHEAT)	5	2
ERIOPHYLLUM CONFERTIFLORUM (GOLDEN YARROW)	45	1
HORDEUM BRACHYANTHERUM (BARLEY)	50	9
LASTHENIA CALIFORNICA (CALIFORNIA GOLDFIELDS)	30	1
LEYMUS TRITICOIDES (BEARDLESS WILDRYE)	55	4
LOTUS PURSHIANUS (SPANISH LOTUS)	45	2
STIPA PULCHRA (PURPLE NEEDLEGRASS)	50	8
VULPIA MICROSTACHYS (SMALL FESCUE)	50	4

EROSION CONTROL LEGEND

ECL-1

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CHECKED BY: CHRIS SEWELL
REVISED BY
DATE REVISED
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03	ED	50	16.0-16.6	30	135

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PLACERVILLE, CA 95667

EROSION CONTROL QUANTITIES

FIBER ROLLS	INCORPORATE MATERIALS	COMPOST	HYDROSEED	STRAW	HYDROMULCH	ROLLED EROSION CONTROL PRODUCT (NETTING)	DESCRIPTION	SHEET
LF	SQFT							
0	16,300	16,300	16,300	16,300	16,300	16,300	EC TYPE 1	EC-1
0	0	0	0	0	0	0	EC TYPE 2	
1,100	-	-	-	-	-	-	FIBER ROLLS	
0	148,000	148,000	148,000	148,000	148,000	148,000	EC TYPE 1	EC-2
0	0	0	23,000	0	23,000	23,000	EC TYPE 2	
12,700	-	-	-	-	-	-	FIBER ROLLS	
0	152,000	152,000	152,000	152,000	152,000	152,000	EC TYPE 1	EC-3
0	0	0	0	0	0	0	EC TYPE 2	
8,700	-	-	-	-	-	-	FIBER ROLLS	
22,500	316,300	316,300	339,300	316,300	339,300	339,300	TOTALS	

REVISED BY | DATE REVISED

JEREMY MILLER-SCHULZE | CHRIS SEWELL

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
03	ED	50	16.0-16.6	31	135

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NOTES:

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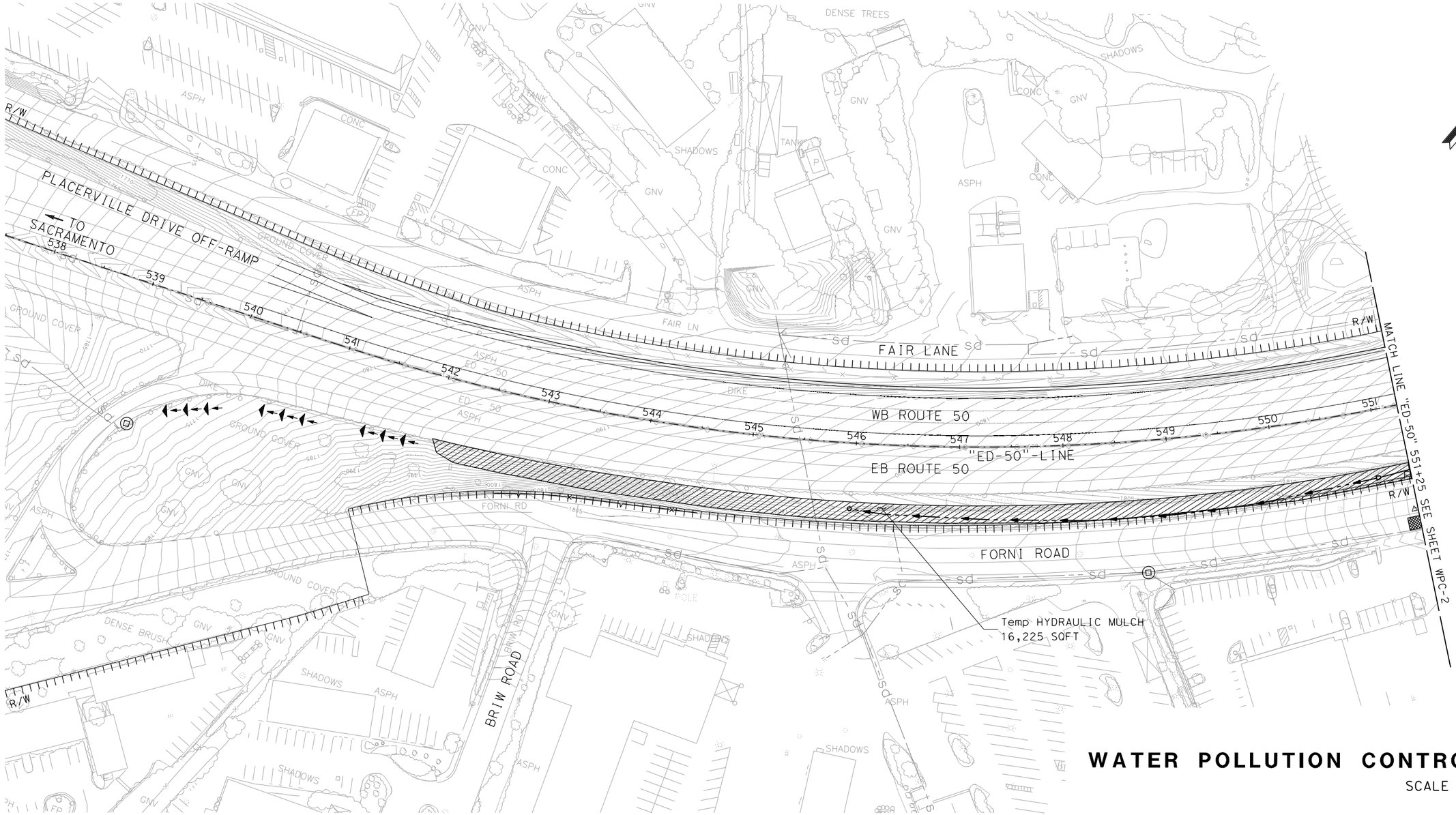
LEGEND:

- TEMPORARY HYDRAULIC MULCH
- TEMPORARY DRAINAGE INLET PROTECTION
- TEMPORARY CONSTRUCTION ENTRANCE
- WASH — TEMPORARY CONCRETE WASHOUT
- TEMPORARY CHECK DAM
- —xx—TSF— TEMPORARY SILT FENCE



WATER POLLUTION CONTROL PLAN

SCALE 1"=50'

WPC-1

APPROVED FOR WATER POLLUTION CONTROL WORK ONLY

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EA 37280

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
03	ED	50	16.0-16.6	32	135

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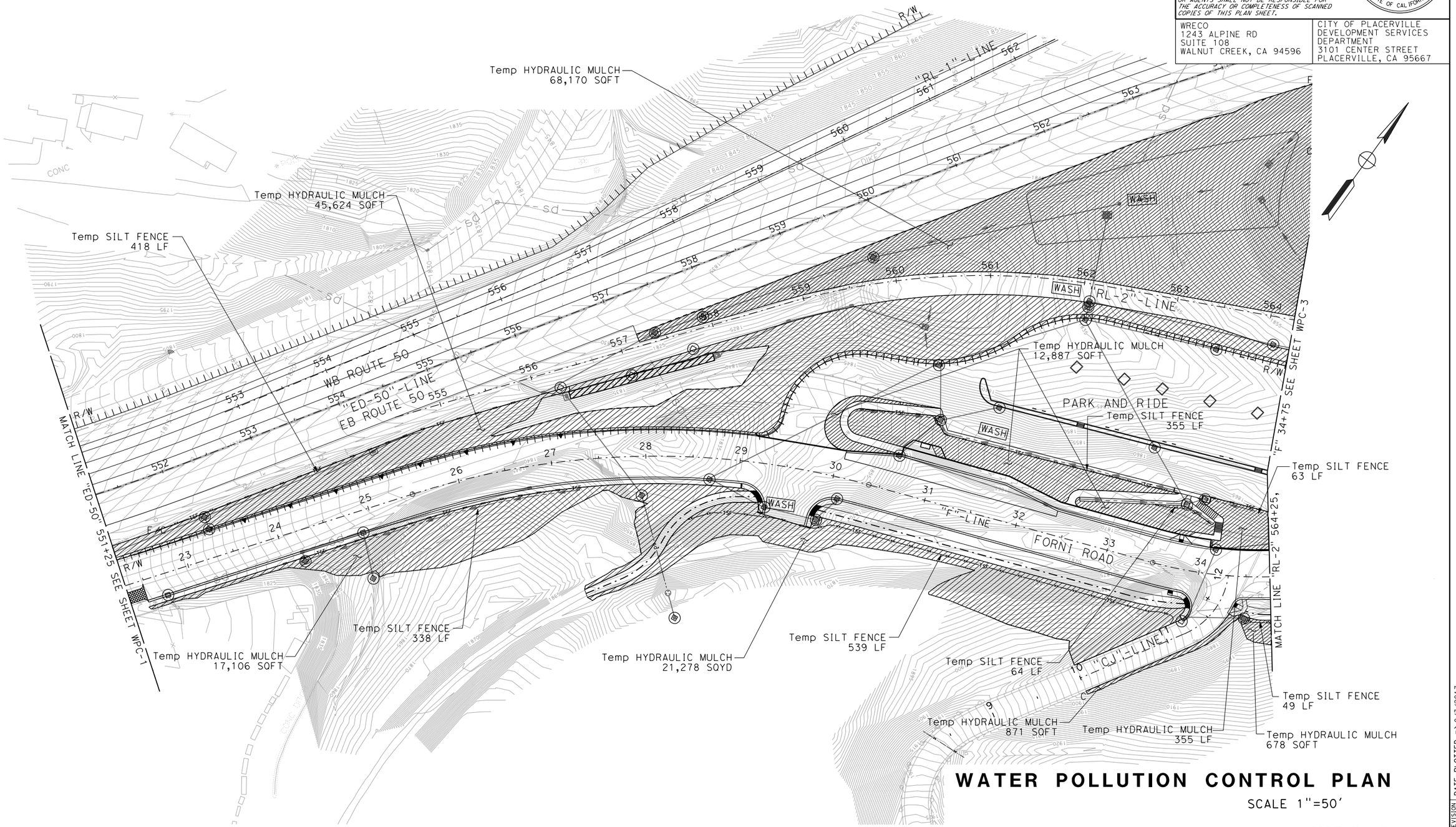
2. SEE SHEET WPC-1 FOR LEGEND & COMPLETE NOTES.



WATER POLLUTION CONTROL PLAN

SCALE 1"=50'

APPROVED FOR WATER POLLUTION CONTROL WORK ONLY

WPC-2

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DATE REVISED	CHRIS SEWELL	CHECKED BY	
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CU 00000 — EA 37280

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
03	ED	50	16.0-16.6	33	135

REGISTERED CIVIL ENGINEER — DATE 8-4-17

REGISTERED PROFESSIONAL ENGINEER — CHRISTOPHER SEWELL — No. 64807 — Exp. 06/30/19 — STATE OF CALIFORNIA

PLANS APPROVAL DATE

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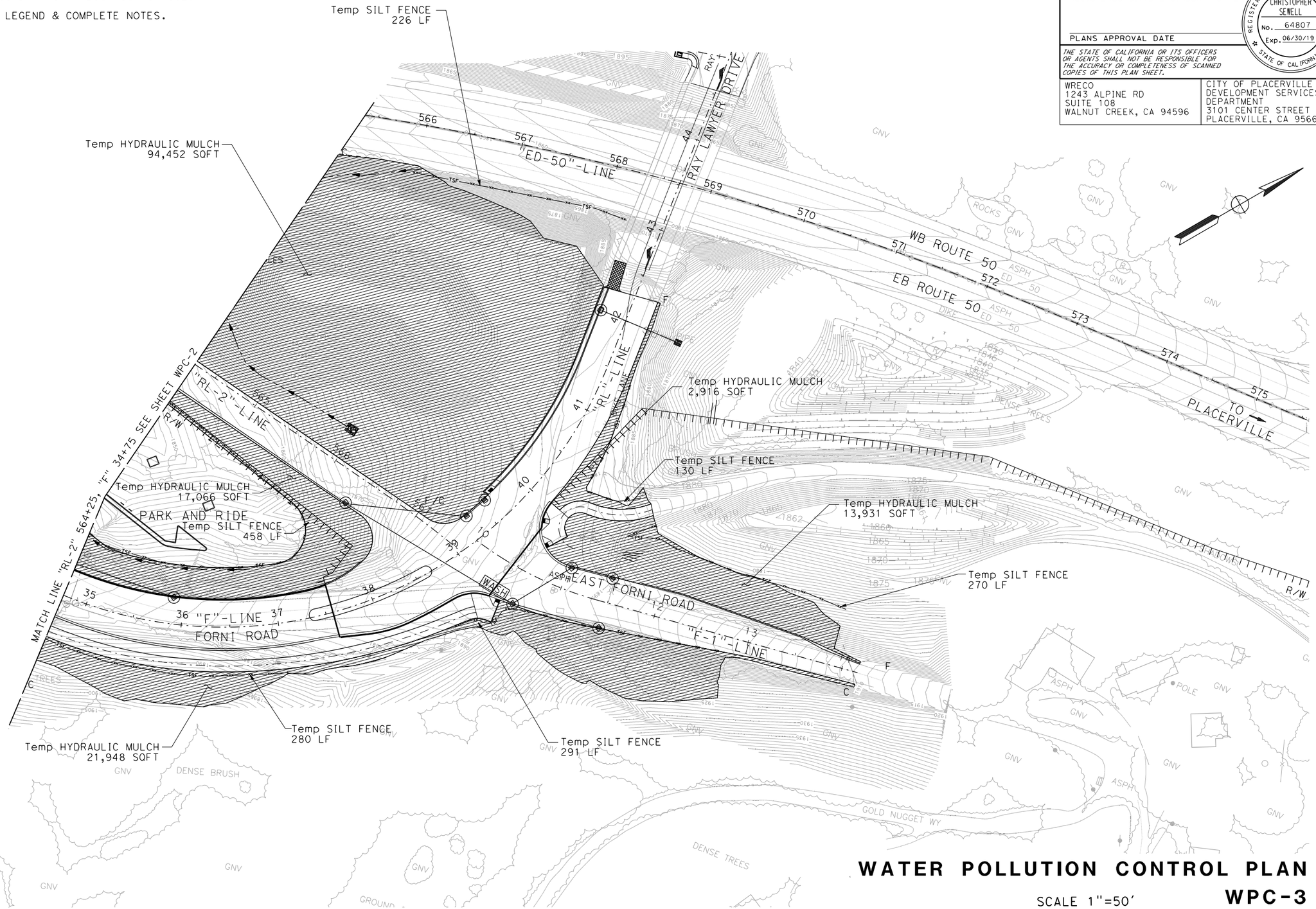
SUITE 108
WALNUT CREEK, CA 94596

CITY OF PLACERVILLE
DEVELOPMENT SERVICES DEPARTMENT
3101 CENTER STREET
PLACERVILLE, CA 95667

NOTES:

1. FOR COMPLETE RIGHT-OF-WAY AND ACCURATE ACCESS DATA, SEE RIGHT-OF-WAY RECORD MAPS AT DISTRICT OFFICE.
2. SEE SHEET WPC-1 FOR LEGEND & COMPLETE NOTES.



WATER POLLUTION CONTROL PLAN

SCALE 1"=50'

WPC-3

APPROVED FOR WATER POLLUTION CONTROL WORK ONLY

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

CONSULTANT FUNCTIONAL SUPERVISOR: HAN-BIN LIANG

CALCULATED-DESIGNED BY

CHECKED BY: CHRIS SEWELL

REVISED BY: JEREMY MILLER-SCHULZE

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2. FOR UTILITIES, SEE UTILITY PLAN.
3. STATION & OFFSET TIES TO DRAINAGE STRUCTURES ARE MEASURED PER DETAILS ON SHEET DD-1.
4. LOCATIONS OF EXISTING DRAINAGE FACILITIES ARE APPROXIMATE. VERIFY LOCATION AND ELEVATION OF EXISTING DRAINAGE FACILITIES PRIOR TO MODIFYING.
5. FOR GCP INLET INFO, SEE Std PLAN D75B

LEGEND:

- DRAINAGE INLET (DI)
- EXISTING DI
- FLARED END SECTION (FES)
- GRADE TO DRAIN
- STORM DRAIN MANHOLE (SDMH)
- ROCK SLOPE PROTECTION (RSP)
- GCP INLET
- LINED DITCH
- OMP INLET

ABBREVIATIONS:

SDMH STORM DRAIN MANHOLE

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
03	ED	50	16.0-16.6	37	135

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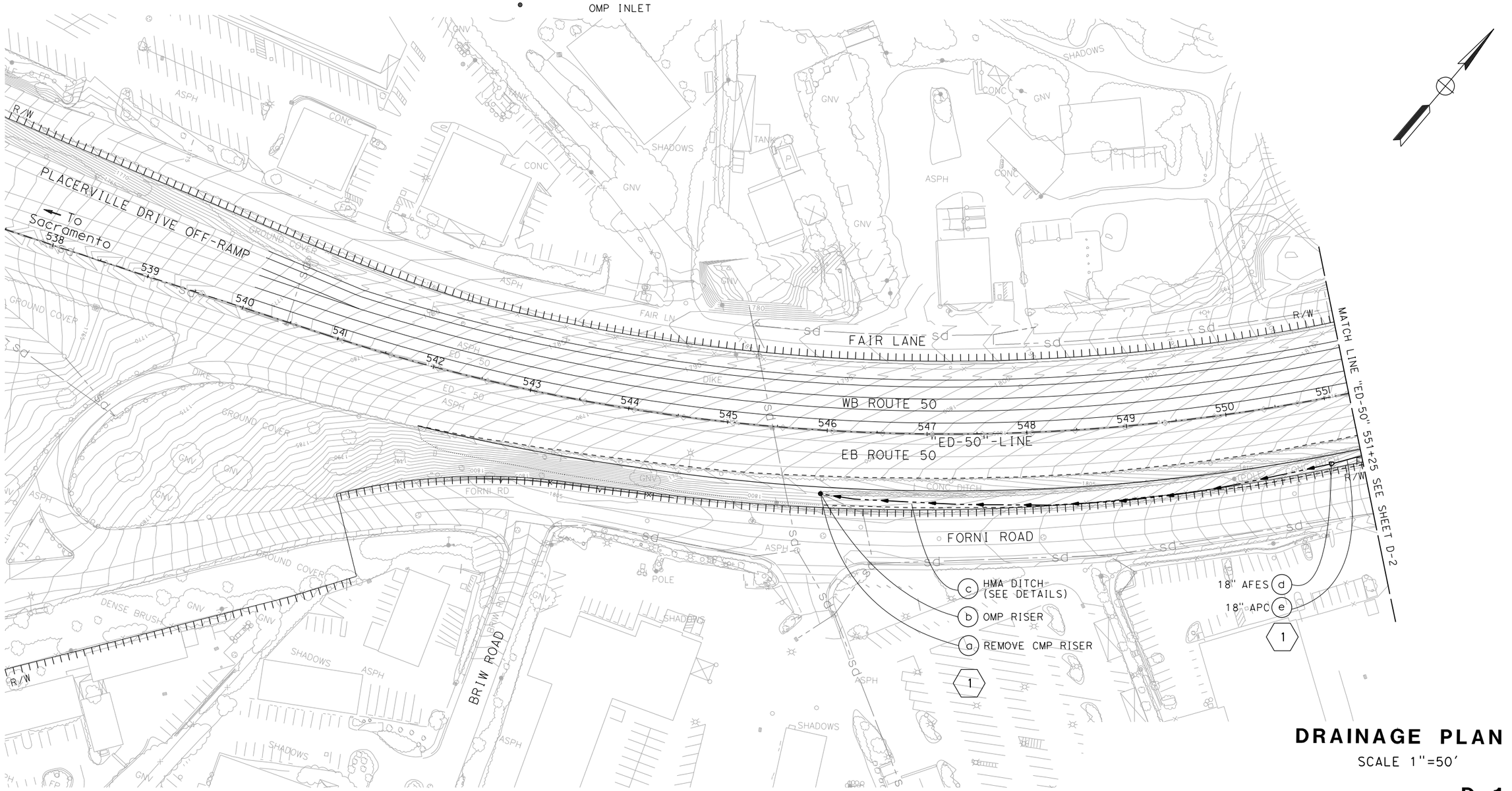

DRAINAGE PLAN

SCALE 1"=50'

D-1

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
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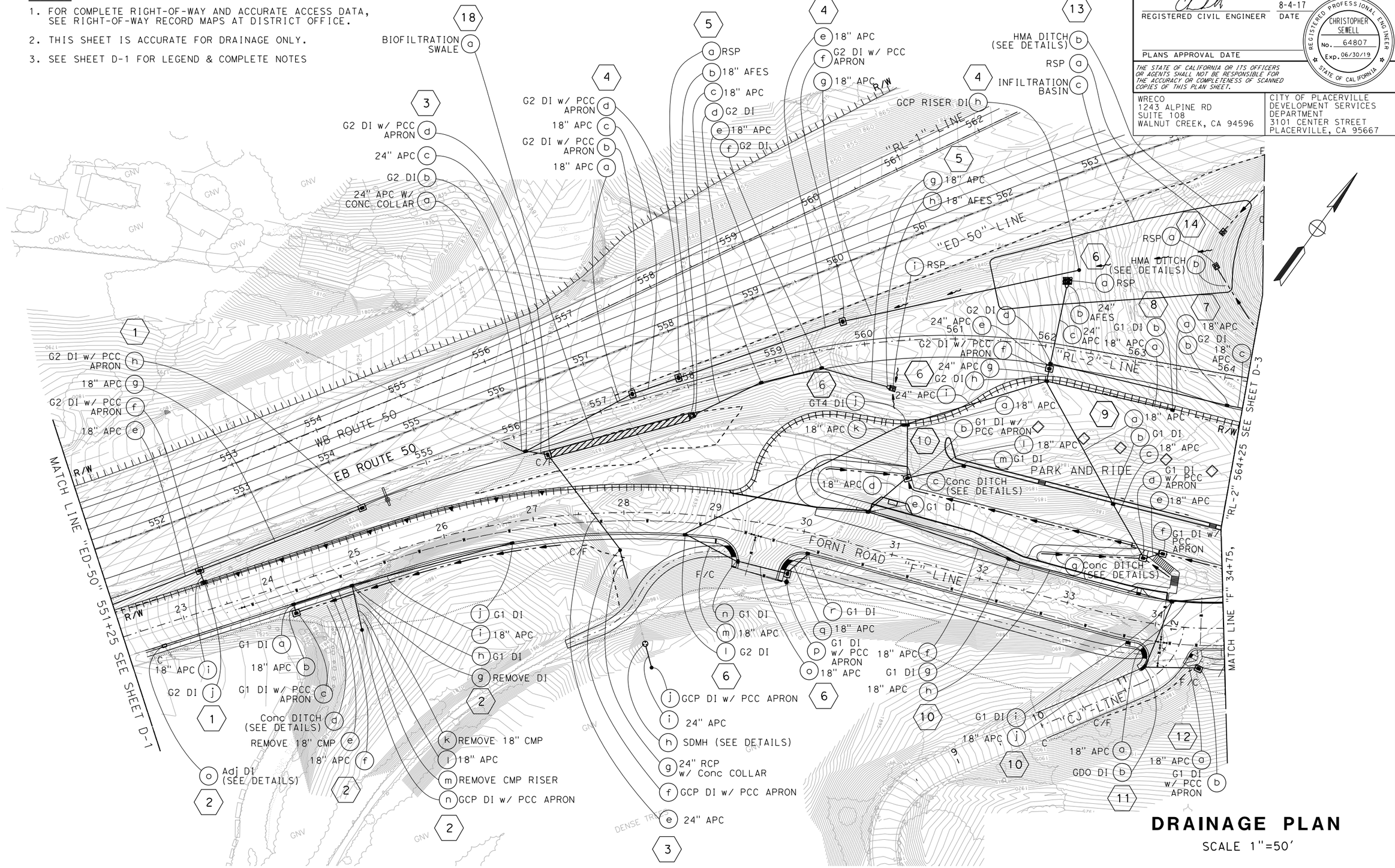
2. THIS SHEET IS ACCURATE FOR DRAINAGE ONLY.
3. SEE SHEET D-1 FOR LEGEND & COMPLETE NOTES



DRAINAGE PLAN

SCALE 1"=50'

D-2

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3. SEE SHEET D-1 FOR LEGEND & COMPLETE NOTES

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
03	ED	50	16.0-16.6	39	135

REGISTERED CIVIL ENGINEER — DATE 8-4-17

REGISTERED PROFESSIONAL ENGINEER — CHRISTOPHER SEWELL — No. 64807 — Exp. 06/30/19 — STATE OF CALIFORNIA

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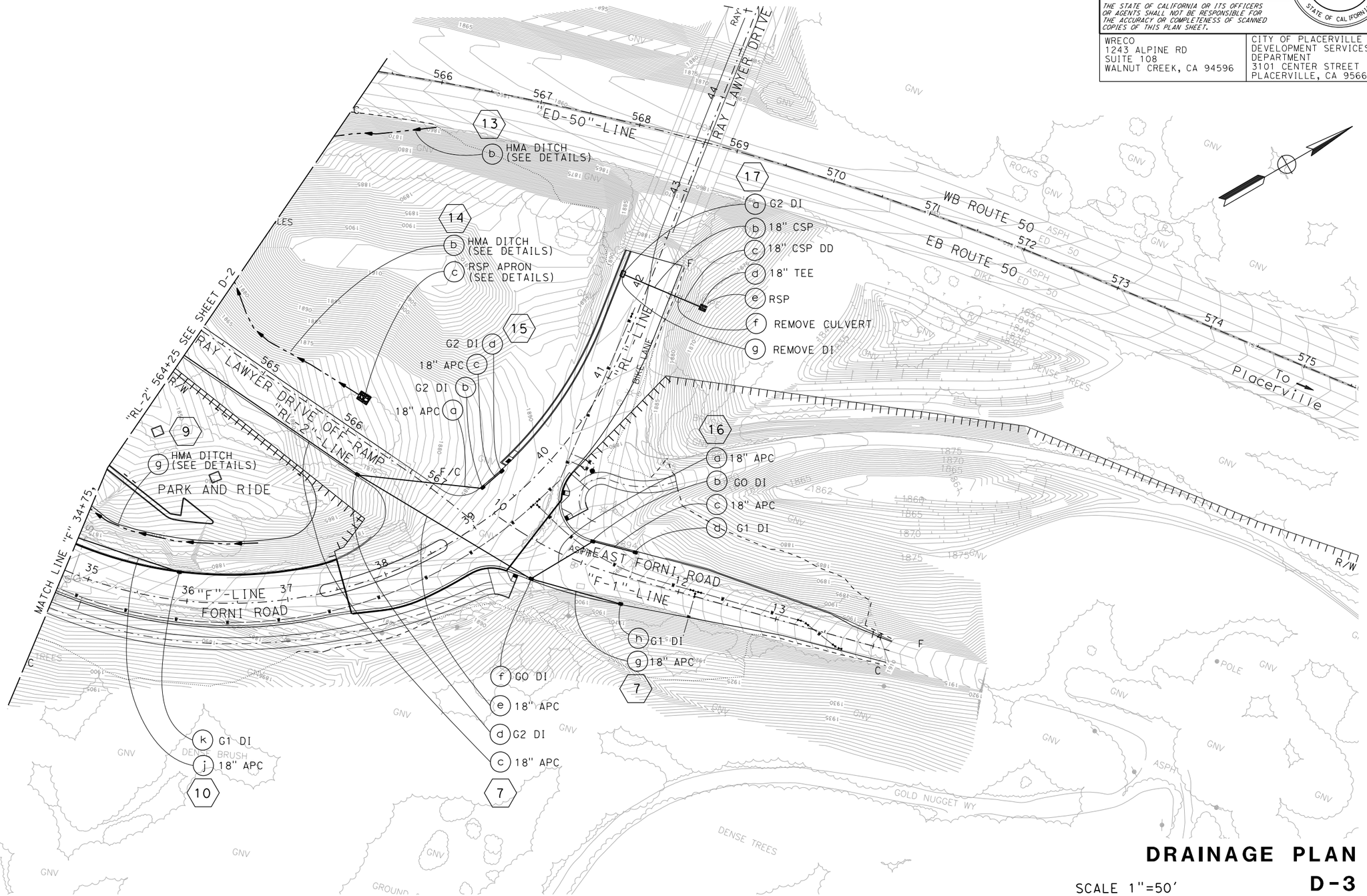

DRAINAGE PLAN

SCALE 1"=50'

D-3

APPROVED FOR DRAINAGE WORK ONLY

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CONSULTANT FUNCTIONAL SUPERVISOR: HAN-BIN LIANG

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JEREMY MILLER-SCHULZE	CHRIS SEWELL		

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EA 37280

FOR COMPLETE RIGHT-OF-WAY AND ACCURATE ACCESS DATA,
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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
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REGISTERED CIVIL ENGINEER DATE

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PLACERVILLE, CA 95667

BMP TYPE
AREA (ac)

FLOW DIRECTION

BASIN BMP - IMPERVIOUS WATERSHED

SWALE BMP - IMPERVIOUS WATERSHED

TREATMENT BMP WATERSHED MAP

SCALE 1"=50'

TBMPWSM-1

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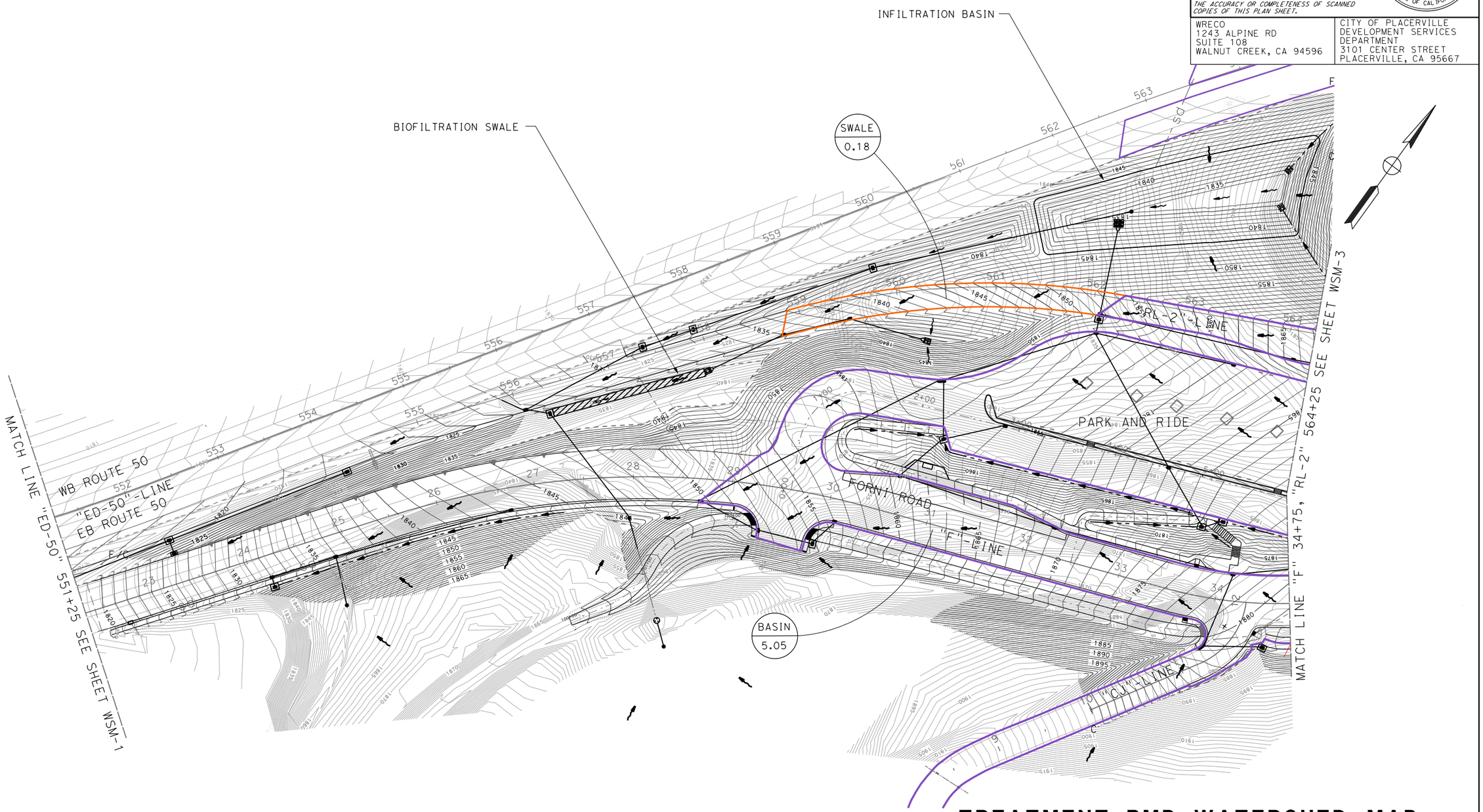

TREATMENT BMP WATERSHED MAP

SCALE 1"=50'

TBMPWSM-2

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
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BASIN 0.36

BASIN 0.91

BASIN 0.10

BASIN 0.13

"ED-50"-LINE

RAY LAWYER DRIVE

WB ROUTE 50

EB ROUTE 50

To Placerville

"RL-2"-LINE

"RL"-LINE

"F"-LINE

"F-1"-LINE

PARK AND RIDE

FORNI ROAD

EAST FORNI ROAD

MATCH LINE "F" 34+75, "RL-2" 564+25 SEE SHEET WSM-2

GOLD NUGGET WY

GROUND COVER

DENSE TREES

DENSE BRUSH

ROCKS

TREATMENT BMP WATERSHED MAP

SCALE 1"=50'

TBMPWSM-3

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CALCULATED-DESIGNED BY	CHECKED BY	REVISED BY	DATE REVISED
Caltrans	HAN-BIN LIANG	JEREMY MILLER-SCHULZE	CHRIS SEWELL		

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CALIFORNIA Water Boards

EDMUND G. BROWN JR. GOVERNOR

MATTHEW RODRIQUEZ SECRETARY FOR ENVIRONMENTAL PROTECTION

Central Valley Regional Water Quality Control Board

CLEAN WATER ACT SECTION 401 WATER QUALITY CERTIFICATION AND ORDER

Reg. Meas. ID:	412181
Place ID:	833657
WDID:	5A09CR00171
USACOE#:	

Effective Date: 13 June 2017

Expiration Date: 13 June 2022

Program Type: Fill/Excavation

Project Type: Roads and Highways

Project: Western Placerville Interchanges Project – Phase 2 (Project)

Applicant: City of Placerville

Applicant Contact:
Rebecca Neves
City of Placerville
3101 Center Street
Placerville, CA 95667
Phone: (530) 642-5250
Email: rneves@cityofplacerville.org

Applicant's Agent:
Tim Chamberlain
Dokken Engineering
110 Blue Ravine Road, Suite 200
Folsom, CA 95630
Phone: (916) 858-0642
Email: tchamberlain@dokkenengineering.com

Water Board Staff:
Daniel Warner
Water Resource Control Engineer
364 Knollcrest Drive, Suite 205
Redding, CA 96002
Phone: (530) 224-4848
Email: Daniel.Warner@waterboards.ca.gov

Water Board Contact Person:
If you have any questions, please call Central Valley Regional Water Quality Control Board (Central Valley Water Board) Staff listed above or (530) 224-4845 and ask to speak with the Water Quality Certification Unit Supervisor.

Table of Contents

I. Order 3
II. Public Notice 3
III. Project Purpose 3
IV. Project Description 3
V. Project Location 3
VI. Project Impact and Receiving Waters Information 3
VII. Description of Direct Impacts to Waters of the State 4
VIII. Description of Indirect Impacts to Waters of the State – Not Applicable 4
IX. Avoidance and Minimization 4
X. Compensatory Mitigation 4
XI. California Environmental Quality Act (CEQA) 4
XII. Petitions for Reconsideration 4
XIII. Fees Received 5
XIV. Conditions 5
XV. Water Quality Certification 15

Attachment A Project Map
Attachment B Receiving Waters, Impact, and Mitigation Information
Attachment C CEQA Findings of Facts
Attachment D Report and Notification Requirements
Attachment E Signatory Requirements
Attachment F Certification Deviation Procedures

I. Order

This Clean Water Act (CWA) section 401 Water Quality Certification action and Order (Order) is issued at the request of City of Placerville (herein after Permittee) for the Project. This Order is for the purpose described in application submitted by the Permittee. The application was received on 9 March 2017. The application was deemed complete on 16 May 2017.

II. Public Notice

The Central Valley Water Board provided public notice of the application pursuant to California Code of Regulations, title 23, section 3858 from 17 March 2017 to 7 April 2017. The Central Valley Water Board did not receive any comments during the comment period. Public notice regarding the Environmental Impact Report is described in Attachment C, CEQA Findings of Fact.

III. Project Purpose

The project proposes to improve the interchange on an east to west corridor located on US Highway 50, just west of Placerville in El Dorado County, California; proposed to reduce congestion; improve connectivity; and increase transportation safety.

IV. Project Description

The proposed project includes an eastbound direct access from US Route 50 onto Ray Lawyer Drive by constructing an eastbound auxiliary lane between the existing eastbound access ramp at Forni Road in addition to a proposed eastbound off-ramp at Ray Lawyer Drive. Additional work includes construction of a retaining wall, resurfacing of mainline US Route 50 Interchange and construction of a park and ride facility to be located between the proposed off-ramp and Forni Road.

V. Project Location

Address: South of US 50, between Ray Lawyer Drive and the lumber yard on Forni Road.

County: El Dorado

Nearest City: Placerville

Section 12-14, Township 10 North, Range 10 East, MDB&M.

Latitude: 38.724°N and Longitude: -120.828°W

Maps showing the Project location are found in Attachment A of this Order.

VI. Project Impact and Receiving Waters Information

The Project is located within the jurisdiction of the Central Valley Water Board. Receiving waters and groundwater potentially impacted by this Project are protected in accordance with the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins, Fourth Edition, revised April 2016 (Basin Plan). The plan for the region and other plans and policies may be accessed online at: http://www.waterboards.ca.gov/plans_policies/. The Basin Plan includes water quality standards, which consist of existing and potential beneficial uses of waters of the state, water quality objectives to protect those uses, and the state and federal antidegradation policies.

Project impact and receiving waters information can be found in Attachment B. Table 1 of Attachment B shows the receiving waters and beneficial uses of waters of the state impacted by the Project. Individual impact location and quantity is shown in Table 2 of Attachment B.

VII. Description of Direct Impacts to Waters of the State

Construction of the off ramp to Ray Lawyer Drive from eastbound US 50, as well as the construction of the park and ride facility will fill in approximately 0.61 acres of wetlands. Approximately 13,610 cubic yards of soil will be used to fill the wetlands with an additional 574 cubic yards of material comprised of 14 cubic yards of concrete, 48 cubic yards concrete pipe,
178 cubic yards asphalt, and 334 cubic yards Class 2 aggregate base.

Total Project fill/excavation quantities for all impacts are summarized in Table 1. Permanent impacts are categorized as those resulting in a physical loss in area and also those degrading ecological condition only.

Table 1: Total Project Fill/Excavation Quantity

Aquatic Resource Type	Temporary Impact[1]			Permanent Impact					
				Physical Loss of Area			Degradation of Ecological Condition Only		
	Acres	CY[2]	LF[2]	Acres	CY	LF	Acres	CY	LF
Stream Channel									
Wetland				0.61	14,184	490			

VIII. Description of Indirect Impacts to Waters of the State – Not Applicable

IX. Avoidance and Minimization

The Project has been designed to avoid and minimize impacts to waters of the state to the maximum extent possible. The project shall comply with all County and State requirements established to reduce construction related erosion, sediment discharge, and discharge of other construction-related wastes and pollutants to the maximum extent possible.

X. Compensatory Mitigation

The Permittee has agreed to provide compensatory mitigation for direct impacts described in section VII for permanent impacts.

XI. California Environmental Quality Act (CEQA)

On 22 November 2005, the City of Placerville, as lead agency, certified an Environmenal Impact Report (EIR) (State Clearinghouse (SCH) No. 2003122137) for the Project and filed a Notice of Determination (NOD) at the SCH on 23 November 2005. Pursuant to CEQA, the Central Valley Water Board has made Findings of Facts (Findings) which support the issuance of this Order and are included in Attachment C.

XII. Petitions for Reconsideration

[1] Includes only temporary direct impacts to waters of the state and does not include upland areas of temporary disturbance which could result in a discharge to waters of the state.

[2] Cubic Yards (CY); Linear Feet (LF)

Any person aggrieved by this action may petition the State Water Resources Control Board to reconsider this Order in accordance with California Code of Regulations, title 23, section 3867. A petition for reconsideration must be submitted in writing and received within 30 calendar days of the issuance of this Order.

XIII. Fees Received

An application fee of $1,440.00 was received on 9 March 2017. The fee amount was determined as required by California Code of Regulations, title 23, sections 3833(b)(3) and 2200(a)(3), and was calculated as category B - Dredging Discharges (fee code 86) with the dredge and fill fee calculator.

An additional fee of $4,786.00 based on total Project impacts was received on 8 June 2017.

XIV. Conditions

The Central Valley Water Board has independently reviewed the record of the Project to analyze impacts to water quality and designated beneficial uses within the watershed of the Project. In accordance with this Order, the Permittee may proceed with the Project under the following terms and conditions:

A. Authorization

Impacts to waters of the state shall not exceed quantities shown in Table 1.

B. Reporting and Notification Requirements

The following section details the reporting and notification types and timing of submittals. Requirements for the content of these reporting and notification types are detailed in Attachment D, including specifications for photo and map documentation during the Project. Written reports and notifications must be submitted using the Reporting and Notification Cover Sheet located in Attachment D, which must be signed by the Permittee or an authorized representative.

The Permittee must submit all notifications, submissions, materials, data, correspondence, and reports in a searchable Portable Document Format (PDF). Documents less than 50 MB must be emailed to: centralvalleyredding@waterboards.ca.gov.

In the subject line of the email, include the Central Valley Water Board Contact, Project name, and WDID. Documents that are 50 MB or larger must be transferred to a disk and mailed to the Central Valley Water Board Contact.

1. Project Reporting

a. **Annual Reporting:** The Permittee shall submit an Annual Report each year on the 1st day of the month one year after the effective date of the Certification. Annual reporting shall continue until a Notice of Project Complete Letter is issued to the Permittee.

2. Project Status Notifications

a. **Commencement of Construction:** The Permittee shall submit a Commencement of Construction Report at least seven (7) days prior to start of initial ground disturbance activities and corresponding Waste Discharge Identification Number (WDID No.) issued under the NPDES General Permit for Storm Water Discharges

Associated with Construction and Land Disturbance Activities (Order No. 20009-0009-DWQ; NPDES No. CAS000002).

b. **Request for Notice of Completion of Discharges Letter:** The Permittee shall submit a Request for Notice of Completion of Discharges Letter following completion of active Project construction activities, including any required restoration and permittee-responsible mitigation. This request shall be submitted to the Central Valley Water Board staff within thirty (30) days following completion of all Project construction activities. Upon acceptance of the request, Central Valley Water Board staff shall issue a Notice of Completion of Discharges Letter to the Permittee which will end the active discharge period and associated annual fees.

c. **Request for Notice of Project Complete Letter:** The Permittee shall submit a Request for Notice of Project Complete Letter when construction and/or any post-construction monitoring is complete,[3] and no further Project activities will occur. This request shall be submitted to Central Valley Water Board staff within thirty (30) days following completion of all Project activities. Upon approval of the request, the Central Valley Water Board staff shall issue a Notice of Project Complete Letter to the Permittee which will end the post discharge monitoring period and associated annual fees.

3. **Conditional Notifications and Reports:** The following notifications and reports are required as appropriate.

a. **Accidental Discharges of Hazardous Materials**[4]

Following an accidental discharge of a reportable quantity of a hazardous material, sewage, or an unknown material, the following applies (Wat. Code, § 13271):

i. As soon as (A) Permittee has knowledge of the discharge or noncompliance, (B) notification is possible, and (C) notification can be provided without substantially impeding cleanup or other emergency measures then:

- first call – 911 (to notify local response agency)
- then call – Office of Emergency Services (OES) State Warning Center at:(800) 852-7550 or (916) 845-8911
- Lastly follow the required OES procedures as set forth in: http://www.caloes.ca.gov/FireRescueSite/Documents/CalOES-Spill_Booklet_Feb2014_FINAL_BW_Acc.pdf

ii. Following notification to OES, the Permittee shall notify Central Valley Water Board, as soon as practicable (ideally within 24 hours). Notification may be delivered via written notice, email, or other verifiable means in accordance with section XIV.B.

[3] Completion of post-construction monitoring shall be determined by Central Valley Water Board staff and shall be contingent on successful attainment of restoration and mitigation performance criteria.

[4] "Hazardous material" means any material that, because of its quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment. "Hazardous materials" include, but are not limited to, hazardous substances, hazardous waste, and any material that a handler or the administering agency has a reasonable basis for believing that it would be injurious to the health and safety of persons or harmful to the environment if released into the workplace or the environment. (Health & Saf. Code, § 25501.)

iii. Within five (5) working days of notification to the Central Valley Water Board, the Permittee must submit an Accidental Discharge of Hazardous Material Report.

b. **Violation of Compliance with Water Quality Standards:** The Permittee shall notify the Central Valley Water Board of any event causing a violation of compliance with water quality standards. Notification may be delivered via written notice, email, or other verifiable means in accordance with section XIV.B.

i. This notification must be followed within three (3) working days by submission of a Violation of Compliance with Water Quality Standards Report.

c. **In-Water Work and Diversions**

i. The Permittee shall notify the Central Valley Water Board at least forty-eight (48) hours prior to initiating work in water or stream diversions. Notification may be delivered via written notice, email, or other verifiable means in accordance with section XIV.B.

ii. Within three (3) working days following completion of work in water or stream diversions, an In-Water Work/Diversions Water Quality Monitoring Report must be submitted to Central Valley Water Board staff.

d. **Modifications to Project**

Project modifications may require an amendment of this Order. The Permittee shall give advance notice to Central Valley Water Board staff if Project implementation as described in the application materials is altered in any way or by the imposition of subsequent permit conditions by any local, state or federal regulatory authority by submitting a Modifications to Project Report. The Permittee shall inform Central Valley Water Board staff of any Project modifications that will interfere with the Permittee's compliance with this Order. Notification may be made in accordance with conditions in the certification deviation section of this Order.

e. **Transfer of Property Ownership:** This Order is not transferable in its entirety or in part to any person or organization except after notice to the Central Valley Water Board in accordance with the following terms:

i. The Permittee must notify the Central Valley Water Board of any change in ownership or interest in ownership of the Project area by submitting a Transfer of Property Ownership Report. The Permittee and purchaser must sign and date the notification and provide such notification to the Central Valley Water Board at least 10 days prior to the transfer of ownership. The purchaser must also submit a written request to the Central Valley Water Board to be named as the permittee in a revised order.

ii. Until such time as this Order has been modified to name the purchaser as the permittee, the Permittee shall continue to be responsible for all requirements set forth in this Order.

f. **Transfer of Long-Term BMP Maintenance:** If maintenance responsibility for post-construction BMPs is legally transferred, the Permittee must submit to the Central Valley Water Board a copy of such documentation and must provide the transferee with a copy of a long-term BMP maintenance plan that complies with manufacturer or designer specifications. The Permittee must provide such notification to the

Central Valley Water Board with a Transfer of Long-Term BMP Maintenance Report at least 10 days prior to the transfer of BMP maintenance responsibility.

C. Water Quality Monitoring

1. **General:** Continuous visual surface water monitoring shall be conducted during active construction periods to detect accidental discharge of construction related pollutants (e.g. oil and grease, turbidity plume, or uncured concrete). The Permittee shall perform surface water sampling:
   a. when performing any in-water work;
   b. during the entire duration of temporary surface water diversions;
   c. in the event that the Project activities result in any materials reaching surface waters; or
   d. when any activities result in the creation of a visible plume in surface waters.
2. **Accidental Discharges/Noncompliance:** Upon occurrence of an accidental discharge of hazardous materials or a violation of compliance with a water quality standard, Central Valley Water Board staff may require water quality monitoring based on the discharge constituents and/or related water quality objectives and beneficial uses.
3. **Post-Construction:** Visually inspect the Project site during the rainy season for one year to ensure excessive erosion, stream instability, or other water quality pollution is not occurring in or downstream of the Project site. If water quality pollution is occurring, contact the Central Valley Water Board staff member overseeing the Project within three (3) working days. The Central Valley Water Board may require the submission of a Violation of Compliance with Water Quality Standards Report. Additional permits may be required to carry out any necessary site remediation.

D. Standard

1. This Order is subject to modification or revocation upon administrative or judicial review, including review and amendment pursuant to Water Code section 13330 and California Code of Regulations, title 23, chapter 28, Article 6 commencing with sections 3867-3869. Additionally, the Central Valley Water Board reserves the right to suspend, cancel, or modify and reissue this Order, after providing notice to the Permittee, if the Central Valley Water Board determines that: the Project fails to comply with any of the conditions of this Order; or, when necessary to implement any new or revised water quality standards and implementation plans adopted or approved pursuant to the Porter-Cologne Water Quality Control Act (Wat. Code, § 13000 et seq.) or federal Clean Water Act section 303 (33 U.S.C. § 1313). For purposes of Clean Water Act section 401(d), the condition constitutes a limitation necessary to assure compliance with water quality standards and appropriate requirements of state law.
2. This Order is not intended and shall not be construed to apply to any activity involving a hydroelectric facility requiring a Federal Energy Regulatory Commission (FERC) license or an amendment to a FERC license, unless the pertinent certification application was filed pursuant to subsection 3855(b) of chapter 28, title 23 of the California Code of Regulations, and that application specifically identified that a FERC license or amendment to a FERC license for a hydroelectric facility was being sought.

3. This Order is conditioned upon total payment of any fee required under title 23 of the California Code of Regulations and owed by the Permittee.

4. In the event of any violation or threatened violation of the conditions of this Order, the violation or threatened violation shall be subject to any remedies, penalties, process, or sanctions as provided for under state and federal law. For purposes of Clean Water Act, section 401(d), the applicability of any state law authorizing remedies, penalties, processes, or sanctions for the violation or threatened violation constitutes a limitation necessary to assure compliance with the water quality standards and other pertinent requirements incorporated into this Order.

E. General Compliance

1. Failure to comply with any condition of this Order shall constitute a violation of the Porter-Cologne Water Quality Control Act and the Clean Water Act. The Permittee and/or discharger may then be subject to administrative and/or civil liability pursuant to Water Code section 13385.

2. Permitted actions must not cause a violation of any applicable water quality standards, including impairment of designated beneficial uses for receiving waters as adopted in the Basin Plans by any applicable Central Valley Water Board or any applicable State Water Board (collectively Water Boards) water quality control plan or policy. The source of any such discharge must be eliminated as soon as practicable.

3. In response to a suspected violation of any condition of this Order, the Central Valley Water Board may require the holder of this Order to furnish, under penalty of perjury, any technical or monitoring reports the Water Boards deem appropriate, provided that the burden, including costs, of the reports shall bear a reasonable relationship to the need for the reports and the benefits to be obtained from the reports. The additional monitoring requirements ensure that permitted discharges and activities comport with any applicable effluent limitations, water quality standards, and/or other appropriate requirement of state law.

4. The Permittee must, at all times, fully comply with engineering plans, specifications, and technical reports submitted to support this Order; and all subsequent submittals required as part of this Order. The conditions within this Order and Attachments supersede conflicting provisions within Permittee submittals.

5. This Order and all of its conditions contained herein continue to have full force and effect regardless of the expiration or revocation of any federal license or permit issued for the Project. For purposes of Clean Water Act, section 401(d), this condition constitutes a limitation necessary to assure compliance with the water quality standards and other pertinent requirements of state law.

6. The Permittee shall adhere to all requirements in the mitigation monitoring and reporting program (MMRP) included in the Final Environmental Impact Report which is incorporated herein by reference and any additional measures as outlined in Attachment C, CEQA Findings of Fact.

7. **Construction General Permit Requirement.** The Permittee shall obtain coverage under the National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities Order No. 2009-0009-DWQ, as amended, for discharges to surface waters comprised of storm water associated with construction activity, including, but not limited to, demolition, clearing, grading, excavation, and other land disturbance

activities of one or more acres, or where projects disturb less than one acre but are part of a larger common plan of development that in total disturbs one or more acres.

F. Administrative

1. Signatory requirements for all document submittals required by this Order are presented in Attachment E of this Order.
2. This Order does not authorize any act which results in the taking of a threatened, endangered or candidate species or any act, which is now prohibited, or becomes prohibited in the future, under either the California Endangered Species Act (Fish & G. Code, §§ 2050-2097) or the federal Endangered Species Act (16 U.S.C. §§ 1531-1544). If a "take" will result from any act authorized under this Order held by the Permittee, the Permittee must obtain authorization for the take prior to any construction or operation of the portion of the Project that may result in a take. The Permittee is responsible for meeting all requirements of the applicable endangered species act for the Project authorized under this Order.
3. The Permittee shall grant Central Valley Water Board staff, or an authorized representative (including an authorized contractor acting as a Water Board representative), upon presentation of credentials and other documents as may be required by law, permission to:
   a. Enter upon the Project or compensatory mitigation site(s) premises where a regulated facility or activity is located or conducted, or where records are kept.
   b. Have access to and copy any records that are kept and are relevant to the Project or the requirements of this Order.
   c. Inspect any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Order.
   d. Sample or monitor for the purposes of assuring Order compliance.
4. A copy of this Order shall be provided to any consultants, contractors, and subcontractors working on the Project. Copies of this Order shall remain at the Project site for the duration of this Order. The Permittee shall be responsible for work conducted by its consultants, contractors, and any subcontractors.
5. A copy of this Order must be available at the Project site(s) during construction for review by site personnel and agencies. All personnel performing work on the Project shall be familiar with the content of this Order and its posted location at the Project site.
6. Lake and Streambed Alteration Agreement – The Permittee shall submit a signed copy of the Department of Fish and Wildlife's Lake and Streambed Alteration Agreement to the Central Valley Water Board immediately upon execution and prior to any discharge to waters of the state.

G. Construction

1. Dewatering – Not Applicable

2. Directional Drilling

a. If installation or relocation of dry and/or wet utility lines is anticipated, the Applicant shall develop and submit Dry and Wet Utility Work Plan to the Central Valley Water

Board Contact indicated in this Certification prior to commencement of dry and wet utility construction. The Dry and Wet Utility Plan must cover all phases of the certified project that will impact waters of the United States and waters of the state, and shall be consistent with this Certification.

The Dry and Wet Utility Plan shall include the types of dry and wet utilities to be removed and installed, method and duration of activities, structure configuration, construction materials, equipment, erosion and sediment controls, and a map or drawing indicating the location(s) of dry and wet utility work, as related to any water of the United States and waters of the state, in the Project area.

Should the methodology for dry and wet utility work include directional drilling, the Dry and Wet Utility Plan shall incorporate a Directional Drilling Plan to address potential frac-outs. The Directional Drilling Plan shall include, but not be limited to, a description of directional drilling activities, dry and wet utility routes, crossing locations and methods, and other geotechnical considerations (i.e., surficial overburden deposits, clays and shales, bedrock formations, hydrogeology), and a reporting procedure should any level of discharge from a frac-out occur, regardless of the discharge size.

The Directional Drilling Plan must be stamped by a California Registered Geologist or Engineer.

3. **Dredging – Not Applicable**

4. **Fugitive Dust – Not Applicable**

5. **Good Site Management "Housekeeping"**

   a. The Permittee shall develop and maintain onsite a project-specific Spill Prevention, Containment and Cleanup Plan outlining the practices to prevent, minimize, and/or clean up potential spills during construction of the Project. The Plan must detail the Project elements, construction equipment types and location, access and staging and construction sequence. The Plan must be made available to the Central Valley Water Board staff upon request.

   b. Refueling of equipment within the floodplain or within 300 feet of the waterway is prohibited. If critical equipment must be refueled within 300 feet of the waterway, spill prevention and countermeasures must be implemented to avoid spills. Refueling areas shall be provided with secondary containment including drip pans and/or placement of absorbent material. No hazardous materials, pesticides, fuels, lubricants, oils, hydraulic fluids, or other construction-related potentially hazardous substances should be stored within a floodplain or within 300 feet of a waterway. The Permittee must perform frequent inspections of construction equipment prior to utilizing it near surface waters to ensure leaks from the equipment are not occurring and are not a threat to water quality.

   c. All materials resulting from the Project shall be removed from the site and disposed of properly.

6. **Hazardous Materials**

   a. The discharge of petroleum products, any construction materials, hazardous materials, pesticides, fuels, lubricants, oils, hydraulic fluids, raw cement, concrete or the washing thereof, asphalt, paint, coating material, drilling fluids, or other

substances potentially hazardous to fish and wildlife resulting from or disturbed by project-related activities is prohibited and shall be prevented from contaminating the soil and/or entering waters of the state. In the event of a prohibited discharge, the Permittee shall comply with notification requirements in sections XIV.B.3.a and XIV.B.3.b.

b. Concrete must be completely cured before coming into contact with waters of the United States and waters of the state. Surface water that contacts wet concrete must be pumped out and disposed of at an appropriate off-site commercial facility, which is authorized to accept concrete wastes.

7. Invasive Species and Soil Borne Pathogens – Not Applicable

8. In-Water Work

a. In-water work shall occur during periods of no precipitation.

9. Post-Construction Storm Water Management

a. The Permittee must minimize the short and long-term impacts on receiving water quality from the Project by implementing the following post-construction storm water management practices and as required by local agency permitting the Project, as appropriate:

i. Minimize the amount of impervious surface;

ii. Provide treatment BMPs to reduce pollutants in runoff;

iii. Ensure existing waters of the state (e.g., wetlands, vernal pools, or creeks) are not used as pollutant source controls and/or treatment controls;

iv. Preserve and where possible, create or restore areas that provide important water quality benefits, such as riparian corridors, wetlands, and buffer zones;

v. Limit disturbances of natural water bodies and natural drainage systems caused by development (including development of roads, highways, and bridges);

vi. Use existing drainage master plans or studies to ensure incorporation of structural and non-structural BMPs to mitigate the projected pollutant load increases in surface water runoff;

vii. Identify and avoid development in areas that are particularly susceptible to erosion and sediment loss, or establish development guidance that protects areas from erosion/ sediment loss; and

viii. Control post-development peak storm water run-off discharge rates and velocities to prevent or reduce downstream erosion, and to protect stream habitat.

b. The Permittee shall ensure that all development within the Project provides verification of maintenance provisions for post-construction structural and treatment control BMPs as required by the local agency permitting the Project. Verification shall include one or more of the following, as applicable:

i. The developer's signed statement accepting responsibility for maintenance until the maintenance responsibility is legally transferred to another party; or

ii. Written conditions in the sales or lease agreement that require the recipient to assume responsibility for maintenance; or

iii. Written text in Project conditions, covenants and restrictions for residential properties assigning maintenance responsibilities to a home owner's association, or other appropriate group, for maintenance of structural and treatment control BMPs; or

iv. Any other legally enforceable agreement that assigns responsibility for storm water BMPs maintenance.

10. Roads

a. The Permittee shall develop and maintain a Transportation Management Plan (Plan) that includes soil stabilization practices, sediment control practices, tracking control practices, and wind erosion control practices. In addition, the Plan must include non-storm water controls, waste management and material pollution controls. The Plan must be developed prior to initiation of any activities that modify existing storm water drainage facilities. The Plan must be consistent with this Order and must be made available to the Central Valley Water Board staff upon request.

11. Sediment Control

a. Except for activities permitted by the United States Army Corps of Engineers under Section 404 of the Clean Water Act and/or Section 10 of the Rivers and Harbors Act, soil, silt, or other organic materials shall not be placed where such materials could pass into surface water or surface water drainage courses.

b. Silt fencing, straw wattles, or other effective management practices must be used along the construction zone to minimize soil or sediment along the embankments from migrating into the waters of the state through the entire duration of the Project.

c. The use of netting material (e.g., monofilament-based erosion blankets) that could trap aquatic dependent wildlife is prohibited within the Project area.

12. Special Status Species – Federally-threatened Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*), California Red Legged Frog (*Rena drayttonii*). California Department of Fish & Wildlife (CDFW) species of special concern western pond turtle (*Actinemys marmorata marmorata*) and Foothill yellow-legged frog (*Rana boylii*).

13. Stabilization/Erosion Control

a. All areas disturbed by Project activities shall be protected from washout and erosion.

b. Hydroseeding shall be performed with California native seed mix.

14. Storm Water

a. During the construction phase, the Permittee must employ strategies to minimize erosion and the introduction of pollutants into storm water runoff. These strategies must include the following:

i. The Storm Water Pollution Prevention Plan must be prepared during the Project planning and design phases and implemented, as appropriate, before construction; and

ii. An effective combination of erosion and sediment control Best Management Practices (BMPs) must be implemented and adequately working prior to the rainy season and during all phases of construction.

H. Site Specific – Not Applicable

I. Total Maximum Daily Load (TMDL) – Not Applicable

J. Mitigation for Temporary Impacts

1. The Permittee shall restore all areas of temporary impacts, including Project site upland areas, which could result in a discharge to waters of the state to pre-construction contours and conditions upon completion of construction activities.
2. The Central Valley Water Board may extend the monitoring period beyond requirements of the restoration plan upon a determination by Executive Officer that the performance standards have not been met or are not likely to be met within the monitoring period.
3. If restoration of temporary impacts to waters of the state is not completed within 90 days of the impacts, compensatory mitigation may be required to offset temporal loss of waters of the state.

K. Compensatory Mitigation for Permanent Impacts[5]

1. **Compensatory Mitigation Plan** Prior to commencing construction, the Permittee shall provide evidence of all off-site compensatory mitigation to the Central Valley Water Board. Evidence of on-site compensatory mitigation shall be provided with the Notice of Completion. At a minimum, compensatory mitigation must achieve a ratio of 1:1 for permanent impacts. Evidence of mitigation includes, but is not limited to, the purchase of mitigation credits, payment of in-lieu fees, recordation of a perpetual conservation easement grant, any combination as required by the United States Army Corps of Engineers.

L. Certification Deviation

1. Minor modifications of Project locations or predicted impacts may be necessary as a result of unforeseen field conditions, necessary engineering re-design, construction concerns, or similar reasons. Some of these prospective Project modifications may have impacts on water quality. Some modifications of Project locations or predicted impacts may qualify as Certification Deviations as set forth in Attachment F. For purposes of this Certification, a "Certification Deviation" is a Project locational or impact modification that does not require an immediate amendment of the Order, because the Central Valley Water Board has determined that any potential water quality impacts that may result from the change are sufficiently addressed by the Order conditions and the CEQA Findings. After the termination of construction, this Order will

[5] Compensatory Mitigation is for permanent physical loss and permanent ecological degradation of a water of the state.

be formally amended to reflect all authorized Certification Deviations and any resulting adjustments to the amount of water resource impacts and required compensatory mitigation amounts.

2. A Project modification shall not be granted a Certification Deviation if it warrants or necessitates changes that are not addressed by the Order conditions or the CEQA environmental document such that the Project impacts are not addressed in the Project's environmental document or the conditions of this Order. In this case a supplemental environmental review and different Order will be required.

XV. Water Quality Certification

I hereby issue the Order for the Western Placerville Interchanges Project – Phase 2, WDID No. 5A09CR00171 certifying that as long as all of the conditions listed in this Order are met, any discharge from the referenced Project will comply with the applicable provisions of Clean Water Act sections 301 (Effluent Limitations), 302 (Water Quality Related Effluent Limitations), 303 (Water Quality Standards and Implementation Plans), 306 (National Standards of Performance), and 307 (Toxic and Pretreatment Effluent Standards).This discharge is also regulated pursuant to State Water Board Water Quality Order No. 2003-0017-DWQ which authorizes this Order to serve as Waste Discharge Requirements pursuant to the Porter-Cologne Water Quality Control Act (Wat. Code, § 13000 et seq.).

Except insofar as may be modified by any preceding conditions, all Order actions are contingent on: (a) the discharge being limited and all proposed mitigation being completed in strict compliance with the conditions of this Order and the attachments to this Order; and, (b) compliance with all applicable requirements of Statewide Water Quality Control Plans and Policies, the Regional Water Boards' Water Quality Control Plans and Policies.

for

Pamela C. Creedon
Executive Officer
Central Valley Regional Water Quality Control Board

6/13/2017
Date

Attachment A	Project Map
Attachment B	Receiving Waters, Impact, and Mitigation Information
Attachment C	CEQA Findings of Facts
Attachment D	Report and Notification Requirements
Attachment E	Signatory Requirements
Attachment F	Certification Deviation Procedures

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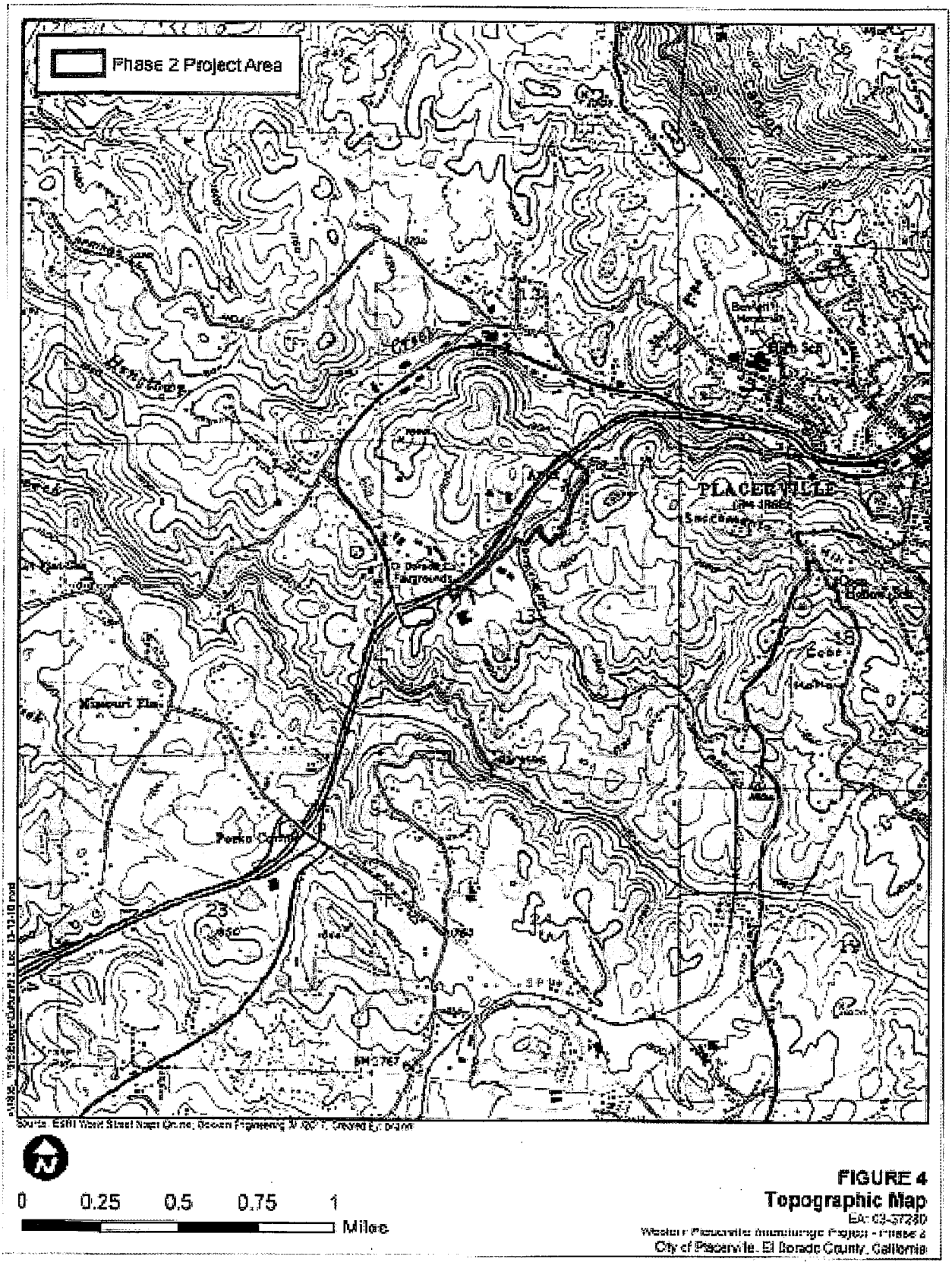

FIGURE 4
Topographic Map
EA: 03-37230
Western Placerville Interchange Project - Phase 2
City of Placerville, El Dorado County, California

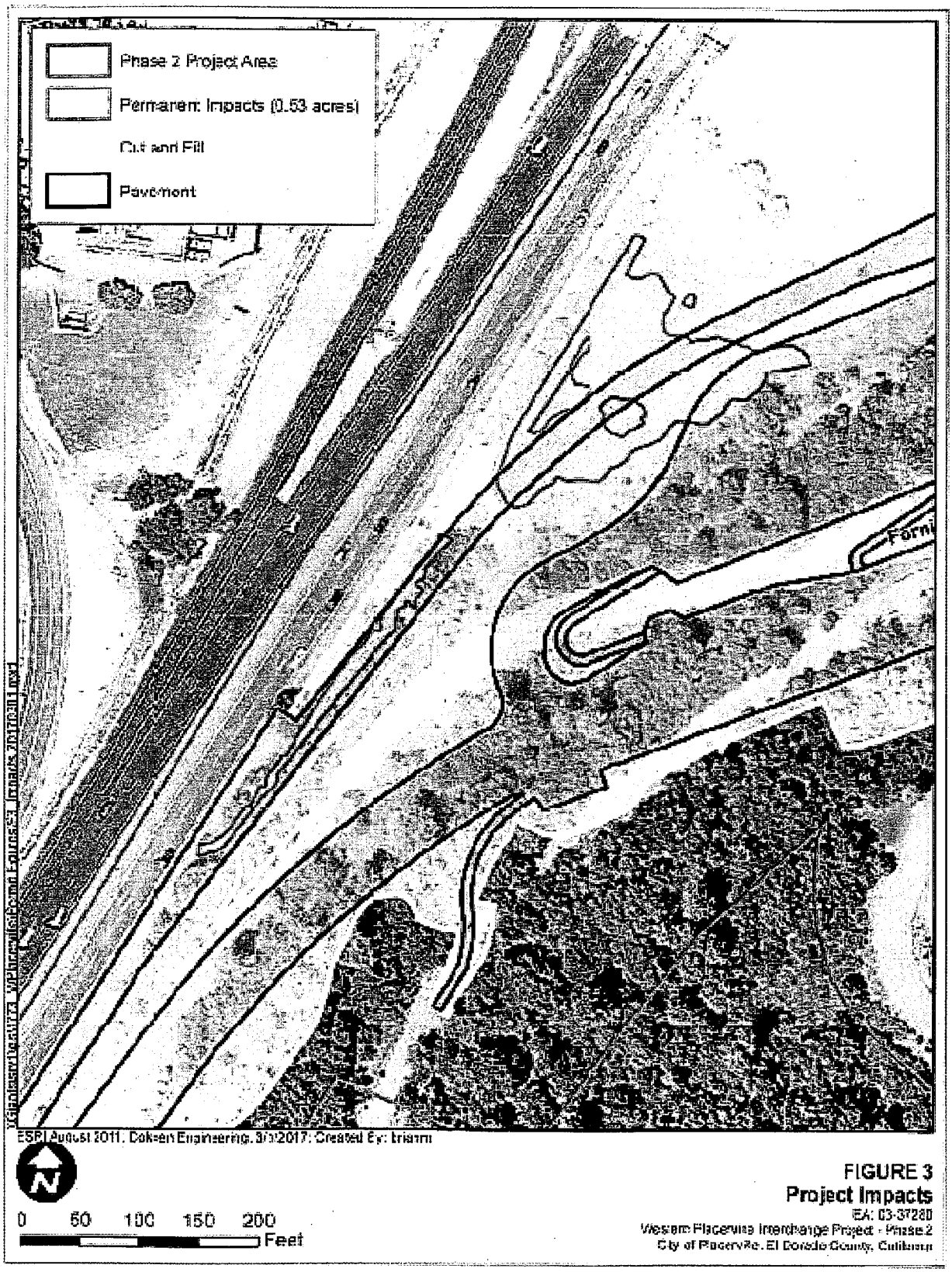

FIGURE 3
Project Impacts
EA: 03-37280
Western Placerville Interchange Project - Phase 2
City of Placerville, El Dorado County, California

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Receiving Waters

The following table shows the receiving waters associated with each impact and Permittee responsible mitigation site.

Table 1: Receiving Water(s) Information

Site ID	Waterbody Name	Impacted Aquatic Resource Type	Water Board Hydrologic Units	Receiving Waters	Receiving Waters Beneficial Uses	303d Listing Pollutant	CRAM AA ID[6]
Wetland-1	Unnamed Wetland	Wetland	514.3 American River Hydrologic Unit	Hangtown Creek	MUN, POW, REC-1, REC-2, WARM, COLD, SPWN, and WILD	N/A	N/A

Individual Direct Impact Locations

The following table shows individual impact locations.

Table 2: Individual Direct Impact Information

Site ID	Latitude	Longitude	Indirect Impact Requiring Mitigation		Direct Impact Duration	Dredge			Fill/Excavation		
			Yes	No		Acres	Cubic Yards	Linear Feet	Acres	Cubic Yards	Linear Feet
Wetland-1	38.724°	-120.828°	☐	☒	Temporary						
					Permanent				0.61	14,184	490

[6] California Rapid Assessment Method (CRAM) score of impacted sites provided by the Permittee.

Compensatory Mitigation Information

The following table(s) show individual compensatory mitigation information and locations.

In-Lieu Fee Compensatory Mitigation Information

Table 3 In-Lieu Fee Program

In-Lieu Fee Program	Name:	National Fish and Wildlife Foundation/American River fund watershed
	Website:	NFWF.org
Contact Information	Name:	
	Phone:	
	Email:	
Mitigation Location	County:	El Dorado County
	Latitude:	
	Longitude:	

Aquatic Resource Credit Type	Mitigation Quantity		
	Acres	Linear Feet	Number of Credits Purchased

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A. Environmental Review

On 22 November 2005, the City of Placerville, as lead agency, certified a Final Environmental Impact Report (FEIR)) (State Clearinghouse (SCH) No. 2003122137) for the Project and filed a Notice of Determination (NOD) at the SCH on 23 November 2005. The Central Valley Water Board is a responsible agency under CEQA (Pub. Resources Code, § 21069) and in making its determinations and findings, must presume that City of Placerville's certified environmental document comports with the requirements of CEQA and is valid. (Pub. Resources Code, § 21167.3.) The Central Valley Water Board has reviewed and considered the environmental document and finds that the environmental document prepared by City of Placerville addresses the Project's water resource impacts. (Cal. Code Regs., tit. 14, § 15096, subd. (f).) The environmental document includes the mitigation monitoring and reporting program (MMRP) developed by City of Placerville for all mitigation measures that have been adopted for the Project to reduce potential significant impacts. (Pub. Resources Code, § 21081.6, subd. (a)(1); Cal. Code Regs., tit. 14, § 15091, subd. (d).)

B. Incorporation by Reference

Pursuant to CEQA, these Findings of Facts (Findings) support the issuance of this Order based on the Project FEIR, the application for this Order, and other supplemental documentation.

The Program Environmental Impact Report (EIR), which includes analyses of broad impacts and serves as a first tier document for the FEIR, is available at the City of Placerville Public Works Department, 3101 Center Street, Placerville, CA 95667.

All CEQA project impacts, including those discussed in subsection C below, are analyzed in detail in the Project FEIR which is incorporated herein by reference. The Project FEIR is available at the City of Placerville Public Works Department, 3101 Center Street, Placerville, CA 95667.

Requirements under the purview of the Central Valley Water Board in the MMRP are incorporated herein by reference.

The Permittee's application for this Order, including all supplemental information provided, is incorporated herein by reference.

C. Findings

The FEIR describes the potential significant environmental effects to water resources. Having considered the whole of the record, the Central Valley Water Board makes the following findings:

(1) Findings regarding impacts that will be avoided or mitigated to a less than significant level. (Pub. Resources Code, § 21081, subd. (a)(1); Cal. Code Regs., tit. 14, § 15091, subd. (a)(1).)

Changes or alterations have been required in, or incorporated into, the Project which avoid or substantially lessen the significant environmental effect as identified in the FEIR.

a.i. Potential Significant Impact:

Impact 3.7-1. Ground disturbance and the use of hazardous or toxic materials during construction would potentially result in increased amounts of sediment or other pollutants in storm water runoff from construction areas.

a.ii. Facts in Support of Finding:

Mitigation Measure 3.7-1. The City shall develop and implement a SWPPP for the project which identifies specific Best Management Practices for controlling storm water runoff to be implemented during construction.

b.i. Potential Significant Impact:

Impact 3.7-2. The project would increase the amounts of impermeable surfaces within the project area that would potentially increase storm water runoff.
Alternative A: 3.38 ha (8.35 ac)
Alternative B: 3.74 ha (9.23 ac)
Alternative C: 3.71 ha (9.17 ac)
Alternative D: 4.07 ha (10.05 ac)

b.ii. Facts in Support of Finding:

Mitigation Measure 3.7-2. The City shall develop and implement a Stormwater Data Report which identifies permanent storm water runoff treatment BMPs to be implemented for the project.

c.i. Potential Significant Impact:

Impact 3.10-1. The project could result in the loss of wetlands or waters regulated by the Corps under Section 404 of the Clean Water Act and the CDFG under Section 1600 of the California Fish and Game Code.

c.ii. Facts in Support of Finding:

Mitigation Measure 3.10-1. The City will obtain required permits, and purchase wetlands credits from an approved wetland mitigation bank, as necessary.

(2) Findings regarding mitigation measures which are the responsibility of another agency. (Pub. Resources Code, § 21081, subd. (a)(2); Cal. Code Regs., tit. 14, §15091, subd.(a)(2).)

There are changes or alterations that are within the responsibility and jurisdiction of another public agency and not the jurisdiction of the Central Valley *Water Board. Such changes have been adopted by such other agency or can and should be adopted by such other agency.*

D. Determination

The Central Valley Water Board has determined that the Project, when implemented in accordance with the MMRP and the conditions in this Order, will not result in any significant adverse water quality or supply impacts. (Cal. Code Regs., tit. 14, § 15096, subd. (h).)

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Copies of this Form

In order to identify your project, it is necessary to include a copy of the Project specific Cover Sheet below with your report: please retain for your records. If you need to obtain a copy of the Cover Sheet you may download a copy of this Order as follows:

1. Go to: http://www.waterboards.ca.gov/water_issues/programs/cwa401/certifications.shtml
2. Find your Order in the table based on Applicant, Date, and Subject headers.

Report Submittal Instructions

1. Check the box on the Report and Notification Cover Sheet next to the report or notification you are submitting.
   - **Part A (Annual Report):** This report will be submitted annually from the anniversary of Project effective date until a Notice of Project Complete Letter is issued.
   - **Part B (Project Status Notifications):** Used to notify the Central Valley Water Board of the status of the Project schedule that may affect Project billing.
   - **Part C (Conditional Notifications and Reports):** Required on a case by case basis for accidental discharges of hazardous materials, violation of compliance with water quality standards, notification of in-water work, or other reports.
2. Sign the Report and Notification Cover Sheet and attach all information requested for the Report Type.
3. **Electronic Report Submittal Instructions:**
   - Submit signed Report and Notification Cover Sheet and required information via email to: centralvalleyredding@waterboards.ca.gov and cc: Daniel.Warner@waterboards.ca.gov
   - Include in the subject line of the email:
     Subject: ATTN: Dan Warner; Reg. Measure ID: 412181_Report

Definition of Reporting Terms

1. **Active Discharge Period:** The active discharge period begins with the effective date of this Order and ends on the date that the Permittee receives a Notice of Completion of Discharges Letter or, if no post-construction monitoring is required, a Notice of Project Complete Letter. The Active Discharge Period includes all elements of the Project including site construction and restoration, and any Permittee responsible compensatory mitigation construction.
2. **Request for Notice of Completion of Discharges Letter:** This request by the Permittee to the Central Valley Water Board staff pertains to projects that have post construction monitoring requirements, e.g. if site restoration was required to be monitored for 5 years following construction. Central Valley Water Board staff will review the request and send a Completion of Discharges Letter to the Permittee upon approval. This letter will initiate the post-discharge monitoring period and a change in fees from the annual

active discharge fee to the annual post-discharge monitoring fee.

3. **Request for Notice of Project Complete Letter:** This request by the Permittee to the Central Valley Water Board staff pertains to projects that either have completed post-construction monitoring and achieved performance standards or have no post-construction monitoring requirements, and no further Project activities are planned. Central Valley Water Board staff will review the request and send a Project Complete Letter to the Permittee upon approval. Termination of annual invoicing of fees will correspond with the date of this letter.

4. **Post-Discharge Monitoring Period:** The post-discharge monitoring period begins on the date of the Notice of Completion of Discharges Letter and ends on the date of the Notice of Project Complete Letter issued by the Central Valley Water Board staff. The Post-Discharge Monitoring Period includes continued water quality monitoring or compensatory mitigation monitoring.

5. **Effective Date:** Date of Order issuance.

Map/Photo Documentation Information

When submitting maps or photos, please use the following formats.

1. **Map Format Information:**
   Preferred map formats of at least 1:24000 (1" = 2000') detail (listed in order of preference):
   - **GIS shapefiles**: The shapefiles must depict the boundaries of all project areas and extent of aquatic resources impacted. Each shape should be attributed with the extent/type of aquatic resources impacted. Features and boundaries should be accurate to within 33 feet (10 meters). Identify datum/projection used and if possible, provide map with a North American Datum of 1983 (NAD38) in the California Teale Albers projection in feet.
   - **Google KML files** saved from Google Maps: My Maps or Google Earth Pro. Maps must show the boundaries of all project areas and extent/type of aquatic resources impacted. Include URL(s) of maps. If this format is used include a spreadsheet with the object ID and attributed with the extent/type of aquatic resources impacted.
   - **Other electronic format** (CAD or illustration format) that provides a context for location (inclusion of landmarks, known structures, geographic coordinates, or USGS DRG or DOQQ). Maps must show the boundaries of all project areas and extent/type of aquatic resources impacted. If this format is used include a spreadsheet with the object ID and attributed with the extent/type of aquatic resources impacted.
   - Aquatic resource maps marked on paper **USGS 7.5 minute topographic maps** or **Digital Orthophoto Quarter Quads (DOQQ)** printouts. Maps must show the boundaries of all project areas and extent/type of aquatic resources impacted. If this format is used include a spreadsheet with the object ID and attributed with the extent/type of aquatic resources impacted.

2. **Photo-Documentation:** Include a unique identifier, date stamp, written description of photo details, and latitude/longitude (in decimal degrees) or map indicating location of photo. Successive photos should be taken from the same vantage point to compare pre/post construction conditions.

REPORT AND NOTIFICATION COVER SHEET

Project:	Western Placerville Interchanges Project – Phase 2		
Permittee:	City of Placerville		
Reg. Meas. ID:	412181	**Place ID:**	833657
Order Effective Date:	13 June 2017		
Order Expiration Date:	13 June 2022		

Report Type Submitted

Part A – Project Reporting	
Report Type 1	☐ **Monthly Report**
Report Type 2	☐ **Annual Report**
Part B - Project Status Notifications	
Report Type 3	☐ **Commencement of Construction**
Report Type 4	☐ **Request for Notice of Completion of Discharges Letter**
Report Type 5	☐ **Request for Notice of Project Complete Letter**
Part C - Conditional Notifications and Reports	
Report Type 6	☐ **Accidental Discharge of Hazardous Material Report**
Report Type 7	☐ **Violation of Compliance with Water Quality Standards Report**
Report Type 8	☐ **In-Water Work/Diversions Water Quality Monitoring Report**
Report Type 9	☐ **Modifications to Project Report**
Report Type 10	☐ **Transfer of Property Ownership Report**
Report Type 11	☐ **Transfer of Long-Term BMP Maintenance Report**

"I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."

Print Name [1]	**Affiliation and Job Title**
Signature	**Date**

[1]STATEMENT OF AUTHORIZATION (include if authorization has changed since application was submitted)

I hereby authorize _____ to act in my behalf as my representative in the submittal of this report, and to furnish upon request, supplemental information in support of this submittal.

_____ _____
Permittee's Signature Date

***This Report and Notification Cover Sheet must be signed by the Permittee or a duly authorized representative and included with all written submittals.**

Part A – Project Reporting

Report Type 1	**Monthly Report – Not Applicable**
Report Purpose	Notifies Central Valley Water Board staff of the Project status and environmental compliance activities on a monthly basis.
When to Submit	On the 1st day of each month until a Notice of Project Complete Letter is issued to the Permittee.
Report Contents	**1. Construction Summary** Describe Project progress and schedule including initial ground disturbance, site clearing and grubbing, road construction, site construction, and the implementation status of construction storm water Best Management Practices (BMPs[7]). If construction has not started, provide estimated start date. **2. Event Summary** Describe distinct Project activities and occurrences, including environmental monitoring, surveys, and inspections. **3. Photo Summary** Provide photos of Project activities. For each photo, include a unique site identifier, date stamp, written description of photo details, and latitude/longitude (in decimal degrees) or map indicating location of photo. Successive photos should be taken from the same vantage point to compare pre/post construction conditions. **4. Compliance Summary** **a)** List name and organization of environmental surveyors, monitors, and inspectors involved with monitoring environmental compliance for the reporting period. **b)** List associated monitoring reports for the reporting period. **c)** Summarize observed incidences of non-compliance, compliance issues, minor problems, or occurrences. **d)** Describe each observed incidence in detail. List monitor name and organization, date, location, type of incident, corrective action taken (if any), status, and resolution.

[7] Best Management Practices (BMPs) is a term used to describe a type of water pollution or environmental control.

Report Type 2	**Annual Report**
Report Purpose	Notify the Central Valley Water Board staff of Project status during both the active discharge and post-discharge monitoring periods.
When to Submit	Annual reports shall be submitted each year on the 1st day of July Annual reports shall continue until a Notice of Project Complete Letter is issued to the Permittee.
Report Contents	The contents of the annual report shall include the topics indicated below for each project period. Report contents are outlined in Annual Report Topics below. **<u>During the Active Discharge Period</u>** • **Topic 1: Construction Summary** • **Topic 2: Mitigation for Temporary Impacts Status** • **Topic 3: Compensatory Mitigation for Permanent Impacts Status** **<u>During the Post-Discharge Monitoring Period</u>** • **Topic 2: Mitigation for Temporary Impacts Status** • **Topic 3: Compensatory Mitigation for Permanent Impacts Status**
Annual Report Topics (1-3)	
Annual Report Topic 1	**Construction Summary**
When to Submit	With the annual report during the Active Discharge Period.
Report Contents	**1.** Project progress and schedule including initial ground disturbance, site clearing and grubbing, road construction, site construction, and the implementation status of construction storm water best management practices (BMPs). If construction has not started, provide estimated start date and reasons for delay. **2.** Map showing general Project progress. **3.** If applicable: **a.** Summary of Conditional Notification and Report Types 6 and 7 (Part C below). **b.** Summary of Certification Deviations. See Certification Deviation Attachment for further information.
Annual Report Topic 2	**Mitigation for Temporary Impacts Status**
When to Submit	With the annual report during both the Active Discharge Period and Post-Discharge Monitoring Period.
Report Contents	**1.** Planned date of initiation and map showing locations of mitigation for temporary impacts to waters of the state and all upland areas of temporary disturbance which could result in a discharge to waters of the state. **2.** If mitigation for temporary impacts has already commenced, provide a map and information concerning attainment of performance standards contained in the restoration plan.
Annual Report Topic 3	**Compensatory Mitigation for Permanent Impacts Status**

When to Submit	With the annual report during both the Active Discharge Period and Post-Discharge Monitoring Period.
Report Contents	***If not applicable report N/A.** **Part A. Permittee Responsible** **1.** Planned date of initiation of compensatory mitigation site installation. **2.** If installation is in progress, a map of what has been completed to date. **3.** If the compensatory mitigation site has been installed, provide a final map and information concerning attainment of performance standards contained in the compensatory mitigation plan. **Part B. Mitigation Bank or In-Lieu Fee** **1.** Status or proof of purchase of credit types and quantities. **2.** Include the name of bank/ILF Program and contact information. **3.** If ILF, location of project and type if known.

Part B – Project Status Notifications

Report Type 3	**Commencement of Construction**
Report Purpose	Notify Central Valley Water Board staff prior to the start of construction.
When to Submit	Must be received at least seven (7) days prior to start of initial ground disturbance activities.
Report Contents	**1.** Date of commencement of construction. **2.** Anticipated date when discharges to waters of the state will occur. **3.** Project schedule milestones including a schedule for onsite compensatory mitigation, if applicable. **4.** Construction Storm Water General Permit WDID No.

Report Type 4	**Request for Notice of Completion of Discharges Letter**
Report Purpose	Notify Central Valley Water Board staff that post-construction monitoring is required and that active Project construction, including any mitigation and permittee responsible compensatory mitigation, is complete.
When to Submit	Must be received by Central Valley Water Board staff within thirty (30) days following completion of all Project construction activities.
Report Contents	**1.** Status of storm water Notice of Termination(s), if applicable. **2.** Status of post-construction storm water BMP installation. **3.** Pre- and post-photo documentation of all Project activity sites where the discharge of dredge and/or fill/excavation was authorized. **4.** Summary of Certification Deviation discharge quantities compared to initial authorized impacts to waters of the state, if applicable. **5.** An updated monitoring schedule for mitigation for temporary impacts to waters of the state and permittee responsible compensatory mitigation during the post-discharge monitoring period, if applicable.

Report Type 5	**Request for Notice of Project Complete Letter**
Report Purpose	Notify Central Valley Water Board staff that construction and/or any post-construction monitoring is complete, or is not required, and no further Project activity is planned.
When to Submit	Must be received by Central Valley Water Board staff within thirty (30) days following completion of all Project activities.
Report Contents	**Part A: Mitigation for Temporary Impacts** **1.** A report establishing that the performance standards outlined in the restoration plan have been met for Project site upland areas of temporary disturbance which could result in a discharge to waters of the state. **2.** A report establishing that the performance standards outlined in the restoration plan have been met for restored areas of temporary impacts to waters of the state. Pre- and post-photo documentation of all restoration sites.

	Part B: Permittee Responsible Compensatory Mitigation **1.** A report establishing that the performance standards outlined in the compensatory mitigation plan have been met. **2.** Status on the implementation of the long-term maintenance and management plan and funding of endowment. **3.** Pre- and post-photo documentation of all compensatory mitigation sites. **4.** Final maps of all compensatory mitigation areas (including buffers). **Part C: Post-Construction Storm Water BMPs** **1.** Date of storm water Notice of Termination(s), if applicable. **2.** Report status and functionality of all post-construction BMPs.

Part C – Conditional Notifications and Reports

Report Type 6	**Accidental Discharge of Hazardous Material Report**
Report Purpose	Notifies Central Valley Water Board staff that an accidental discharge of hazardous material has occurred.
When to Submit	Within five (5) working days following the date of an accidental discharge. Continue reporting as required by Central Valley Water Board staff.
Report Contents	1. The report shall include the OES Incident/Assessment Form, a full description and map of the accidental discharge incident (i.e. location, time and date, source, discharge constituent and quantity, aerial extent, and photo documentation). If applicable, the OES Written Follow-Up Report may be substituted. 2. If applicable, any required sampling data, a full description of the sampling methods including frequency/dates and times of sampling, equipment, locations of sampling sites. 3. Locations and construction specifications of any barriers, including silt curtains or diverting structures, and any associated trenching or anchoring.

Report Type 7	**Violation of Compliance with Water Quality Standards Report**
Report Purpose	Notifies Central Valley Water Board staff that a violation of compliance with water quality standards has occurred.
When to Submit	The Permittee shall report any event that causes a violation of water quality standards within three (3) working days of the noncompliance event notification to Central Valley Water Board staff.
Report Contents	The report shall include: the cause; the location shown on a map; and the period of the noncompliance including exact dates and times. If the noncompliance has not been corrected, include: the anticipated time it is expected to continue; the steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance; and any monitoring results if required by Central Valley Water Board staff.

Report Type 8	**In-Water Work and Diversions Water Quality Monitoring Report – Not Aplicable**
Report Purpose	Notifies Central Valley Water Board staff of the start and completion of in-water work. Reports the sampling results during in-water work and during the entire duration of temporary surface water diversions.
When to Submit	Seven (7) days prior to the start of in-water work. Within three (3) working days following the completion of in-water work. Surface water monitoring reports to be submitted two (2) weeks on initiation of in-water construction and during entire duration of temporary surface water diversions. Continue reporting in accordance with the approved water quality monitoring plan or as indicated in XIV.C.
Report Contents	As required by the approved water quality monitoring plan or as indicated in XIV.C.

Report Type 9	**Modifications to Project Report**
Report Purpose	Notifies Central Valley Water Board staff if the Project, as described in the application materials, is altered in any way or by the imposition of subsequent permit conditions by any local, state or federal regulatory authority.
When to Submit	If Project implementation as described in the application materials is altered in any way or by the imposition of subsequent permit conditions by any local, state or federal regulatory authority.
Report Contents	A description and location of any alterations to Project implementation. Identification of any Project modifications that will interfere with the Permittee's compliance with the Order.

Report Type 10	**Transfer of Property Ownership Report**
Report Purpose	Notifies Central Valley Water Board staff of change in ownership of the Project or Permittee-responsible mitigation area.
When to Submit	At least 10 working days prior to the transfer of ownership.
Report Contents	**1.** A statement that the Permittee has provided the purchaser with a copy of this Order and that the purchaser understands and accepts: **a.** the Order's requirements and the obligation to implement them or be subject to administrative and/or civil liability for failure to do so; and **b.** responsibility for compliance with any long-term BMP[8] maintenance plan requirements in this Order. **2.** A statement that the Permittee has informed the purchaser to submit a written request to the Central Valley Water Board to be named as the permittee in a revised order.

Report Type 11	**Transfer of Long-Term BMP Maintenance Report**
Report Purpose	Notifies Central Valley Water Board staff of transfer of long-term BMP maintenance responsibility.
When to Submit	At least 10 working days prior to the transfer of BMP maintenance responsibility.
Report Contents	A copy of the legal document transferring maintenance responsibility of post-construction BMPs.

[8] Best Management Practices (BMPs) is a term used to describe a type of water pollution or environmental control.

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SIGNATORY REQUIREMENTS

All Documents Submitted In Compliance With This Order Shall Meet The Following Signatory Requirements:

1. All applications, reports, or information submitted to the Central Valley Water Quality Control Board (Central Valley Water Board) must be signed and certified as follows:

   a) For a corporation, by a responsible corporate officer of at least the level of vice-president.
   b) For a partnership or sole proprietorship, by a general partner or proprietor, respectively.
   c) For a municipality, or a state, federal, or other public agency, by either a principal executive officer or ranking elected official.

2. A duly authorized representative of a person designated in items 1.a through 1.c above may sign documents if:

   a) The authorization is made in writing by a person described in items 1.a through 1.c above.
   b) The authorization specifies either an individual or position having responsibility for the overall operation of the regulated activity.
   c) The written authorization is submitted to the Central Valley Water Board Staff Contact prior to submitting any documents listed in item 1 above.

3. Any person signing a document under this section shall make the following certification:

   "I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."

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Certification Deviation Procedures

Introduction

These procedures are put into place to preclude the need for Order amendments for minor changes in the Project routing or location. Minor changes or modifications in project activities are often required by the Permittee following start of construction. These deviations may potentially increase or decrease impacts to waters of the state. In such cases, a Certification Deviation, as defined in Section XIV.L of the Order, may be requested by the Permittee as set forth below:

Process Steps

Who may apply: The Permittee or the Permittee's duly authorized representative or agent (hereinafter, "Permittee") for this Order.

How to apply: By letter or email to the 401 staff designated as the contact for this Order.

Certification Deviation Request: The Permittee will request verification from the Central Valley Water Board staff that the project change qualifies as a Certification Deviation, as opposed to requiring an amendment to the Order. The request should:

1. Describe the Project change or modification:
    a. Proposed activity description and purpose;
    b. Why the proposed activity is considered minor in terms of impacts to waters of the state;
    c. How the Project activity is currently addressed in the Order; and,
    d. Why a Certification Deviation is necessary for the Project.
2. Describe location (latitude/longitude coordinates), the date(s) it will occur, as well as associated impact information (i.e., temporary or permanent, federal or non-federal jurisdiction, water body name/type, estimated impact area, etc.) and minimization measures to be implemented.
3. Provide all updated environmental survey information for the new impact area.
4. Provide a map that includes the activity boundaries with photos of the site.
5. Provide verification of any mitigation needed according to the Order conditions.
6. Provide verification from the CEQA Lead Agency that the proposed changes or modifications do not trigger the need for a subsequent environmental document, an addendum to the environmental document, or a supplemental EIR. (Cal. Code Regs., tit. 14, §§ 15162-15164.)

Post-Discharge Certification Deviation Reporting:

1. Within 30 calendar days of completing the approved Certification Deviation activity, the Permittee will provide a post-discharge activity report that includes the following information:
    a. Activity description and purpose;
    b. Activity location, start date, and completion date;
    c. Erosion control and pollution prevention measures applied;
    d. The net change in impact area by water body type(s) in acres, linear feet and cubic yards;
    e. Mitigation plan, if applicable; and,
    f. Map of activity location and boundaries; post-construction photos.

Annual Summary Deviation Report:

1. Until a Notice of Completion of Discharges Letter or Notice of Project Complete Letter is issued, include in the Annual Project Report (see Construction Notification and Reporting attachment) a compilation of all Certification Deviation activities through the reporting period with the following information:
    a. Site name(s).
    b. Date(s) of Certification Deviation approval.
    c. Location(s) of authorized activities.
    d. Impact area(s) by water body type prior to activity in acres, linear feet and cubic yards, as originally authorized in the Order.
    e. Actual impact area(s) by water body type in, acres, linear feet and cubic yards, due to Certification Deviation activity(ies).
    f. The net change in impact area by water body type(s) in acres, linear feet and cubic yards;
    g. Mitigation to be provided (approved mitigation ratio and amount).

ATTACHMENT 16

California Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
North Central Region
1701 Nimbus Road, Suite A
Rancho Cordova, CA 95670-4599
916-358-2900
www.wildlife.ca.gov

EDMUND G. BROWN, Jr., Governor
CHARLTON H. BONHAM, Director

JUN 15 2017
Date

Rebecca Neves
City of Placerville
3101 Center Street
Placerville, CA 95667

Dear Ms. Neves:

Final Lake or Streambed Alteration Agreement, Notification No. 1600-2017-0084-R2, Western Placerville Interchanges Project Phase 2.

Enclosed is the final Streambed Alteration Agreement (Agreement) for the Western Placerville Interchanges Project Phase 2 Project (Project). Before the California Department of Fish and Wildlife (CDFW) may issue an Agreement, it must comply with the California Environmental Quality Act (CEQA). In this case, CDFW acting as a responsible agency filed a Notice of Determination (NOD) within five working days of signing the Agreement. The NOD was based on information contained in the final Environmental Impact Report prepared by the lead agency.

Under CEQA, the filing of an NOD triggers a 30-day statute of limitations period during which an interested party may challenge the filing agency's approval of the Project. You may begin the Project before the statute of limitations expires if you have obtained all necessary local, state, and federal permits or other authorizations. However, if you elect to do so, it will be at your own risk.

If you have any questions regarding this letter, please contact Gabriele Quillman at (916) 358-2955 or by email at gabriele.quillman@wildlife.ca.gov.

Sincerely,

Tina Bartlett
Regional Manager

ec: California Department of Fish and Wildlife

Gabriele Quillman, Environmental Scientist

CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE
NORTH CENTRAL REGION
1701 NIMBUS ROAD, SUITE A
RANCHO CORDOVA, CA 95670

STREAMBED ALTERATION AGREEMENT
NOTIFICATION NO. 1600-2017-0084-R2
UNNAMED TRIBUTARY TO HANGTOWN CREEK

CITY OF PLACERVILLE
WESTERN PLACERVILLE INTERCHANGES PROJECT – PHASE 2

This Streambed Alteration Agreement (Agreement) is entered into between the California Department of Fish and Wildlife (CDFW) and the City of Placerville (Permittee), as represented by Rebecca Neeves.

RECITALS

WHEREAS, pursuant to Fish and Game Code section 1602, Permittee notified CDFW on March 10, 2017 that Permittee intends to complete the project described herein.

WHEREAS, pursuant to Fish and Game Code section 1603, CDFW has determined that the project could substantially adversely affect existing fish or wildlife resources and has included measures in the Agreement necessary to protect those resources.

WHEREAS, Permittee has reviewed the Agreement and accepts its terms and conditions, including the measures to protect fish and wildlife resources.

NOW THEREFORE, Permittee agrees to complete the project in accordance with the Agreement.

PROJECT LOCATION

The project is located on an unnamed tributary to Hangtown Creek, in the County of El Dorado, City of Placerville, County of El Dorado, State of California; Latitude 38.724151, Longitude -120.827842.

PROJECT DESCRIPTION

The project is limited to activities associated with Phase 2 of the larger Western Placerville Interchange Project. Phase 2 includes the following improvements:

- Constructing a new eastbound off-ramp from US Highway on to Ray Lawyer Drive.
- Widening and realigning Ray Lawyer Drive to the west to improve the connections with Forni Drive and the new off-ramp.

- Widening and realigning Forni Road to the south to improve sight lines and the connection with Ray Lawyer Drive.
- Constructing a new park-n-ride parking lot between the new off-ramp, Ray Lawyer Drive, and Forni Road Drive.

Construction of the new interchange is expected to fill approximately 0.53 acre of wetlands and remove two (2) interior like oak trees (*Quercus wizlizenii*).

PROJECT IMPACTS

Existing fish or wildlife resources the project could substantially adversely affect include: nesting and migratory birds, fossorial mammals such as California ground squirrel (*Otospermophilus californicus*), amphibians such as California tree frog (*Pseudacris cadaverina*) and Western toad (*Anaxyrus boreus*), reptiles such as northern brown skink (*Pleistiodon gilberti placerensis*), and all other fish and wildlife resources in the area.

The adverse effects the project could have on the fish or wildlife resources identified above include: loss of nesting and foraging habitat, disturbance of nesting or other breeding activities leading to loss of young, direct mortality or injury by heavy equipment, release of hazardous materials and/or sediment into wetlands, and change in water flow regime.

MEASURES TO PROTECT FISH AND WILDLIFE RESOURCES

1. Administrative Measures

Permittee shall meet each administrative requirement described below.

1.1 Documentation at Project Site. Permittee shall make the Agreement, any extensions and amendments to the Agreement, and all related notification materials and California Environmental Quality Act (CEQA) documents, readily available at the project site at all times and shall be presented to CDFW personnel, or personnel from another state, federal, or local agency upon request.

1.2 Providing Agreement to Persons at Project Site. Permittee shall provide copies of the Agreement and any extensions and amendments to the Agreement to all persons who will be working on the project at the project site on behalf of Permittee, including but not limited to contractors, subcontractors, inspectors, and monitors.

1.3 Notification of Conflicting Provisions. Permittee shall notify CDFW if Permittee determines or learns that a provision in the Agreement might conflict with a provision imposed on the project by another local, state, or federal agency. In that event, CDFW shall contact Permittee to resolve any conflict.

1.4 Project Site Entry. Permittee agrees that CDFW personnel may enter the project site at any time to verify compliance with the Agreement.

1.5 Does Not Authorize "Take". This Agreement does not authorize "take" of any listed (i.e. threatened, endangered, candidate, or rare) species. CDFW defines "take" as hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill. If there is potential for take of any listed species to occur, the Permittee shall consult with CDFW as outlined in FGC Section 2081 and shall obtain the required State and federal threatened and endangered species permits if necessary.

1.6 Nesting Bird Protection. Sections 3503, 3503.5, and 3513 of the FGC stipulate the following: Section 3503 states that it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by FGC or any regulation made pursuant thereto; Section 3503.5 states that it is unlawful to take, possess, or destroy any birds in the orders Falconiformes or Strigiformes (birds-of-prey) to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by FGC or any regulation adopted pursuant thereto; and Section 3513 states that it is unlawful to take or possess any migratory nongame bird except as provided by the rules and regulations adopted by the Secretary of the Interior under provisions of the Migratory Bird Treaty Act (MBTA).

2. Avoidance and Minimization Measures

To avoid or minimize adverse impacts to fish and wildlife resources identified above, Permittee shall implement each measure listed below.

Biological Resources

2.1 Nesting Birds. If vegetation removal and/or ground disturbing activities are scheduled between February 1 and August 31 then a breeding bird survey will be conducted no more than three (3) days prior to the start of construction by a qualified biologist. All active bird nests will be marked following the survey to avoid destruction by equipment, and a non-disturbance buffer will be established around the nest site. The size of the non-disturbance buffer and any other restrictions will be determined through consultation with CDFW following completion of the survey. If a lapse in project-related work of 15 days or longer occurs, another focused survey and if required, consultation with CDFW, shall be required before project work can be reinitiated. If, during the course of carrying out the project, an active nest is identified or becomes established, that was not previously identified during a breeding bird survey, a buffer or installation of appropriate barriers shall be established between the construction activities and the active nest so that nesting activities are not interrupted. The buffer shall be delineated and shall be in effect throughout construction or until the nest is no longer active. The buffer(s) shall be determined based upon the life history of the individual species, including their sensitivity to noise, vibration, ambient levels of human activity and general disturbance, the current site conditions (screening vegetation, terrain, etc.) and the

various project-related activities necessary to implement the project. This Agreement does not allow the Permittee, any employees, or agents to destroy or disturb any active bird nest (Section 3503 Fish and Game Code) or any raptor nest (Section 3503.5) at any time of the year.

2.2 Special-Status Species Encountered During Work. If during the course of project activity Permittee encounters a species which is listed under the California Endangered Species Act as rare, threatened, or endangered, or which is designated a candidate for listing, work shall be immediately suspended, CDFW shall be notified, and conservation measures shall be developed in Agreement with CDFW prior to re-initiating the activity.

2.3 Leave Wildlife Unharmed. If any wildlife is encountered during the course of construction, said wildlife shall be allowed to leave the construction area unharmed.

2.4 Demarcate Work Area to Avoid Vegetation. Demarcation of the work area shall consider and avoid vegetation to the greater extent possible. Vegetation shall not be removed or damaged beyond the work area, except for trimming with hand tools to the extent necessary to gain access to the work sites. No trees over four (4) inches in diameter at breast height shall be removed from the stream bed, banks, or channel without prior written approval from CDFW, except as allowed by this Agreement.

2.5 Vegetation Removal. Disturbance or removal of vegetation shall be kept to the minimum necessary to complete project related activities. No trees with a trunk diameter at breast height (DBH) in excess of two (2) inches shall be removed or damaged without prior consultation and approval of a CDFW representative. Vegetation marked for protection may only be trimmed with hand tools to the extent necessary to gain access to the work sites.

2.6 Prohibited Plant Species. Permittee shall not plant, seed or otherwise introduce invasive exotic plant species. Prohibited exotic plant species include those identified in the California Exotic Pest Plant Council's database, which is accessible at: http://www.cal-ipc.org/paf.

Work Period

2.7 Work Period in Low Rainfall / Dry Weather Only. The work period within the tributary to Hangtown Creek shall be restricted to periods of low rainfall (less than ¼" per 24 hour period) and periods of dry weather (with less than a 20% chance of rain). All erosion control measures shall be initiated prior to all storm events. Revegetation, restoration and erosion control work is not confined to this work period.

Erosion and Sediment Control

2.8 Stabilize Bare Soil. Loose or compacted soil areas in need of stabilization shall be seeded with a locally native seed mix, unless otherwise agreed upon with CDFW. Permittee shall apply seed mix to such sites shall be completed as soon as possible after project activities in those areas cease. Following placement of the seed mix, Permittee shall cover the seeded area with broadcast straw, jute netting, coconut fiber blanket or similar erosion control blanket.

2.9 Best Management Practices. Permittee shall actively implement Best Management Practices (BMPs) to prevent erosion and the discharge of sediment and pollutants into streams during project activities. BMPs shall be monitored and repaired if necessary to ensure maximum erosion, sediment, and pollution control. Permittee shall prohibit the use of erosion control materials potentially harmful to fish and wildlife species, such as mono-filament netting (found in materials such as straw wattles/fiber rolls or erosion control matting) or similar material, within and adjacent to the work area. All fiber rolls, straw wattles, and/or hay bales utilized within and adjacent to the project site shall be free of nonnative plant seed. **Fiber rolls or erosion control mesh shall be made of loose-weave mesh that is not fused at the intersections of the weave, such as jute, or coconut (coir) fiber, or other products without welded weaves. Non-welded weaves reduce entanglement risks to wildlife by allowing animals to push through the weave, which expands when spread.**

Debris and Waste

2.10 Remove Cleared Material from Watercourse. All excavated sediment, vegetation, and any other material shall be either replaced in the excavation site or removed from the area and deposited where it cannot re-enter the stream and/or pond.

2.11 No Dumping. Permittee and all of its contractors, subcontractors, and employees shall not dump any litter or construction debris within the stream, or where it may pass into the stream.

2.12 Remove Temporary Flagging, Fencing, and Barriers. Permittee shall remove all temporary flagging, fencing, and/or barriers from the project area and vicinity of the stream immediately upon completion of project activities.

Equipment and Vehicles

2.13 Minimize Vehicle Parking. Vehicles may enter and exit the work area as necessary for project activities, but may not be parked overnight within ten (10) feet of the drip line of any trees; nor shall vehicles be parked where mechanical fluid leaks may potentially enter the waters of the state.

2.14 Operating Equipment and Vehicle Leaks. Any equipment or vehicles driven and/or operated within or adjacent to the stream/pond shall be checked and maintained

daily to prevent leaks of materials that could be deleterious to aquatic and terrestrial life or riparian habitat.

2.15 Equipment Maintenance and Fueling. No equipment maintenance or fueling shall be done within or near any stream channel or lake margin where petroleum products or other pollutants from the equipment may enter these areas

2.16 Clean Equipment Prior to Entering Watercourse. All heavy equipment that will be entering the watercourse shall be cleaned of materials deleterious to aquatic life including oil, grease, hydraulic fluid, soil and other debris. Cleaning of equipment shall take place outside of the area adjacent to the watercourse where runoff may enter the stream or pond, and prior to entering the water.

2.17 Stationary Equipment Leaks. Stationary equipment such as motors, pumps, generators, and welders, located within or adjacent to the stream/pond shall be positioned over drip pans. Stationary heavy equipment shall have suitable containment to handle a catastrophic spill/leak.

2.18 Equipment Storage. Staging and storage areas for equipment, materials, fuels, lubricants and solvents, shall be located outside of the stream channel and banks.

Use of Concrete/Hazardous Materials

2.19 Isolate Wet Concrete from Stream. If any structure is cast in place, the area poured shall be completely bermed and isolated to contain all and any wet cement, even if water is not present. The pH of hot concrete may be as high as 13 which is toxic to wildlife. The berm may be made of sandbags or dirt, but it shall be lined with plastic to prevent any material from seeping past the berm. Permittee shall maintain the berm in place until the concrete is fully cured.

2.20 No Pouring in Advance of Rain. No concrete or any cement product may be poured if measurable rain is forecasted within 15 days. If any concrete is poured after October 15, a quick cure ingredient shall be added to the concrete mix to ensure a faster set or drying time.

2.21 Concrete – Designated Monitor. At all times when Permittee is pouring or working with wet concrete there shall be a designated monitor to inspect the containment structures and ensure that no concrete or other debris enters into the channel outside of those structures.

2.22 Hazardous Materials. Debris, soil, silt, bark, slash, sawdust, rubbish, creosote-treated wood, raw cement/concrete or washings thereof, asphalt, paint or other coating material, oil or other petroleum products, or any other substances which could be hazardous to aquatic life, wildlife, or riparian habitat resulting from the project related activities shall be prevented from contaminating the soil and/or entering the stream.

3. Compensatory Measures

To compensate for adverse impacts to fish and wildlife resources identified above that cannot be avoided or minimized, Permittee shall implement each measure listed below.

3.1 Habitat Restoration. Permittee shall restore a minimum of 1.59 acres of riparian or wetland habitat within the Hangtown Creek Watershed, at a location approved by CDFW. **Some or all of the restoration may be substituted with the purchase of wetland or riparian habitat credits from a CDFW-approved mitigation bank.** Restoration activities shall include, but are not limited to, installation of locally native plant materials by seed, container stock, cut poles, or a combination thereof; removal of non-native plant species, removal of garbage and debris, and light grading and irrigation if necessary. The restoration site(s) shall be monitored for a minimum of five years, and until CDFW concurs that it has met its success criteria.

3.2 Tree Replacement. Permittee shall plant, or fund the planting of, **a minimum of thirty (30) interior live oak (*Quercus wizlizenii*) acorns** either on-site of at another location as approved by CDFW in writing. Oaks planted by acorn tend to grow more successfully than oaks transplanted from containers. CDFW strongly recommends consulting with a horticulturist, arborist, or ecological restoration expert familiar with oak woodlands prior to planting the acorns, as they require specific environmental circumstances in order to germinate successfully.

3.3 Habitat Protection. The restoration area(s) and oak planting area shall be preserved via a conservation easement, or other legal protection method as approved in writing by CDFW.

4. Reporting Measures

Permittee shall meet each reporting requirement described below.

4.1 Work Notification. Permittee shall notify CDFW at least five days prior to project commencement. Upon completion of the project activities described in this Agreement including revegetation, the work area shall be digitally photographed and the photographs shall be submitted to CDFW. Notification shall be made as described in the Contact Information section below.

4.2 Restoration Plan. Within 30 days following signature of this Agreement, Permittee shall submit a plan to plant a minimum of thirty (30) interior live oaks and, if applicable, restore 1.59 acres of wetland or riparian habitat within an area or areas approved in writing by CDFW. The restoration plan shall include, at a minimum, the following:

a. A description of the site(s) current conditions, complete with representative photographs from designated photo stations.

b. A topographic or aerial photography map showing the details of where the restorations site(s) will be and where each species will be planted.
c. A list of appropriate locally native species to be planted or seeded.
d. Sources for the plant material (native plant nurseries, universities, etc.)
e. A plan for the monitoring, maintenance, and protection of the plants.
f. A plan for irrigation, if necessary.
g. Contingency plans for catastrophic events such as disease outbreaks, fires, floods, or vandalism.
h. Quantitative success criteria including target coverage by native species, target coverage by exotic species, and use by wildlife species.

4.3 Annual Reports. Permittee shall submit an annual report detailing the successes and failures of the compensatory mitigation. The reposts shall contain at least, but shall not be limited to the following:

a. A list of any plant materials that have died, likely reasons for their death, and plans for their replacement.
b. Heights of all surviving trees and shrubs.
c. A discussion of the successes and failures of the restoration, and proposed remedial measures to address any failures.
d. A discussion of whether the restoration is meeting the success criteria, and corrective measures that will be taken if the success criteria are not being met.
e. A list of wildlife species observed during maintenance and monitoring activities.
f. Representative photographs of the restoration site, taken from designated photo stations that will remain in the same spaces for the entirety of the project.

The first Annual Report is due one year after the restoration is first installed, and will be due for a minimum of five years and until CDFW agrees that the site has met the success criteria.

CONTACT INFORMATION

Any communication that Permittee or CDFW submits to the other shall be in writing and any communication or documentation shall be delivered to the address below by U.S. mail, fax, or email, or to such other address as Permittee or CDFW specifies by written notice to the other.

To Permittee:

Rebecca Neves
City of Placerville
3101 Center Street
Placerville, CA 95667

Phone (530) 642-5250

CC: Tim Chamberlain, Dokken Engineering
110 Blue Ravine Road, Suite 200
Folsom, CA 95630
Phone: (916) 858-0642

To CDFW:

Department of Fish and Wildlife
North Central Region
1701 Nimbus Road, Suite A
Attn: Lake and Streambed Alteration Program
Notification #1600-2017-0084-R2
Phone: 916-358-2885
Email: R2LSA@wildlife.ca.gov

LIABILITY

Permittee shall be solely liable for any violations of the Agreement, whether committed by Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents or contractors and subcontractors, to complete the project or any activity related to it that the Agreement authorizes.

This Agreement does not constitute CDFW's endorsement of, or require Permittee to proceed with the project. The decision to proceed with the project is Permittee's alone.

SUSPENSION AND REVOCATION

CDFW may suspend or revoke in its entirety the Agreement if it determines that Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents, or contractors and subcontractors, is not in compliance with the Agreement.

Before CDFW suspends or revokes the Agreement, it shall provide Permittee written notice by certified or registered mail that it intends to suspend or revoke. The notice shall state the reason(s) for the proposed suspension or revocation, provide Permittee an opportunity to correct any deficiency before CDFW suspends or revokes the Agreement, and include instructions to Permittee, if necessary, including but not limited to a directive to immediately cease the specific activity or activities that caused CDFW to issue the notice.

ENFORCEMENT

Nothing in the Agreement precludes CDFW from pursuing an enforcement action against Permittee instead of, or in addition to, suspending or revoking the Agreement.

Nothing in the Agreement limits or otherwise affects CDFW's enforcement authority or that of its enforcement personnel.

OTHER LEGAL OBLIGATIONS

This Agreement does not relieve Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents, or contractors and subcontractors, from complying with, from obtaining any other permits or authorizations that might be required under, other federal, state, or local laws or regulations before beginning the project or an activity related to it. For example, if the project causes take of a species listed as threatened or endangered under the Endangered Species Act (ESA), such take will be unlawful under the ESA absent a permit or other form of authorization from the U.S. Fish and Wildlife Service or National Marine Fisheries Service.

This Agreement does not relieve Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents, or contractors and subcontractors, from complying with other applicable statutes in the Fish and Game Code including, but not limited to, Fish and Game Code sections 2050 *et seq.* (threatened and endangered species), section 3503 (bird nests and eggs), section 3503.5 (birds of prey), section 5650 (water pollution), section 5652 (refuse disposal into water), section 5901 (fish passage), section 5937 (sufficient water for fish), and section 5948 (obstruction of stream).

Nothing in the Agreement authorizes Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents, or contractors and subcontractors, to trespass.

AMENDMENT

CDFW may amend the Agreement at any time during its term if CDFW determines the amendment is necessary to protect an existing fish or wildlife resource.

Permittee may amend the Agreement at any time during its term, provided the amendment is mutually agreed to in writing by CDFW and Permittee. To request an amendment, Permittee shall submit to CDFW a completed CDFW "Request to Amend Lake or Streambed Alteration" form and include with the completed form payment of the corresponding amendment fee identified in CDFW's current fee schedule (see Cal. Code Regs., tit. 14, § 699.5).

TRANSFER AND ASSIGNMENT

This Agreement may not be transferred or assigned to another entity, and any purported transfer or assignment of the Agreement to another entity shall not be valid or effective,

unless the transfer or assignment is requested by Permittee in writing, as specified below, and thereafter CDFW approves the transfer or assignment in writing.

The transfer or assignment of the Agreement to another entity shall constitute a minor amendment, and therefore to request a transfer or assignment, Permittee shall submit to CDFW a completed CDFW "Request to Amend Lake or Streambed Alteration" form and include with the completed form payment of the minor amendment fee identified in CDFW's current fee schedule (see Cal. Code Regs., tit. 14, § 699.5).

EXTENSIONS

In accordance with Fish and Game Code section 1605, subdivision (b), Permittee may request one extension of the Agreement, provided the request is made prior to the expiration of the Agreement's term. To request an extension, Permittee shall submit to CDFW a completed CDFW "Request to Extend Lake or Streambed Alteration" form and include with the completed form payment of the extension fee identified in CDFW's current fee schedule (see Cal. Code Regs., tit. 14, § 699.5). CDFW shall process the extension request in accordance with Fish and Game Code section 1605, subdivisions (b) through (e).

If Permittee fails to submit a request to extend the Agreement prior to its expiration, Permittee must submit a new notification and notification fee before beginning or continuing the project the Agreement covers (Fish & G. Code § 1605, subd. (f)).

EFFECTIVE DATE

The Agreement becomes effective on the date of CDFW's signature, which shall be: 1) after Permittee's signature; 2) after CDFW complies with all applicable requirements under the California Environmental Quality Act (CEQA); and 3) after payment of the applicable Fish and Game Code section 711.4 filing fee listed at https://www.wildlife.ca.gov/Conservation/CEQA/Fees.

TERM

This Agreement shall expire five years after it is signed, unless it is terminated or extended before then. All provisions in the Agreement shall remain in force throughout its term. Permittee shall remain responsible for implementing any provisions specified herein to protect fish and wildlife resources after the Agreement expires or is terminated, as Fish and Game Code section 1605, subdivision (a)(2) requires.

EXHIBITS

The documents listed below are included as exhibits to the Agreement and incorporated herein by reference.

A. Project Site Map

B. Impacts Map

AUTHORITY

If the person signing the Agreement (signatory) is doing so as a representative of Permittee, the signatory hereby acknowledges that he or she is doing so on Permittee's behalf and represents and warrants that he or she has the authority to legally bind Permittee to the provisions herein.

AUTHORIZATION

This Agreement authorizes only the project described herein. If Permittee begins or completes a project different from the project the Agreement authorizes, Permittee may be subject to civil or criminal prosecution for failing to notify CDFW in accordance with Fish and Game Code section 1602

CONCURRENCE

The undersigned accepts and agrees to comply with all provisions contained herein.

FOR CITY OF PLACERVILLE

Rebecca Neves _____ 6/13/17

Rebecca Neves Date

FOR DEPARTMENT OF FISH AND WILDLIFE

_____ 6/15/17

for Tina Bartlett Date

~~Environmental Program Manager~~
Regional Manager

Prepared by: Gabriele Quillman, Environmental Scientist

Exhibit A:

Project Site Map

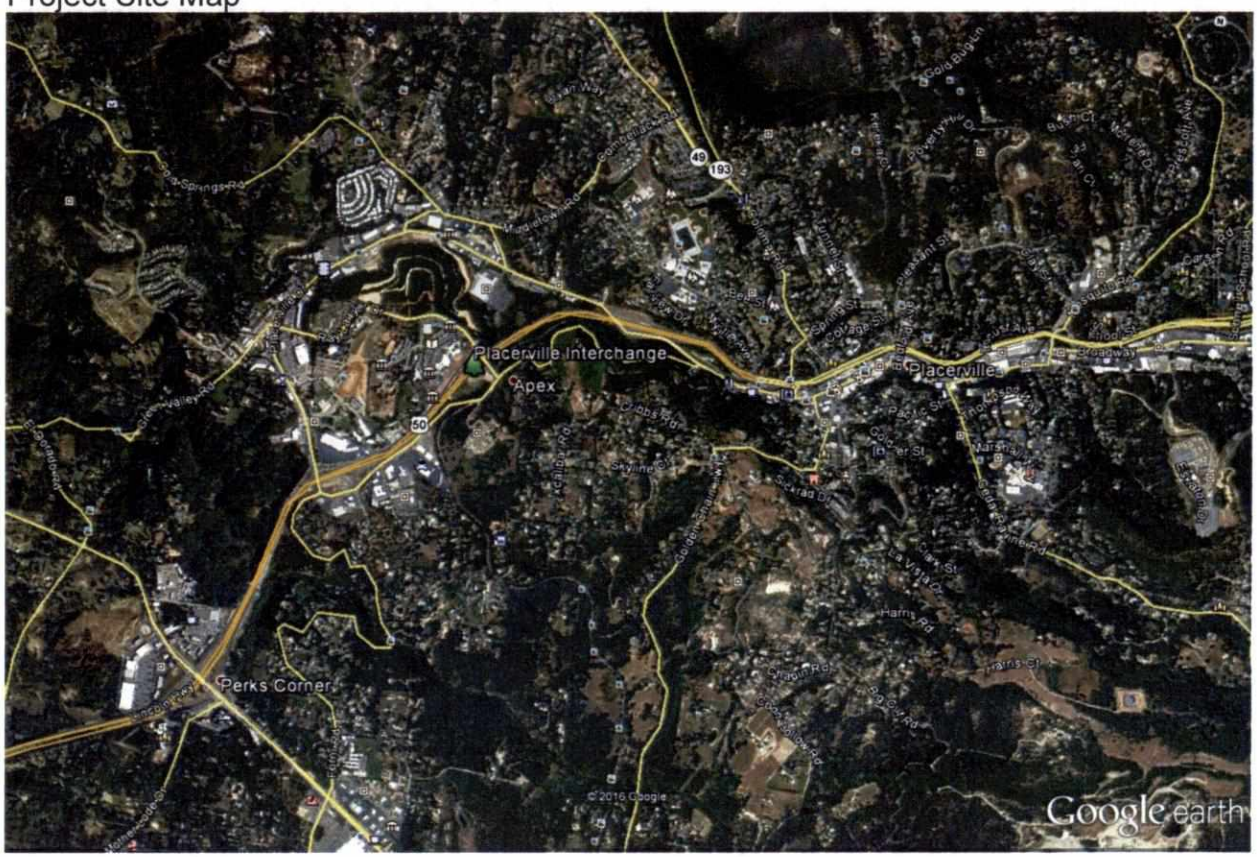
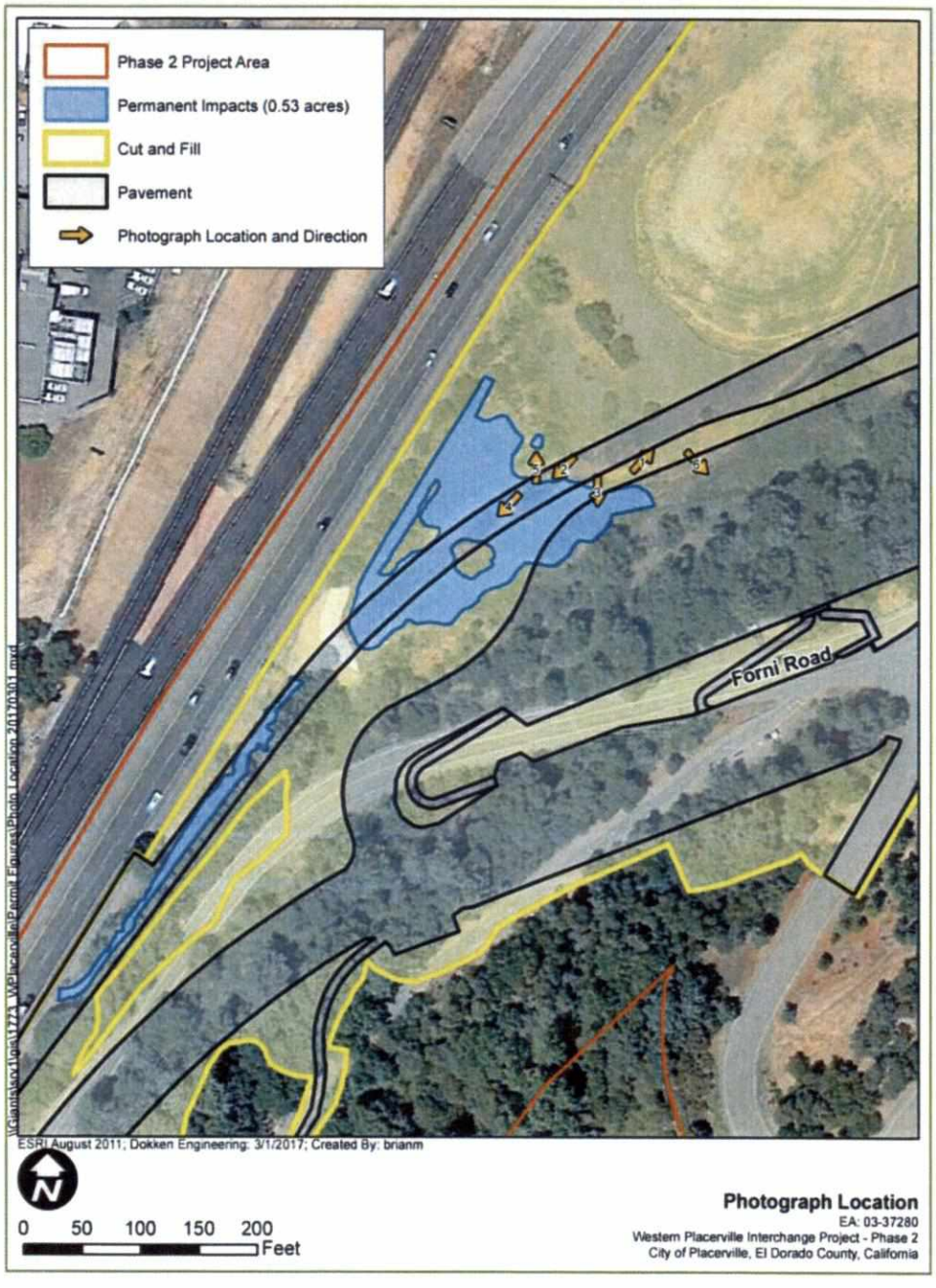


Exhibit B:

Impacts Map



ATTACHMENT 17

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, SACRAMENTO DISTRICT
1325 J STREET
SACRAMENTO CA 95814-2922

July 10, 2017

Regulatory Division (SPK-2004-00958)

City of Placerville
Attn: Ms. Rebecca Neves
487 Main Street
Placerville, CA 95667

Dear Ms. Neves:

This letter of permission (LOP) authorizes your proposed activities in approximately 0.61 acre of waters of the United States, including wetlands, for the Western Placerville Interchange project. The approximately 9-acre project site is located at the intersection of Highway 50 and Ray Lawyer Drive, in Section 13, Township 10 North, Range 10 East, Latitude 38.7245°, Longitude -120.8283°, Placerville, El Dorado County, California.

The term "you" and its derivatives, as used in this permit, means the permittee or any future transferee. The term "this office" refers to the appropriate district or division office of the Corps of Engineers having jurisdiction over the permitted activity or the appropriate official of that office acting under the authority of the commanding officer. **Work in waters of the United States must be in accordance with the following conditions of authorization:**

Special Conditions:

1. To mitigate for the loss of 0.61 acre of waters of the U.S. (WOUS), you shall purchase 0.634 acre of aquatic resource credits from the National Fish and Wildlife Foundation's (NFWF) Sacramento District California In-Lieu Fee Program for the American River - Aquatic Resource Service Area. Contact information for NFWF can be found on their website at: www.nfwf.org/ilf. Evidence of this purchase shall be provided to the Corps prior to initiation of construction activities within waters of the U.S.

2. Prior to initiation of any construction activities within waters of the U.S., you shall employ construction best management practices (BMPs) onsite to prevent degradation to waters of the U.S. Methods shall include the use of appropriate measures to intercept and capture sediment prior to entering waters of the U.S., as well as erosion control measures along the perimeter of all work areas to prevent the displacement of fill material. All BMPs shall be in place prior to initiation of any construction activities and shall remain until construction activities are completed. You shall maintain erosion control methods until all on-site soils are stabilized. You shall submit a description of and photo-documentation of your BMPs to our office within 15 days of commencement of construction. Documentation and photos may be submitted electronically to regulatory-info@usace.army.mil.

General Conditions:

1. The time limit for completing the work authorized by this permit ends on July 7, 2022. If you find that you need more time to complete the authorized activity, submit a request for time extension to this office for consideration at least one month before the above date is reached.

2. You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of these requirements if you abandon the permitted activity. This permit may be transferred upon request provided the work complies with the terms and conditions of this authorization. When the structures or work authorized by this permit are still in existence at the time the property is transferred, the terms and conditions of this permit will continue to be binding on the new owner(s) of the property. Should you wish to cease to maintain the authorized activity or abandon it without a good faith transfer, you must obtain a permit modification from this office.

3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and state coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register.

4. You shall comply with all terms and conditions of the Section 401 Water Quality Certification for this project.

5. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of your permit.

6. You must sign the enclosed Compliance Certification and return it to this office within 45 days after completion of the authorized work.

Further Information:

1. Congressional Authorities: You have been authorized to undertake the activity described above pursuant to:

( ) Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403).

(X) Section 404 of the Clean Water Act (33 U.S.C. 1344).

2. Limits of this authorization.

a. This permit does not obviate the need to obtain other Federal, state, or local authorizations required by law.

b. This permit does not grant any property rights or exclusive privileges.

c. This permit does not authorize any injury to the property or rights of others.

d. This permit does not authorize interference with any existing or proposed Federal projects.

3. Limits of Federal Liability. In issuing this permit, the Federal Government does not assume any liability for the following:

a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.

b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.

c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.

d. Design or construction deficiencies associated with the permitted work.

e. Damage claims associated with any future modification, suspension, or revocation of this permit.

4. The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.

5. This office may reevaluate its decision on this permit at any time the circumstances warrant. Circumstances that could require a reevaluation include, but are not limited to, the following:

a. You fail to comply with the terms and conditions of this permit.

b. The information provided by you in support of your permit application proves to have been false, incomplete, or inaccurate (see 4 above).

c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.

Such a reevaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation procedures contained in 33 CFR 325.7 or enforcement procedures such as those contained in 33 CFR 326.4 and 326.5.

6. Extensions. General Condition 1 establishes a time limit for the completion of the activity authorized by this permit. Unless there are circumstances requiring either a prompt completion of the authorized activity or a reevaluation of the public interest decision, the Corps will normally give favorable consideration to a request for an extension of this time limit.

This permit becomes effective when the Federal official, designated to act for the Secretary of the Army, has signed below.

This letter contains an initially proffered permit for your proposed project. If you object to this decision, you may request an administrative appeal under Corps regulations at 33 CFR Part 331. Enclosed you will find a Notification of Appeal Process (NAP) fact sheet and Request for Appeal (RFA) form. If you request to appeal this decision, submit a completed RFA form to the South Pacific Division Office at the following address: Tom Cavanaugh, Administrative Appeal

Officer, Army Engineer District-South Pacific (CESPD-PDS-O), 1455 Market Street, San Francisco, CA 94103-1399, Phone 415-503-6574, FAX 415-503-6646.

In order for an RFA to be accepted by the Corps, the Corps must determine that it is complete, that it meets the criteria for appeal under 33 CFR Part 331.5, and that it has been received by the Division Office within 60 days of the NAP fact sheet. It is not necessary to submit an RFA for the Division Office if you do not object to the decision in this letter.

We appreciate your feedback. At your earliest convenience, please tell us how we are doing by completing the customer survey on our website under *Customer Service Survey*.

Please refer to identification number SPK-2004-00958 in any correspondence concerning this project. If you have any questions, please contact Jesse Stovall, by email at *Jesse.T.Stovall@usace.army.mil*, or telephone at 916-557-7506. For more information regarding our program, please visit our website at *www.spk.usace.army.mil/Missions/Regulatory.aspx*

For and on the behalf of Colonel David G. Ray, P.E., District Engineer.

Sincerely,

for Kathleen A. Dadey, PhD
Chief, California South Section
Regulatory Division

Enclosures

cc: (w/o encls)
Ms. Elizabeth Lee, Storm Water and Water Quality Certification Unit, Central Valley Regional Water Quality Control Board (5S); Elizabeth.Lee@waterboards.ca.gov
Ms. Tina Bartlett, California Department of Fish and Wildlife, R2CEQA@wildlife.ca.gov
Mr. Richard Kuyper, U.S. Fish and Wildlife Service, richard_kuyper@fws.gov
Mr. Tim Chamberlain, Dokken Engineering, tchamberlain@dokkenengineering.com

ATTACHMENT 18

WASTE DISCHARGE IDENTIFICATION (WDID) NUMBER:

STORMWATER POLLUTION PREVENTION PLAN

for

CONSTRUCTION ACTIVITIES

CALIFORNIA CONSTRUCTION GENERAL PERMIT (ORDER No. 2009-0009-DWQ, LAST AMENDED BY 2012-006-DWQ)

Prepared for:
The City of Placerville
Placerville, CA

Submitted by:

Project Site Address
Forni Road and US-50

SWPPP Developed by:
WRECO
Walnut Creek, CA 94596

SWPPP Date
July 2017

Contractor's Qualified SWPPP Practitioner (QSP) (if different from WPC Manager)
Company Name:
Contact Name:
Address:
City, State, Zip:
Telephone Number:
Fax/Email:

RISK LEVEL: 2
CONTRACT NO.:

CALTRANS Project Identifier NUMBER:
Estimated Construction Dates:
Construction Start Date: March 1, 2018
Construction Completion Date: March 31, 2019

Contents

SECTION 100 SWPPP Certifications and Approval

100.1 LRP Certification and Caltrans Approval
100.2 Contractor and QSD SWPPP Certification
100.3 Amendments
100.3.1 SWPPP Amendments Certification and Approval
100.3.2 Amendment Log
100.4 Annual Compliance and Approval

SECTION 200 OBJECTIVES

SECTION 300 PROJECT AND CONTRACTOR INFORMATION

300.1 Project Description
300.2 Project Risk Level
300.3 Construction Sites Estimates
300.4 Vicinity and Site Map
300.5 Unique Site Features
300.6 Contact Information for Responsible Parties
300.7 List of Subcontractor and Materials Suppliers
300.8 Training

SECTION 400 REFERENCES, OTHER PLANS, PERMITS AND AGREEMENTS

SECTION 500 DETERMINATION OF CONSTRUCTION SITE BEST MANAGEMENT PRACTICES

500.1 Pollutant Sources
500.1.1 Inventory of Materials and Activities that May Pollute Stormwater
500.1.2 Potential Pollutants from Site Features or Known Contaminates
500.1.3 Risk Level Determination
500.2 Pre-Construction Existing Stormwater Control Measures
500.3 BMP Selection for Erosion and Sediment Control
500.3.1 Temporary Run-on Control BMPs
500.3.2 Soil Stabilization (Erosion Control)
500.3.3 Sediment Control
500.3.4 Tracking Control
500.3.5 Wind Erosion Control
500.4 BMP Selection for Construction Site Management
500.4.1 Non-Stormwater Site Management
500.4.2 Waste Management and Materials Pollution Control
500.5 Water Pollution Control BMP List

500.6 Water Pollution Control Drawings
500.7 Water Pollution Control Schedule

SECTION 600 PROJECT SITE IMPLEMENTATION PROGRAM

600.1 Water Pollution Control Manager Responsibilities
600.2 Site Inspections
600.3 Weather Forecast Monitoring
600.4 Weather Monitoring
600.5 Best Management Practices Status Report
600.6 Rain Event Action Plans

SECTION 700 CONSTRUCTION SITE MONITORING PROGRAM

700.1 Site Visual Monitoring Inspection
- 700.1.1 Visual Monitoring Locations
- 700.1.2 Visual Monitoring Schedule
- 700.1.3 Visual Monitoring Procedures
- 700.1.4 Visual Monitoring Following-up and Tracking Procedures
- 700.1.5 Data Management and Reporting

700.2 Sampling and Analysis Plans
- 700.2.1 General
- 700.2.2 Sampling and Analysis Plan for Non-Visible Pollutants
- 700.2.3 Sampling and Analysis Plan for Non-Stormwater Discharge
- 700.2.4 Sampling and Analysis Plan for Stormwater pH and Turbidity
- 700.2.5 Sampling and Analysis Plan for Monitoring Required by Regional Board
- 700.2.6 Sampling and Analysis Plan for Monitoring of Active Treatment System (ATS)

SECTION 800 POST CONSTRUCTION CONTROL PRACTICES

800.1 Post-Construction Control Practices
800.2 Post Construction Operation/Maintenance

SECTION 900 SWPPP REPORTING REQUIREMENTS

900.1 Record Keeping
900.2 Stormwater Annual Report
900.3 Discharge Reporting
900.4 Regulatory Agency Notice or Order Reporting
900.5 Illicit Connection/Illegal Discharge Reporting

SWPPP Attachments

Attachment A .....Legally Responsible Person Authorization of Approved Signatory
Attachment B .....Notice of Construction (NOC) / Notice of Intent (NOI)
Attachment C .....Risk Level Determination
Attachment D .....Vicinity Map and Site Map
Attachment E .....Contractor Personnel Stormwater Training
Attachment F .....Other Plans/Permits/Agreements

Attachment AA .....SWPPP Amendments
Attachment BB .....Water Pollution Control Drawings
Attachment CC .....Water Pollution Control Best Management Practices List
Attachment DD .....Water Pollution Control Schedule
Attachment EE .....Stormwater Sampling Locations

SWPPP Appendices

Appendix A .....CEM-2008 SWPPP/WPCP Amendment Certification and Acceptance Form
Appendix B .....CEM-2009 SWPPP/WPCP Amendments Log Form
Appendix C .....CEM-2070 SWPPP/WPCP Annual Certification of Compliance Form
Appendix D .....Subcontractor/Material Supplier Notification Letter and Contact Information
Appendix E .....CEM-2023 Stormwater Training Record Form
Appendix F .....CEM-2024 Stormwater Training Log-Optional Form
Appendix G .....CEM-2030 Stormwater Site Inspection Report
Appendix H CEM-2034 Monthly Stormwater Best Management & Materials Inventory Report Form
Appendix I .....CEM-2035 Stormwater Corrective Actions Summary
Appendix J .....CEM-2045 Rain Event Action Plan Forms
Appendix K .....CEM- 2061 Notice of Discharge Form
Appendix L .....CEM-2058 Stormwater Meter Calibration Record– Specialty Meters Form
Appendix M .....CEM-2051 Stormwater Sampling and Testing Activity Log – Optional Form
Appendix N .....CEM-2052 Stormwater Sample Field Test Report Form
Appendix O .....CEM-2062 Numeric Action Level Exceedance Report Form
Appendix P .....CEM-2063 Numeric Effluent Limitation Violation Report – ATS Discharges Form

SWPPP Files

File Category 20.01 .....Stormwater Pollution Prevention Plan (SWPPP)
File Category 20.02 .....Stormwater Pollution Prevention Plan Amendments
File Category 20.03 .....Water Pollution Control Schedule Updates
File Category 20.05 .....Notice of Construction or Notice of Intent
File Category 20.06 .....Legally Responsible Person Authorization of Approved Signatory

File Category 20.10 .....Correspondence
File Category 20.21 .....Subcontractor Contact Information and Notification Letters
File Category 20.22 .....Material Suppliers Contact Information and Notification Letters
File Category 20.23 .....Contractor Personnel Training Documentation
File Category 20.31 .....Contractor Stormwater Site Inspection Reports
File Category 20.32 .....Caltrans Stormwater Site Inspection Reports
File Category 20.33 .....Site Visual Monitoring Inspection Reports
File Category 20.34 .....Best Management Practices Monthly Status Reports
File Category 20.35 .....Corrective Actions Summary
File Category 20.40 .....Weather Monitoring Logs
File Category 20.45 .....Rain Event Action Plans
File Category 20.46 .....Rain/Storm Event Sampling and Analysis Plan
File Category 20.50 .....Non-Stormwater Discharge Sampling and Test Results
File Category 20.51 .....Non-Visible Pollutant Sampling and Test Results
File Category 20.52 .....Turbidity, pH and SSC Sampling and Test Results
File Category 20.53 .....Required Regional Water Board Monitoring Sampling and Test Results
File Category 20.54 .....ATS Monitoring Sampling and Test Results
File Category 20.55 .....Field Testing Equipment Maintenance and Calibration Records
File Category 20.61 .....Notice of Discharge Reports
File Category 20.62 .....Numeric Action Level Exceedance Reports
File Category 20.63 .....Numeric Effluent Limitation Violation Reports
File Category 20.70 .....Annual Certification of Compliance
File Category 20.80 .....Stormwater Annual Reports
File Category 20.90 .....Notice of Termination

SECTION 100
SWPPP Certifications and Approval

100.1 Legally Responsible Person Certification and Caltrans Approval

The City of Placerville Public Works Director, as the Legally Responsible Person (LRP), has authorized the Caltrans RE to be the authorized Approved Signatory of Caltrans for reviewing, signing, and certifying the Stormwater Pollution Prevention Plan (SWPPP) in conformance with Section IV.I of the Construction General Permit (CGP) (CAS000002, Order No. 2009-0009-DWQ as amended by Order 2010-0014-DWQ and 2012-006-DWQ). The LRP authorization for the RE to be the Approved Signatory is provided as Attachment A. The SWPPP was developed by the Contractor and submitted for review and acceptance to the RE, pursuant to the Special Provisions, the SWPPP / Water Pollution Control Program (WPCP) Preparation Manual, and the Standard Specifications Section 7-1.01G - Water Pollution. The Contractor is responsible and liable at all times for compliance with applicable requirements of the CGP (CAS000002, Order No. 2009-009- DWQ as amended by Order 2010-0014-DWQ and 2012-006-DWQ) for which compliance is ultimately determined by the Regional Water Quality Control Board (RWQCB), the State Water Resources Control Board (SWRCB), and/or the U.S. Environmental Protection Agency (USEPA). Copies of the SWRCB-issued Waste Discharge Identification Number and Notice of Intent form are provided as Attachment B.

For Caltrans Use Only

RE's Acceptance of the
Stormwater Pollution Prevention Plan

Project Name: Western Placerville IC Phase II

Caltrans Contract Number: 03-37281

Caltrans Project
Identification Number:

"I certify under penalty of law that this document and all attachments were reviewed under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, to the best of my knowledge and belief, the information submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations."

This SWPPP is accepted based on a review performed by myself or personnel acting under my direction that determined that the SWPPP meets the requirements set forth in the contract special provisions, Caltrans Standard Specifications, and the Caltrans SWPPP/WPCP Preparation Manual.

RE's Signature

Date of SWPPP Acceptance

RE's Name | RE's Telephone Number

100.2 Contractor and QSD SWPPP Certification

Contractor's Certification of SWPPP

Project Name: Western Placerville IC Phase II

Caltrans Contract Number: 03-37281

Caltrans Project
Identification Number:

"I certify under a penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted, to the best of my knowledge and belief, is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations."

Contractor's Signature | Date

Contractor's Name | Telephone Number

To be determined

Contractor's Title

QSD's Certification of SWPPP

Project Name: Western Placerville IC Phase II

Caltrans Contract Number: 03-37281

Caltrans Project
Identification Number:

"I certify under penalty of law that I relied upon available project and site information, current watershed and basin plan maps and available soil data to develop this SWPPP so that Best Management Practices (BMPs) were designed and placed in accordance with industry standards and best professional judgment to reduce pollutants from leaving the job site. All other sources relied upon to gain information for this project's SWPPP were appropriate and dependable, based on my best professional judgment. To the best of my knowledge and belief, the information submitted in this SWPPP is in compliance with all requirements of the Construction General Permit (CAS000002, Order No. 2009-009-DWQ as ammended by Order 2010-0014-DWQ and 2012-006-DWQ). I certify that the 'required text' portions of this document are unaltered from the original required text and content."

QSD's Signature	Date
WRECO	
QSD's Name	QSD's Telephone Number
Senior Associate Engineer (Chris Sewell, WRECO)	
QSD's Title	

100.3 Amendments

100.3.1 SWPPP Amendments Certification and Approval

This SWPPP is meant to be a "living document," therefore, updated and additional information is expected to be added to the SWPPP as the project progresses, including information regarding changes in the field that do not require an amendment, such as the following:

- adding BMPs as required by a *Rain Event Action Plan*
- increasing or decreasing the quantity of BMPs in the field that are already part of the erosion control plan in the SWPPP,
- moving BMPs shown on the WPCDs to protect water quality during different phases of construction,
- updating WPCDs to reflect actual site conditions, and
- maintenance and repairs to BMPs.

This SWPPP shall be amended when:

- a change in construction or operations affects the discharge of pollutants to surface waters, groundwater(s), or a municipal separate storm sewer system (MS4);
- a contract change order includes additional water pollution control practices, not already specified in the approved SWPPP;
- deemed necessary by the RE;
- SWPPP objectives to reduce or eliminate pollutants in stormwater discharges have not been achieved; or
- a CGP violation has occurred; when the RWQCB determines that a CGP violation has occurred, the SWPPP shall be amended and corrective actions implemented within 14 calendar days after notification by the RWQCB.

The following information shall be included in each amendment:

- who requested the amendment;
- the location of proposed change;
- the reason for the change;
- the original BMP proposed, if any;
- the new BMP proposed; and
- any existing implemented BMP(s).

Approved and certified amendments shall be inserted into the appropriate section or attachment of the SWPPP. All SWPPP amendments prepared by the WPC Manager and approved by the Contractor shall be accepted and certified by the LRP or Approved Signatory. A blank copy of the CEM-2008 SWPPP/WPCP Amendment Certification and Approval form is in Appendix A. For approved amendments, the signed SWPPP Amendment Certification and Approval form shall be attached to the SWPPP amendment.

A copy of each approved and certified amendment shall be inserted into Attachment AA. All SWPPP amendments shall be listed in the SWPPP Amendment Log, available in Appendix B. The Amendment Log shall be kept in SWPPP File Category 20.02 and a copy shall be inserted into Attachment AA.

The SWPPP will be completely revised if either the number of amendments or the amount of information contained in the amendments makes implementation of the SWPPP confusing, as determined by the RE, or the Contractor requests to revise the SWPPP based on planned changes in activities that would require a major SWPPP amendment.

100.3.2 Amendment Log

All approved and certified SWPPP amendments shall be shown on the SWPPP Amendment Log. A blank Amendment Log is available in Appendix B. The SWPPP Amendment Log shall include the following information:

- amendment number;
- amendment date;
- brief description of the amendment;
- name of individual requesting amendment; and
- approval date.

All SWPPP amendment(s) prepared and approved as discussed in Section 100.3.1 shall be documented in the Amendment Log and kept in SWPPP File Category 20.02: Stormwater Pollution Prevention Plan Amendments. A copy of the Amendment Log shall also be inserted into Attachment AA.

100.4 Annual Compliance and Approval

By July 15 of each year, the Contractor shall submit the Contractor's Annual Certification of Compliance to the RE stating that the project is in compliance with the terms and conditions of the Permits and the SWPPP. By August 1 of each year, the Caltrans LRP, or RE as authorized Approved Signatory, will complete an Annual Certification of Compliance stating that the project is in compliance with the terms and conditions of the Permits and the SWPPP. A blank copy of the CEM-2070 SWPPP/WPCP Annual Certification of Compliance form is included in Appendix C. Completed Annual Certification of Compliance forms will be filed in SWPPP File Category 20.70: Annual Certification of Compliance.

SECTION 200
OBJECTIVES

This SWPPP has five (5) main objectives, which are listed below.

1. All pollutants and their sources, including sources of sediment associated with construction, construction site erosion, and all other activities associated with construction activity, are controlled.

2. Where not otherwise required to be under a California Regional Water Quality Control Board (RWQCB) permit, all non-stormwater discharges are identified and either eliminated, controlled, or treated.

3. Site BMPs are effective and result in the reduction or elimination of pollutants in stormwater discharges and authorized non- stormwater discharges from the construction activity to the best available technology (BAT) / best conventional technology (BCT) standard.

4. Calculations and design details for site run-on, as well as BMP controls, are complete and correct.

5. Stabilization BMPs designed to eliminate or reduce pollutants after construction is complete have been installed

This SWPPP was developed to conform to the required elements of the CGP (CAS000002, Order No. 2009-0009-DWQ as ammended by Order 2010-0014-DWQ and 2012-006-DWQ) issued by the SWRCB.

This SWPPP is designed to be a useful document for those who must implement the SWPPP on a daily basis in the field. Most of the information necessary for the daily implementation of the SWPPP is contained in Attachment BB: Water Pollution Control Drawings, Attachment CC: Water Pollution Control Best Management Practices List, and Attachment DD: Water Pollution Control Schedule.

This SWPPP is also a "living document" because updated and additional information is added to the SWPPP file categories as the project progresses, including:

- SWPPP Amendments;
- Subcontractor and Material Supplier Information;
- Contractor Personnel Training Documentation;
- Site Inspection Reports;
- Monthly Status Reports;
- Rain Event Action Plans;
- Sampling and Analysis Results; and
- Notice of Discharge Reports.

The SWPPP shall be readily available on site for the duration of the project.

SECTION 300
PROJECT AND CONTRACTOR INFORMATION

300.1 Project Description

The City of Placerville proposes an eastbound direct access from US Route 50 (US 50) onto Ray Lawyer Drive with an eastbound auxiliary lane between the existing eastbound access ramp at Forni Road in addition to a proposed eastbound off-ramp at Ray Lawyer Drive. Also proposed is a retaining wall along Forni Road, resurfacing of the existing number one lane mainline US 50 and a park-and-ride facility located between the proposed offramp and Forni Road.

300.2 Project Risk Level

The risk level assessment of the project site was calculated to be Risk Level 2 . This risk level will determine the minimum level of BMPs that will be acceptable based on the project site and the project construction activities. The risk level is the basis for the minimum level of site-specific monitoring and reporting that will be required. The risk level is based on project duration, proximity to impaired receiving waters, and soil conditions. The Risk Level Determination is discussed in Section 500.1.3 and the calculations are included in Attachment C.

300.3 Construction Sites Estimates

The following are estimates of the construction site.

- Construction site area 16.09
- Percentage impervious area before construction 15%
- Runoff coefficient before construction 0.75
- Percentage impervious area after construction 42%
- Runoff coefficient after construction 0.83

Run-on from off-site areas anticipated: ◉ Yes ○ No

Anticipated stormwater run-on flow rate to the construction site:

Anticipated drainage patterns following the completion of grading activities are shown on the WPCDs from Attachment BB.

Per the Rational Method, discharge, Q in cubic feet per second (cfs), is estimated as follows:

$Q = CiA$

C = 0.54 for offsite area (unitless)
i = 3.50 in/hr (5 minute tc, small offsite watersheds)
1.01 in/hr (60 minute tc, large offsite watershed draining to inlet 12b)
A = 0.17 acre (small watershed running onto the "CJ" Line)
0.79 acre (small watershed running onto the "F-1" Line)
8.56 acre (potentially running onto the "F" Line. This area is routed to a earthen ditch but has the potential to run over the bike path onto Forni Road)

Q(CJ) = 0.32 cfs

Q(F-1) = 1.5 cfs

Q(F) = 4.7 cfs

Locations of potential run-on with the estimated flow rates shall be noted on the WPCDs. The BMPs designed to handle the run-on flows are included in Section 500.3.1.

300.4 Vicinity and Site Map

The construction project vicinity map showing the project location, surface water boundaries, geographic features, construction site perimeter, and general topography, is located in Attachment D. The project contract plan Title Sheet provides additional detail regarding the project location and is also included in Attachment D.

The construction Project vicinity map showing the project location, surface water boundaries, geographic features, construction site perimeter, and general topography, is located in Attachment C. The project contract plan Title Sheet provides additional detail regarding the Project location and is also included in Attachment C.

The proposed Project is located in El Dorado County on portions of US-50, Forni Road and Ray Lawyer Drive. The majority of the Project construction is centered around the Forni Road/Ray Lawyer Drive overcrossing of US-50.

300.5 Unique Site Features

Project has Fill Material: ◉ Yes ○ No

Project has Native Material: ◉ Yes ○ No

Hydrologic Soil Group: ☐ A (high infiltration rate) ☐ B (moderate infiltration rate) ☑ C (slow infiltration rate) ☐ D (very slow infiltration rate)

Soil Erodibility: ☐ Slight ☑ Moderate ☐ Severe

Unique Features Onsite: ☑ Water Bodies ☐ Wetlands ☑ Endangered or Protected Species ☑ Environmentally Sensitive Areas ☐ Other ☐ None

300.6 Contact Information for Responsible Parties

The following parties are responsible for this SWPPP:

WPC Manager

Name:

Title:	**Water Pollution Control Manager**
Company:	**To be determined.**
Address:	
	,
Phone Number:	
Emergency Phone Number (24/7):	
Email address:	

Resident Engineer

Name:	
Title:	**Resident Engineer**
Company:	**Caltrans District 3**
Address:	**703 B Street**
	Marysville, CA 95901
Phone Number:	
Emergency Phone Number (24/7)	**To be determined.**
Email address:	

Contractor

Name:	
Title:	**Contractor**
Company:	
Address:	
	,
Phone Number:	
Emergency Phone Number (24/7)	**To be determined.**
Email address:	

Erosion and Sediment Control Provider

Name: **To be determined.**

Title:

Company:

Address:

,

Phone Number:

Emergency Phone Number (24/7)

Email address:

Stormwater Sampling and Testing Agent

Name: **To be determined.**

Title:

Company:

Address:

,

Phone Number:

Emergency Phone Number (24/7)

Email address:

Chris Sewell, QSD
Chris_Sewell@wreco.com
925-941-0017 x 204

300.7 List of Subcontractor and Materials Suppliers

The following subcontractors will be working on this project:

1 **To be determined**

SWPPP Responsibility:

2

SWPPP Responsibility:

Contact information for each subcontractor will be provided in the SWPPP Notification log in SWPPP File Category 20.21: Subcontractor Contact Information and Notification Letters. Contact information shall include subcontractor name, type of work performed, contact name, phone number and emergency telephone number (24/7).

The following materials suppliers will be delivering materials to the project site and must comply with pertinent SWPPP requirements:

1 **To be determined**

2

Contact information for each material supplier will be provided in the SWPPP Notification log in SWPPP File Category 20.22: Material Supplier Contact Information and Notification Letters. Contact information shall include company name, type of material supplied, contact name and phone number.

All subcontractors and material suppliers shall be notified that the project is covered by the

- SWRCB Order No. 2009-0009-DWQ as amended by Order 2010-0014-DWQ and 2012-006-DWQ, NPDES General Permit No. CAS000002, National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities, September 02, 2009 (Construction General Permit).

Each subcontractor and material supplier shall also be notified that the project has a SWPPP and the pertinent water pollution control BMPs with which the subcontractor or material supplier must comply. If subcontractors or material suppliers are added during the project, appropriate notification that the project has a SWPPP and the pertinent water pollution control BMPs shall be given to the subcontractor or materials supplier prior to working or supplying materials on the project site.

A SWPPP Notification Letter shall be sent to all subcontractors and material suppliers. A sample notification letter and notification letter log is provided in Appendix D. A copy of SWPPP Notification Letters sent to subcontractors and material suppliers are in SWPPP File Category 20.21: Subcontractor Contact Information and Notification Letters or 20.22 Material Supplier Contact Information and Notification Letters. Notification letter logs and contact information are filed in SWPPP File Category 20.21: Subcontractor Contact Information and Notification Letters and File Category 20.22: Material Supplier Contact Information and Notification Letters.

300.8 Training

The Contractor's WPC Manager is a QSD. The WPC Manager for this project, meets the qualifications and certification requirements of Section VII, Training Qualifications and Certification Requirements, of the CGP based on:

- To be determined
-
-

The WPC Manager has received the following training:

- To be determined
-

The WPC Manager has the following SWPPP development and implementation experience:

- To be determined
-

Ongoing, formal training sessions for individuals responsible for SWPPP development and implementation shall be selected from one of the following organizations.

- City of Los Angeles Storm Water Program
- County of Los Angeles Storm Water Program
- State of California RWQCB
- IECA-, ABAG- and/or AGC-sponsored training
- USEPA-sponsored training
- Recognized municipal stakeholder organizations throughout California
- Professional organizations and societies in the building and construction field
- City of Los Angeles Storm Water Program
- County of Los Angeles Storm Water Program
- State of California RWQCB
- DECA-, ABAG- and/or AGC-sponsored training
- USEPA-sponsored training
- Recognized municipal stakeholder organizations throughout California
- Professional organizations and societies in the building and construction field

Contractor or subcontractor employees responsible for water pollution control BMP installation, maintenance and repair have received the following training.

- water pollution control rules and regulations
- implementation and maintenance for: temporary soil stabilization, temporary sediment control, tracking control, wind erosion control, material pollution prevention control, waste management, and non-stormwater management
- identification and handling of hazardous substances
- potential dangers to humans and the environment from spills and leaks or exposure to toxic or hazardous substances
-

Contractor and subcontractor employees shall be trained prior to working on the site in the following subjects:

- water pollution control rules and regulations
- implementation and maintenance for:
    - temporary soil stabilization,
    - temporary sediment control,
    - tracking control,
    - wind erosion control,
    - material pollution prevention control,
    - waste management, and
    - non-stormwater management
- identification and handling of hazardous substances
- potential dangers to humans and the environment from spills and leaks or exposure to toxic or hazardous substances

Informal employee training shall include tailgate site meetings to be conducted weekly; tailgate meetings should address the following topics:

- water pollution control BMP deficiencies and corrective actions;
- BMPs that are required for work activities during the week;
- spill prevention and control;
- material delivery, storage, use, and disposal;
- waste management; and
- non-stormwater management procedures.

A summary of formal and informal training of various personnel is shown in Attachment E. A copy of all training certificate(s) (e.g., Caltrans 24-Hour Training Class and CGP Training) for the WPC Manager and the Qualified SWPPP Developer are included in Attachment E.

Training records for project personnel shall be updated by completing the CEM-2023 Stormwater Training Record form, available in Appendix E, and the CEM-2024 Stormwater Training Log - Optional form, available in Appendix F. Records of training, with training certificates attached, when applicable, and the training log will be kept in SWPPP File Category 20.23: Contractor Personnel Training Documentation. Personnel training records, with required documentation attached and an updated training log, shall be submitted to the RE within five (5) days of completion of training.

Training information, consisting of the following items, shall be provided in the Stormwater Annual Report:

- documentation of all training for individuals responsible for all activities associated with compliance with CGP,
- documentation of all training for individuals responsible for BMP installation, inspection, maintenance, and repair, and
- documentation of all training for individuals responsible for overseeing, revising, and amending the SWPPP.
- water pollution control BMP deficiencies and corrective actions;

- BMPs that are required for work activities during the week;
- spill prevention and control;
- material delivery, storage, use, and disposal;
- waste management; and
- non-stormwater management procedures.
- Training information, consisting of the following items, shall be provided in the Stormwater Annual Report:
- documentation of all training for individuals responsible for all activities associated with compliance with CGP,
- documentation of all training for individuals responsible for BMP installation, inspection, maintenance, and repair, and
- documentation of all training for individuals responsible for overseeing, revising, and amending the SWPPP.

SECTION 400
REFERENCES, OTHER PLANS, PERMITS AND AGREEMENTS

The documents listed below are made a part of this SWPPP by reference.

- Standard Plans and Specifications, dated 2015.
- Contract Plans and Special Provisions for Contract No. To be determined, dated June 2017, prepared by To be determined.
- SWRCB-Order No. 2009-0009-DWQ, Order No. 2009-0009-DWQ as amended by Order 2010-0014-DWQ and 2012-006-DWQ NPDES General Permit No. CAS000002, National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated With Construction and Land Disturbance Activities (Construction General Permit), September 2009
- *Caltrans Statewide Storm Water Management Plan* (SWMP), dated July 2016
- *Caltrans SWPPP/WPCP Preparation Manual,* dated June 2011
- *Caltrans Construction Site Monitoring Program Guidance Manual,* August 2013
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Attachment F includes copies of the Caltrans Statewide Permit, the CGP, and other local, state, and federal plans and permits. A list of the other local, state, and federal plans and permits included in Attachment F is provided below.

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SECTION 500
DETERMINATION OF CONSTRUCTION SITE BEST MANAGEMENT PRACTICES

500.1 Pollutant Sources

500.1.1 Inventory of Materials and Activities that May Pollute Stormwater

The following table contains a list of construction activities that have the potential to contribute pollutants, including sediment, to stormwater discharges. All potential pollutants, except sediment, and their locations shall be listed in this section, and, where possible, the locations shall be shown on the WPCDs from Attachment BB. Details for controlling these pollutants using soil stabilization and sediment control BMPs are discussed in Sections 500.3.1 through 500.3.5. Potential non-storm water and waste management-related discharges are further described in Sections 500.4.1 and 500.4.2, respectively.

TABLE 500.1.1
ANTICIPATED CONSTRUCTION SITE ACTIVITIES WITH THE POTENTIAL TO DISCHARGE POLLUTANTS

☑ Demolition	☑ Pavement Removal (asphalt concrete, concrete) ☐ Structure Demolition/Removal over or Adjacent to Water ☐ Building Demolition (Structure, HVAC, insulation) ☑ Hardscape Demolition (Parking areas, curbs, gutters, sidewalks)
☑ Earthwork	☑ Clearing and Grubbing ☑ Grading Activities ☑ Soil Import and Export ☑ Stockpiling ☑ Excavation ☐ Disturbance of Contaminated Soil ☐ Dewatering ☐ Temporary Stream Crossing ☑ Drainage Construction ☐ Dredging ☐ Pile Driving ☐ Utilities ☐ Line Flushing (hydrostatic test water, pipe flushing) ☑ Landscaping, Planting and Plant Maintenance, Amending of Soil and Mulching ☐ Material and Equipment Use over Water
☑ Masonry, Concrete, Asphalt Work	☑ Saw Cutting (cement and brick dust, saw cut slurries) ☑ Paving and Grinding

TABLE 500.1.1 ANTICIPATED CONSTRUCTION SITE ACTIVITIES WITH THE POTENTIAL TO DISCHARGE POLLUTANTS	
	☑ Concrete Placement (colored chalks) ☑ Concrete Curing (curing and glazing compounds) ☑ Concrete Finishing (surface cleaners) ☑ Concrete Waste Management
☐ Building Construction	☐ Paint Preparation, Painting, Stenciling, and Etching ☐ Material Use ☐ Material Delivery and Storage ☐ Adhesives (glues, resins, epoxy synthetics, caulks, sealers, putty, sealing agents and coal tars) ☐ Cleaning, Polishing (metal, ceramic, tile), and Sandblasting Operations ☐ Plumbing [solder (lead, tin), flux (zinc chloride), pipe fitting] ☐ Framing (sawdust, particle board dust and treated woods) ☐ Interior Construction (tile cutting, flashing, saw-cutting drywall, galvanized metal in nails and fences, and electric wiring)
☑ Equipment Use	☑ Vehicle and Equipment Cleaning ☑ Vehicle and Equipment Fueling ☑ Vehicle and Equipment Maintenance
☑ Waste Management	☐ Hazardous Waste Management ☑ Solid Waste Management (litter, trash, and debris) ☑ Liquid Waste Management (wash water) ☑ Sanitary Septic Waste Management (portable toilets, disturbance of existing sewer lines)

The WPC Manager shall update the list of potential pollutants in accordance with onsite conditions, documenting all materials or equipment that have been received or produced onsite that are not designed to be outdoors and are potential sources of stormwater contamination.

Materials Management Plan

Potential pollutants shall not be stored within 50 feet of stormwater conveyance features or concentrated flow paths. In addition, non-stormwater discharges shall not be made within 50 feet of potential pollutants.

A list of construction materials that will be on site and have the potential to contribute pollutants, other than sediment, to stormwater runoff, which has been prepared to prevent or minimize the off-site discharge of those pollutants, are provided below.

The following stockpiles will be covered and bermed prior to likely precipitation events.

- Disturbed soils
- Debris from construction, removal, and clearing activities
- Soil amendments
- Erosion and landscaping material

The following materials will be kept off the ground or bermed and covered prior to likely precipitation events.

- Liquid material and waste
- Hazardous materials and waste

The following materials will be properly stored according to Material Safety Data Sheet requirements.

- Concrete materials, including cast-in-place and precast concrete items
- Asphalt concrete or hot mix asphalt
- Paint and striping material

The following dumpsters shall be covered prior to likely precipitation events.

- Trash and litter
- Construction and demolition waste

The following areas will be inspected for leaks or spills prior to likely precipitation events.

- Portable Toilets
- Portable toilets
- Drums containing liquid material

Potential pollutants shall not be stored within 50 feet of stormwater conveyance features or concentrated flow paths. In addition, non-stormwater discharges shall not be made within 50 feet of potential pollutants.

500.1.2 Potential Pollutants from Site Features or Known Contaminates

Former site usage or known site contamination may contribute pollutants to stormwater discharges from the site. Based on information available for the project site, the following site usage and historical contamination has been determined:

Former Industrial Operations: ○ Yes ◉ No

Description of Former Industrial Operations

No known historical industrial operations existed onsite.

There is a Diamond Pacific lumber yard/timber products retail site. This site is a potential source for copper naphthenate as a wood preservative among other chemicals and by products of construction materials, including cement.

Historic Contamination: ○ Yes ◉ No

-
-

The following contaminants are known to exist at the project site locations identified:

- Aerially deposited lead (ADL).

-

500.1.3 Risk Level Determination

Project sediment risk is High. The rainfall runoff erosivity factor (R) is 90, K factor 0.32, and LS factor is 4.5.
Project receiving water risk is Low.
Therfore the Project combined risk level is Level 2.

500.2 Pre-Construction Existing Stormwater Control Measures

The following are existing (pre-construction) control measures encountered within the project site.

- Sheet flow onto established vegetated surfaces
- Stormwater routing through a temporary detention basin
- Sheetflow to vegetated depression storage areas

500.3 BMP Selection for Erosion and Sediment Control

The Contractor shall control construction site erosion through the implementation of effective erosion and sediment control measures in accordance with the CGP. The Contractor and the WPC Manager shall develop a schedule that includes the sequencing of construction activities and the implementation of effective erosion control BMPs while taking local climate (rainfall, wind, etc.) into consideration, thereby reducing the amount and duration of soil exposed to erosion by wind, rain, runoff, and vehicle tracking. The SWPPP schedule shall: describe when work activities will be performed that could cause the discharge of pollutants in stormwater; describe the water pollution control practices associated with each construction phase; and identify the soil stabilization and sediment control practices for all disturbed soil areas. Effective soil cover shall be provided for:

- Disturbed soil areas
- Stockpiles
- Inactive areas

Additional erosion and sediment control BMPs may be required in other locations on the project site as work progresses in order to prevent sediment from leaving the construction site. These measures shall be determined by the Contractor and the WPC Manager in the field. As long as the water pollution control measures consist of additions to the BMPs already selected in the approved SWPPP, then these additional measures do not require a SWPPP amendment and the WPC Manager shall simply show the additional measures on the WPCDs. If erosion control or sediment control BMPs must be changed because of field conditions or because they are determined to be ineffective, the SWPPP must be amended. Once deemed necessary, corrective actions/design changes to the SWPPP shall be reviewed and signed by the WPC Manager, implemented, as required by Standard Specification 13-1.03A, within 24 hours of identification unless a longer period is authorized (but cannot be authorized longer than required by the CGP: implemented within 72 hours of identification and completed as soon as possible thereafter). Immediate corrective action is required for numeric action level (NAL) exceedances. Routine BMP maintenance or the implementation of an additional quantity of a BMP included in the SWPPP as recommended by the WPC Manager does not require an amendment to the SWPPP.

An effective combination of erosion (soil stabilization) and sediment control BMPs shall be implemented and maintained during the project. The following principles shall be followed to the maximum extent practicable to control erosion and sedimentation in disturbed areas at the site.

- Provide effective soil cover for inactive areas (areas that have been disturbed and are not scheduled to be redisturbed for at least 14 days).
- Apply soil stabilization measures and install sediment control measures.
- Implement effective wind erosion control measures.

The Contractor shall control construction site erosion through the implementation of effective erosion and sediment control measures in accordance with the CGP. The Contractor and the WPC Manager shall develop a schedule that includes the sequencing of construction activities and the implementation of effective erosion control BMPs while taking local climate (rainfall, wind, etc.) into consideration, thereby reducing the amount and duration of soil exposed to erosion by wind, rain, runoff, and vehicle tracking. The SWPPP schedule shall: describe when work activities will be performed that could cause the discharge of pollutants in stormwater; describe the water pollution control practices associated with each construction phase; and identify the soil stabilization and sediment control practices for all disturbed soil areas.

Additional erosion and sediment control BMPs may be required in other locations on the project site as work progresses in order to prevent sediment from leaving the construction site. These measures shall be determined by the Contractor and the WPC Manager in the field. As long as the water pollution control measures consist of additions to the BMPs already selected in the approved SWPPP, then these additional measures do not require a SWPPP amendment and the WPC Manager shall simply show the additional measures on the WPCDs. If erosion control or sediment control BMPs must be changed because of field conditions or because they are determined to be ineffective, the SWPPP must be amended. Once deemed necessary, corrective actions/design changes to the SWPPP shall be reviewed and signed by the WPC Manager, implemented, as required by Standard Specification 13-1.03A, within 24 hours of identification unless a longer period is authorized (but cannot be authorized longer than required by the CGP: implemented within 72 hours of identification and completed as soon as possible thereafter). Immediate corrective action is required for numeric action level (NAL) exceedances. Routine BMP maintenance or the implementation of an additional quantity of a BMP included in the SWPPP as recommended by the WPC Manager does not require an amendment to the SWPPP.

An effective combination of erosion (soil stabilization) and sediment control BMPs shall be implemented and maintained during the project.

A more concise listing of the BMP control measures to be implemented and maintained at the project site are denoted in the BMP selection tables in the following sub-sections.

A more concise listing of the BMP control measures to be implemented and maintained at the project site are denoted in the BMP selection tables in the following sub-sections.

500.3.1 Temporary Run-on Control BMPs

TABLE 500.3.1
TEMPORARY RUN-ON CONTROL BMPs

CONSTRUCTION BMP ID NO.(1)	BMP NAME	CONTRACT MIN REQUIRE-MENT(2)	CONTRACT BID ITEM	BMP USED		IF A CONTRACT MINIMUM REQUIREMENT BUT NOT USED, STATE REASON
				Yes	No	
SS-1	Scheduling	☑	☑	◉	○	
SS-2	Preservation of Property/ Preservation of Existing Vegetation	☑	☑	◉	○	

SS-9	Earth Dikes / Drainage Swales & Lined Swales	☐	☑	◉	○	
SS-10	Outlet Protection / Velocity Dissipation Devices	☐	☑	◉	○	
SS-11	Slope Drains	☐	☐	○	◉	
SS-12	Streambank Stabilization	☐	☐	○	◉	
SC-4	Temporary Check Dam	☐	☐	○	◉	
SC-5	Fiber Rolls	☐	☐	○	◉	
SC-6	Temporary Gravel Bag Berm	☐	☐	○	◉	
SC-8	Temporary Sandbag Barrier	☐	☐	○	◉	
ALTERNATIVE BMPs USED(3) ○ Yes ◉ No						

Notes:
(1) The BMP designations (SS-1, SC-5, etc.) are solely for maintaining continuity with existing Caltrans documents and are not provided to imply that the Construction Site BMP Reference Manual is a required contract document.
(2) Minimum requirements are based on the required Contract Provisions, Standard Special Provisions, Plans and Specifications. Not all minimum requirements may be applicable to every project. Applicability to a specific project shall be determined by the QSD or WPC Manager.
(3) Use of alternative BMPs will require written approval by the RE.

Implementation of Temporary Run-on Controls BMPs

- SS-9 and SS-10: The Drainage Plan identifies the proposed permanent drainage. These facilities can be used or modified to provide temporary run-on control.
- SS-1: A water pollution control schedule (WPCS) is required as discussed in Section 500.7 of this SWPPP. The WPCS
must reflect the construction limitations stated in the permits listed in Section 400 of this SWPPP.
- SS-2: Construction, including disturbance of soils, must be limited to the areas shown on the plans. ESA fencing must be placed as shown on the plans, stated in the permits listed in Section 400, and as directed by the County.

500.3.2 Soil Stabilization (Erosion Control)

Soil stabilization, also referred to as erosion control, consists of source control measures that are designed to prevent soil particles from detaching and becoming transported in stormwater runoff. Soil stabilization BMPs protect the soil surface by covering and/or binding soil particles. This project will incorporate SWPPP/WPCP Preparation Manual minimum temporary soil stabilization requirements, temporary soil stabilization measures required by the contract documents, and other measures selected by the Contractor.

Sufficient soil stabilization materials will be maintained on site to allow implementation in conformance with Caltrans requirements and as described in this SWPPP. This includes implementation requirements for active and non-active areas that require deployment before the onset of rain.

The following soil stabilization BMP selection table indicates the BMPs that shall be implemented to control erosion on the construction site. Temporary soil stabilization BMPs are listed by location in the WPCBMPL in Attachment CC and are shown on the WPCDs from Attachment BB. Any details for temporary soil stabilization BMPs are shown in Attachment BB.

TABLE 500.3.2
TEMPORARY EROSION CONTROL BMPs

CONSTRUCTION BMP ID NO.(1)	BMP NAME	CONTRACT MIN REQUIRE-MENT(2)	CONTRACT BID ITEM	BMP USED		IF A CONTRACT MINIMUM REQUIREMENT BUT NOT USED, STATE REASON
				Yes	No	
SS-1	Scheduling	☑	☑	◉	○	
SS-2	Preservation of Property/ Preservation of Existing Vegetation	☑	☑	◉	○	
SS-3	Temporary Hydraulic Mulch (Bonded Stabilized Fiber Matrix)	☑	☑	◉	○	
SS-3	Temporary Hydraulic Mulch (Polymer Stabilized Fiber Matrix)	☐	☐	○	◉	
SS-4	Temporary Erosion Control (With Temporary Seeding)	☐	☐	○	◉	
SS-5	Temporary Soil Stabilizer	☐	☐	○	◉	
SS-6	Temporary Erosion Control (Straw Mulch with Stabilizing Emulsion)	☐	☐	○	◉	
SS-7	Temporary Erosion Control Blanket (On Slope)	☐	☐	○	◉	
SS-7	Temporary Erosion Control Blanket (In swale or ditch)	☐	☐	○	◉	
SS-7	Temporary Cover (Geotextiles and Mats)	☐	☐	○	◉	

SS-8	Temporary Mulch (Wood)	☐	☐	○	◉	
SS-9	Earth Dikes / Drainage Swales & Lined Swales	☐	☐	○	◉	
SS-10	Outlet Protection/ Velocity Dissipation Devices	☐	☐	○	◉	
SS-11	Slope Drains	☐	☐	○	◉	
SS-12	Streambank Stabilization	☐	☐	○	◉	
SS-13	Polyacrylamide	☐	☐	○	◉	
ALTERNATIVE BMPs USED (3) ○ Yes ◉ No						

Notes:
(1) The BMP designations (SS-1, SC-3, etc.) are solely for maintaining continuity with existing Caltrans documents and are not provided to imply that the Construction Site BMP Reference Manual is a required contract document.
(2) Minimum requirements are based on the required Contract Provisions, Standard Special Provisions, Plans and Specifications. Not all minimum requirements may be applicable to every project. Applicability to a specific project shall be determined by the QSD or WPC Manager.
(3) Use of alternative BMPs will require written approval by the RE.

The BMPs selected for the project are listed below along with an explanation of how they will be incorporated into the project.

- SS-3: Temporary hydraulic mulch will be applied to all newly graded sloped to help prevent erosion from occuring on a short-term basis.

500.3.3 Sediment Control

Sediment controls are structural measures that are intended to complement and enhance the selected soil stabilization (erosion control) measures and reduce sediment discharges from construction areas. Sediment controls are designed to intercept and settle out soil particles that have been detached and transported by the force of water. This project will incorporate SWPPP/WPCP Preparation Manual minimum temporary sediment control requirements, temporary sediment control measures required by the contract documents, and other measures selected by the Contractor.

Sediment control BMPs will be installed at all appropriate locations along the site perimeter and at all operational internal inlets to storm drain systems at all times.

Throughout the duration of the project, temporary sediment control materials, equivalent to 10 percent of the materials installed on site, will be maintained on site for implementation in event of predicted rain, or the need for rapid response to failures or emergencies, in conformance with other Caltrans requirements, and as described in the SWPPP. This includes implementation requirements for active areas and non-active areas before the onset of rain.

The following sediment control BMP selection table indicates the BMPs that shall be implemented to control sediment on the construction site. Temporary sediment control BMPs are listed by location in the WPCBMPL in Attachment CC and are shown on the WPCDs from Attachment BB. Any details for temporary sediment control BMPs are shown in Attachment BB.

TABLE 500.3.3
TEMPORARY SEDIMENT CONTROL BMPs

CONSTRUCTION BMP ID NO.(1)	BMP NAME	CONTRACT MIN REQUIRE-MENT(2)	CONTRACT BID ITEM	BMP USED		IF A CONTRACT MINIMUM REQUIREMENT BUT NOT USED, STATE REASON
				Yes	No	
SC-1	Temporary Silt Fence	☑	☑	◉	○	
SC-2	Temporary Sediment Basin	☐	☐	○	◉	
SC-3	Temporary Sediment Trap	☐	☐	○	◉	
SC-4	Temporary Check Dam	☑	☑	◉	○	
SC-5	Fiber Rolls	☐	☐	○	◉	
SC-6	Temporary Gravel Bag Berm	☐	☐	○	◉	
SC-7	Street Sweeping	☑	☑	◉	○	
SC-8	Temporary Sandbag Barrier	☐	☐	○	◉	
SC-9	Temporary Straw Bale Barrier	☐	☐	○	◉	
SC-10	Temporary Drain Inlet Protection	☑	☑	◉	○	
SC-11	Temporary Chemical Treatment	☐	☐	○	◉	
ALTERNATIVE BMPs USED(3) ○ Yes ◉ No						

Notes:
(1) The BMP designations (SS-1, SC-3, etc.) are solely for maintaining continuity with existing Caltrans documents and are not provided to imply that the Construction Site BMP Reference Manual is a required contract document.
(2) Minimum requirements are based on the required contract provisions, standard special provisions, plans and specifications. Not all minimum requirements may be applicable to every project. Applicability to a specific project shall be determined by the QSD or WPC Manager.
(3) Use of alternative BMPs will require written approval by the RE

The following list of BMPs and associated narratives explain how the selected BMPs will be incorporated into the project.

- SC-7: Street sweeping is conducted to remove sediment that collects along the roadway and to prevent transport of construction debris outside the limits of the Project.
- SC-10: Drain inlet protection is placed at all existing and proposed drainage inlets for the entire duration of construction.
- SC-1: Install silt fence as a perimeter control along the right-of-way and temporary construction easement limits to limit sediment transport and at the toe of slopes.
- SC-4: Install temporary check dams at steep ditch areas to settle out sediment in the construction runoff.

500.3.4 Tracking Control

Tracking control BMPs are be implemented to reduce sediment tracking from the construction site onto private or public roads. This project will incorporate SWPPP/WPCP Preparation Manual minimum temporary tracking control requirements, temporary tracking control measures required by the contract documents, and other measures selected by the Contractor.

The following tracking control BMP selection table indicates the BMPs that shall be implemented to reduce sediment tracking from the construction site onto private or public roads. Temporary tracking control BMPs are listed by location in the WPCBMPL in Attachment CC and shown on the WPCDs from Attachment BB. Any details for temporary tracking control BMPs are shown in Attachment BB.

TABLE 500.3.4
TEMPORARY TRACKING CONTROL BMPs

CONSTRUCTION BMP ID NO.(1)	BMP NAME	CONTRACT MIN REQUIRE-MENT(2)	CONTRACT BID ITEM	BMP USED		IF A CONTRACT MINIMUM REQUIREMENT BUT NOT USED, STATE REASON
				Yes	No	
SC-7	Street Sweeping	☑	☑	◉	○	
TC-1	Temporary Construction Entrance	☑	☑	◉	○	
TC-2	Stabilized Construction Roadway	☐	☐	○	◉	
TC-3	Temporary Entrance / Outlet Tire Wash	☐	☐	○	◉	

ALTERNATIVE BMPs USED(3)	
○ Yes ◉ No	

Notes:
(1) The BMP designations (SS-1, SC-3, etc.) are solely for maintaining continuity with existing Caltrans documents and are not provided to imply that the Construction Site BMP Reference Manual is a required contract document.
(2) Minimum requirements are based on the required Contract Provisions, Standard Special Provisions, Plans and Specifications. Not all minimum requirements may be applicable to every project. Applicability to a specific project shall be determined by the QSD or WPC Manager.
(3) Use of alternative BMPs will require written approval by the RE.

The following list of BMPs and associated narratives explain how the selected BMPs will be incorporated into the project.

- SC-7: Street sweeping is conducted to remove sediment that collects along the roadway and to prevent transport of construction debris outside the limits of the Project.
- TC-1: A temporary construction entrance is used at the entrance to and from the staging area to Forni Road and Ray Lawyer Drive to prevent tracking of material onto the roadway.

500.3.5 Wind Erosion Control

Wind erosion control BMPs will be implemented to prevent sediment from leaving the construction site. This project will incorporate SWPPP/WPCP Preparation Manual minimum temporary wind erosion control requirements, temporary wind erosion control measures required by the contract documents, and other measures selected by the Contractor.

The following temporary wind erosion control BMP selection table indicates the BMPs that shall be implemented to reduce wind erosion at the construction site. Temporary wind erosion control BMPs are listed by location in the WPCBMPL in Attachment CC and shown on the WPCDs from Attachment BB. Any details for temporary wind erosion control BMPs are shown in Attachment BB.

TABLE 500.3.5
TEMPORARY WIND EROSION CONTROL BMPs

CONSTRUCTION BMP ID NO.(1)	BMP NAME	CONTRACT MIN REQUIRE-MENT(2)	CONTRACT BID ITEM	BMP USED		IF A CONTRACT MINIMUM REQUIREMENT BUT NOT USED, STATE REASON
				Yes	No	
WE-1	Wind Erosion Control	☑	☑	◉	○	
TC-1	Temporary Construction Entrance	☑	☑	◉	○	
TC-2	Stabilized Construction Roadway	☐	☐	○	◉	
----	All Soil Stabilization Measures included in Section 500.3.2	☐	☐	○	◉	

ALTERNATIVE BMPs USED(3)	
○ Yes ◉ No	

Notes:
(1) The BMP designations (SS-1, SC-3, etc.) are solely for maintaining continuity with existing Caltrans documents and are not provided to imply that the Construction Site BMP Reference Manual is a required contract document.
(2) Minimum requirements are based on the required contract provisions, standard special provisions, plans and specifications. Not all minimum requirements may be applicable to every project. Applicability to a specific project shall be determined by the QSD or WPC Manager.
(3) Use of alternative BMPs will require written approval by the RE.

The following list of BMPs and narrative explain how the selected BMPs shall be incorporated into the project.

- WE-1: Wind erosion control measures are used in accordance with the Caltrans standard specifications. In most instances wind erosion control is achieved through the use of soil stabilization measures.
- TC-1: A temporary construction entrance is used at the entrance to and from the staging area to Forni Road and Ray Lawyer Drive to prevent tracking of material onto the roadway.

500.4 BMP Selection for Construction Site Management

Construction site management shall consist of controlling potential sources of water pollution before they come in contact with stormwater systems or watercourses. The Contractor shall control material pollution and manage waste and non-stormwater discharges at the construction site by implementing effective handling, storage, use, and disposal practices.

500.4.1 Non-Stormwater Site Management

Non-stormwater discharges into storm drainage systems or waterways, which are not authorized under the Caltrans Permit or authorized under a separate NPDES permit, shall be prohibited. The selection of non-stormwater BMPs is based on whether construction activities with a potential for non-stormwater discharges will be conducted, as discussed in the Materials Management Plan and in Section 500.4. This project will incorporate SWPPP/WPCP Preparation Manual minimum non-stormwater pollution control requirements, non-stormwater pollution temporary wind erosion control measures required by the contract documents, and other measures selected by the Contractor.

The following non-stormwater control BMP selection table indicates the BMPs that shall be implemented to prevent non-stormwater discharges from construction activities conducted at the project site. Non-stormwater pollution control BMPs are listed by location in the WPCBMPL in Attachment CC and shown on the WPCDs from Attachment BB. Any details for non-stormwater pollution control BMPs are shown in Attachment BB.

TABLE 500.4.1
TEMPORARY NON-STORMWATER POLLUTION CONTROL BMPs

CONSTRUCTION BMP ID NO.(1)	BMP NAME	CONTRACT MIN REQUIRE-MENT(2)	CONTRACT BID ITEM	BMP USED		IF A CONTRACT MINIMUM REQUIREMENT BUT NOT USED, STATE REASON
				Yes	No	
NS-1	Water Control and Conservation	☑	☑	◉	○	

NS-2	Dewatering(3)	☐	☐	○	◉	
NS-3	Paving, Sealing, Sawcutting, and Grinding Operations	☑	☑	◉	○	
NS-4	Temporary Stream Crossing (3)	☐	☐	○	◉	
NS-5	Clear Water Diversion (3)	☐	☐	○	◉	
NS-6	Illegal Connection and Illegal Discharge Detection Reporting	☑	☑	◉	○	
NS-7	Potable Water / Irrigation	☑	☑	◉	○	
NS-8	Vehicle and Equipment Cleaning	☑	☑	◉	○	
NS-9	Vehicle and Equipment Fueling	☑	☑	◉	○	
NS-10	Vehicle and Equipment Maintenance	☑	☑	◉	○	
NS-11	Pipe Driving Operations	☐	☐	○	◉	
NS-12	Concrete Curing	☑	☑	◉	○	
NS-13	Material and Equipment Used Over Water	☐	☐	○	◉	
NS-14	Concrete Finishing	☑	☑	◉	○	
NS-15	Structure Demolition / Removal Over or Adjacent to Water	☐	☐	○	◉	
ALTERNATIVE BMPs USED(4) ○ Yes ◉ No						

Notes:
(1) The BMP designations (SS-1, SC-3, etc.) are solely for maintaining continuity with existing Caltrans documents and are not provided to imply that the Construction Site BMP Reference Manual is a required contract document.
(2) Minimum requirements are based on the required contract provisions, standard special provisions, plans and specifications. Not all minimum requirements may be applicable to every project. Applicability to a specific project shall be determined by the QSD or WPC Manager.
(3) The BMPs listed above are incidental and do not include operations listed as separated line items in the contract.
(4) Use of alternative BMPs will require written approval by the RE.

The following list of BMPs and associated narratives explain how the selected BMPs will be incorporated into the project.

NS-1: Use of water will be minimized to control erosion and discharge into storm drain systems or to the creek, prevent ponding, transport of sediment. Non-stormwater discharge from watering operations will be documented and reported to the Resident Engineer.

NS-3: Paving material will be transported onsite using proper equipment, only when needed, and placed by properly trained personnel. Excess paving material, and waste from sawcutting and grinding operations, will be collected, transported, and disposed of in accordance with the specifications. All inlets are protected and sediment control measures placed to prevent these materials from being transported to the creek.

NS-8, NS-9, and NS-10: Vehicle and equipment cleaning, fueling, and maintenance will be performed off-site. If allowed by the Resident Engineer to be performed onsite, these actions will be performed within staging area, and any waste or contaminated water will be collected and disposed.

NS-12 and NS-14: A temporary concrete washout is provided within the staging area. Where cast-in-place concrete work is performed, concrete will be mixed to minimize aerial deposition of fines, formed and placed where shown on the plans, and excess material collected and disposed. Rubble or damaged concrete from precast concrete structures will be collected and disposed. Concrete material is prevented from entering drainage facilities or the creek through proper implementation of sediment control measures.

500.4.2 Waste Management and Materials Pollution Control

An inventory of construction activities, materials, and wastes is provided in Section 500.1.1. The following BMP consideration checklist lists the BMPs that have been selected to control construction site wastes and materials. Locations and details of applicable materials handling and waste management BMPs are shown on the WPCDs from Attachment BB. In the narrative description, a list of waste disposal facilities and the type of waste to be disposed at each facility is also provided. The following list of BMPs and associated narratives explain how the selected BMPs will be incorporated into the project.

TABLE 500.4.2
TEMPORARY WASTE MANAGEMENT AND MATERIALS POLLUTION CONTROL BMPs

CONSTRUCTION BMP ID NO.(1)	BMP NAME	CONTRACT MIN REQUIRE-MENT(2)	CONTRACT BID ITEM	BMP USED		IF A CONTRACT MINIMUM REQUIREMENT BUT NOT USED, STATE REASON
				Yes	No	
WM-1	Material Delivery and Storage	☑	☑	◉	○	
WM-2	Material Use	☑	☑	◉	○	
WM-3	Stockpile Management	☑	☑	◉	○	
WM-4	Spill Prevention and Control	☑	☑	◉	○	
WM-5	Solid Waste Management	☑	☑	◉	○	

WM-6	Hazardous Waste Management (3)	☐	☐	○	◉	
WM-7	Contaminated Soil Management (3)	☐	☐	○	◉	
WM-8	Concrete Waste Management	☐	☐	○	◉	
WM-8	Temporary Concrete Washout (Portable)	☐	☐	○	◉	
WM-8	Temporary Concrete Washout Facility	☑	☑	◉	○	
WM-9	Sanitary/Septic Waste Management	☑	☑	◉	○	
WM-10	Liquid Waste Management	☐	☐	○	◉	
ALTERNATIVE BMPs USED (4) ○ Yes ◉ No						

Notes:
(1) The BMP designations (SS-1, SC-3, etc.) are solely for maintaining continuity with existing Caltrans documents and are not provided to imply that the Construction Site BMP Reference Manual is a required contract document.
(2) Minimum requirements are based on the required contract provisions, standard special provisions, plans and specifications. Not all minimum requirements may be applicable to every project. Applicability to a specific project shall be determined by the QSD or WPC Manager.
(3) The BMPs listed above are incidental and do not include operations listed as separated line items in the contract.
(4) Use of alternative BMPs will require written approval by the RE.

WM-1 and WM-2: Minimize or eliminate the discharge of material into the air and surface drainage during delivery and construction use. Material must be stored and used in accordance with the contract specifications and plans, and MSDS sheets.

WM-3: Stockpiling is limited to the staging area. Stockpiling allowed by Resident Engineer in other areas will be covered and protected by sediment control measures.

WM-4: Spill and leak prevention procedures are implemented for chemicals and hazardous substances. All hazardous spills must be reported to the WPC Manager and Resident Engineer immediately. As soon as it is safe, spills of will be contained and cleaned as described under 40 CFR, Parts 110, 117, and 302.

WM-8: A temporary concrete washout is located in the staging area. No concrete washout outside of the staging area is allowed. Concrete waste will be disposed of off-site.

WM-9: No sanitary or septic waste is permitted to be discharged from the Project. Portable toilets will be placed in the staging area. Additional portable toilets will only be placed outside the staging area if approved by the Resident Engineer. Placement of portable toilets within or outside the staging area will be setback from drainage inlets, the creek, and any other conveyance system in accordance with the contract specifications.

500.5 Water Pollution Control Drawings

The WPCDs are the component of the project SWPPP that show the BMPs, by project phase/stage, that are necessary for the project to be in compliance with the CGP. The construction activity phases used in this SWPPP are the preliminary phase, grading phase, highway construction phase, and the highway planting / erosion control establishment phase. These phases are defined below.

Preliminary Phase (Pre-Construction Phase – Part of the Grading Phase)

Includes rough grading/or disking, clearing and grubbing operations, or any soil disturbance prior to mass grading.

Grading Phase

Includes reconfiguring the topography for the highway, including excavation for roadway (e.g., necessary blasting of hard rock), highway embankment construction (fills); mass grading, and stockpiling of select material for capping operations.

Highway Construction Phase

Encompasses both highway and structure construction. Highway construction includes final roadway excavation, placement of base materials and highway paving, finish grading, curbs, gutters and sidewalks, public utilities, public water facilities including fire hydrants, public sanitary sewer systems, storm drain systems and/or other drainage improvements, highway lighting, traffic signals and/or other highway electrical work, guardrail, concrete barriers, sign installation, pavement markers, traffic striping and pavement markings. Structure construction includes structure footings, bridges, retaining walls, major culverts, overhead sign structures and buildings.

Highway Planting / Erosion Control Establishment Phase

Includes clearing and grubbing operations, soil preparation (grading, incorporation of soil amendments, and placement of topsoil), irrigation (trenching, installation and trench backfilling), minor grading (top dressing and fine grading of lawn and ground cover areas), planting (seeding and planting of vegetation), mulching (application of wood chips or other mulches) and plant establishment (weeding, plant replacement, and, if needed, fertilizer application, irrigation maintenance, and reapplication of mulch). Erosion control includes placement of permanent erosion control materials and maintenance of temporary sediment controls during the erosion control establishment period.

The WPCDs provide field staff with the information on where to install BMPs so that they are effective. The WPCDs, WPCBML and Water Pollution Control Schedule provide the necessary tools for a Contractor to plan and implement BMPs to meet the requirements of the project SWPPP.

The WPCD cover sheet(s) shall include a listing of the BMPs that will be used along with the associated BMP symbols used on the WPCDs.

WPCDs are provided for all areas that are directly related to the construction activity, including but not limited to staging areas, storage yards, material borrow areas and storage areas, access roads, etc., whether or not they reside within the Caltrans rights-of-way

The WPCDs shall show the construction project site in detail, including:

- the construction site perimeter;
- geographic features within or immediately adjacent to the site; include surface waters such as lakes, streams, springs, wetlands, estuaries, ponds, and the ocean;

- site topography before and after construction; include roads, paved areas, buildings, slopes, drainage facilities, and areas of known or suspected contamination; and
- permanent (post-construction) BMPs.

The WPCDs shall show the following site information:

- discharge points from the project to off-site storm drain systems or receiving waters;
- tributary areas and drainage patterns across the project area (show using flow arrows) into each on-site stormwater inlet or receiving water;
- tributary areas and drainage patterns to each on-site stormwater inlet, receiving water or discharge point;
- off-site tributary drainage areas that generate run-on to the project;
- temporary on-site drainage(s) to carry concentrated flows;
- drainage patterns and slopes anticipated after major grading activities are completed;
- outlines of all areas of existing vegetation, soil cover, or native vegetation that will remain undisturbed during the project;
- outlines of all areas of planned soil disturbance (disturbed soil areas, DSAs);
- known location(s) of contaminated or hazardous soils; and
- any potential non-stormwater discharges and activities, such as dewatering operations, concrete saw-cutting or coring, pressure washing, waterline flushing, diversions, cofferdams, and vehicle and equipment cleaning; if operations can't be located on the WPCDs, a narrative description should be provided.

The WPCDs show proposed locations of all construction site BMPs. Additional detail drawings are provided if necessary to convey site-specific BMP configurations. The WPCDs shall show construction site BMPs including the following:

- temporary soil stabilization and temporary sediment control BMPs that will be used during construction; any temporary on-site drainage(s) to carry concentrated flows, BMPs implemented to divert off-site drainage around or through the construction site, and BMPs that protect stormwater inlets;
- construction entrances used for site ingress and egress points and any proposed temporary construction roads;
- BMPs to mitigate or eliminate non-stormwater discharges;
- BMPs for waste management and materials pollution control, including, but not limited to storage of soil or waste; construction material loading, unloading, storage and access areas; and areas designated for waste handling and disposal; and
- BMPs for vehicle and equipment storage, fueling, maintenance, and cleaning.

The WPCDs can be found in Attachment BB of the SWPPP.

500.6 Water Pollution Control BMP List

The Water Pollution Control Best Management Practices List (WPCBMPL) provides, by location and project phase/stage, the BMPs necessary for the project to be in compliance with the CGP. The WPCBMPL provides field staff both with a list of necessary BMPs and with an estimated quantity for each BMP by location and phase/stage of the project. The construction activity phases are typically the Preliminary Phase, Grading Phase, Highway Construction Phase, and the Highway Planting / Erosion Control Establishment Phase. The construction activity phases are defined in Section 500.5.

The WPCBMPL, water pollution control drawings and water pollution control schedule provide the tools necessary for the Contractor to plan and implement BMPs to meet the requirements of the project SWPPP. The BMPs listed on the WPCBMPL are the base line for site inspections and visual monitoring.

The WPCBMPL cover sheet includes a list of all BMPs to be used on the project based on Section 500 Determination of Construction Site Best Management Practices.

The names and number of locations listed on the WPCBMPL were established so that field staff and inspectors can easily identify where BMPs need to be located. The WPCBMPL includes all locations that are directly related to the construction activity, including but not limited to staging areas, storage yards, material borrow areas and storage areas, access roads, etc., whether or not they reside within Caltrans rights-of-way.

Necessary additional information to convey site-specific BMP configurations or BMP modifications are noted on the WPCBMPL.

All construction site BMPs are listed on the WPCBMPL including the following:

- temporary soil stabilization and temporary sediment control BMPs that will be used during construction; include temporary on-site drainage(s) to carry concentrated flows
- BMPs implemented to divert off-site drainage around or through the construction site, and BMPs that protect stormwater inlets
- BMPs to mitigate or eliminate non-stormwater dischargesBMPs for waste management and materials pollution control, including, but not limited to storage of soil or waste; construction material loading, unloading, storage and access areas; and areas designated for waste handling and disposal
- BMPs for vehicle and equipment storage, fueling, maintenance, and cleaning
- permanent BMPs that are a component of the project SWPPP

The WPCBMPL can be found in Attachment CC of the SWPPP.

Necessary additional information to convey site-specific BMP configurations or BMP modifications are noted on the WPCBMPL.

All construction site BMPs are listed on the WPCBMPL including the following:

●temporary soil stabilization and temporary sediment control BMPs that will be used during construction; include temporary on-site drainage(s) to carry concentrated flows

●BMPs implemented to divert off-site drainage around or through the construction site, and BMPs that protect stormwater inlets

●BMPs to mitigate or eliminate non-stormwater discharges MPs for waste management and materials pollution control, including, but not limited to storage of soil or waste; construction material loading, unloading, storage and access areas; and areas designated for waste handling and disposal

●BMPs for vehicle and equipment storage, fueling, maintenance, and cleaning

●permanent BMPs that are a component of the project SWPPP

The WPCBMPL can be found in Attachment XX of the SWPPP.

The WPCBMPL is from the contract documents. The list is based on the single WPCD prepared for the Project. The WPCBMPL must be either accepted or modified by the Contractor, QSD, and/or WPC Manager prior to approval of this SWPPP and the start of construction.

500.7 Water Pollution Control Schedule

The Water Pollution Control Schedule (WPCS) is the component of the project SWPPP that shows the timeline for when BMPs will be installed so that the project is in compliance with the CGP. The WPCS provides field staff with the information necessary to plan for adequate materials and crews to install BMPs at the right time so that they are effective. The WPCS, WPCBMPL, and WPCDs provide the necessary tools for the Contractor to plan and implement BMPs to meet the requirements of the project SWPPP.

The WPCS shall contain an adequate level of detail to show major activities sequenced with the implementation of construction site BMPs, including:

- project start and finish dates, including each stage of the project
- SWPPP review and approval
- annual certifications
- mobilization dates
- mass clearing and grubbing/roadside clearing dates
- major grading/excavation dates
- dates named in other permits such as TRPA, Fish and Game and Army Corps of Engineers Permits
- dates for submittal of SWPPP amendments as required in the contract specifications

The WPCS shall show by location the dates for the deployment of:

- temporary soil stabilization BMPs
- temporary sediment control BMPs
- wind erosion control BMPs
- tracking control BMPs
- non-stormwater BMPs
- waste management and materials pollution control BMPs

The WPCS shall include:

- paving, saw-cutting, and any other pavement-related operations;
- major planned stockpiling operations;

- dates for other significant long-term operations or activities that may cause non-stormwater discharges, such as dewatering, grinding, etc; and
- final stabilization activities for each disturbed soil area of the project.

The WPCS shall be updated quarterly and the quarterly updates shall be filed in SWPPP File Category 20.03: Water Pollution Control Schedule Updates.

The Water Pollution Control Schedule can be found in Attachment DD of the SWPPP.

The Water Pollution Control Schedule (WPCS) is the component of the project SWPPP that shows the timeline for when BMPs will be installed so that the project is in compliance with the CGP. The WPCS provides field staff with the information necessary to plan for adequate materials and crews to install BMPs at the right time so that they are effective. The WPCS, WPCBMPL, and WPCDs provide the necessary tools for the Contractor to plan and implement BMPs to meet the requirements of the project SWPPP.

The WPCS shall contain an adequate level of detail to show major activities sequenced with the implementation of construction site BMPs, including:

- project start and finish dates, including each stage of the project
- SWPPP review and approval
- annual certifications
- mobilization dates
- mass clearing and grubbing/roadside clearing dates
- major grading/excavation dates
- dates named in other permits such as TRPA, Fish and Game and Army Corps of Engineers Permits
- dates for submittal of SWPPP amendments as required in the contract specifications

The WPCS shall show by location the dates for the deployment of:

- temporary soil stabilization BMPs
- temporary sediment control BMPs
- wind erosion control BMPs
- tracking control BMPs
- non-stormwater BMPs
- waste management and materials pollution control BMPs

The WPCS shall include:

- paving, saw-cutting, and any other pavement-related operations;
- major planned stockpiling operations;

●dates for other significant long-term operations or activities that may cause non-stormwater discharges, such as dewatering, grinding, etc.; and

●final stabilization activities for each disturbed soil area of the project.

The WPCS shall be updated quarterly and the quarterly updates shall be filed in SWPPP File Category 20.03: Water Pollution Control Schedule Updates.

The Water Pollution Control Schedule can be found in Attachment DD of the SWPPP.

No WPCS has been developed for this SWPPP. The WPCS must be prepared by the Contractor, QSD, and/or WPC Manager prior to approval of the SWPPP and start of construction.

SECTION 600
PROJECT SITE IMPLEMENTATION PROGRAM

600.1 Water Pollution Control Manager Responsibilities

The WPC Manager shall have primary responsibility and authority to implement the SWPPP and ensure the project is in compliance with the CGP. The WPC Manager is responsible for implementing the SWPPP and amending the SWPPP when any of the conditions specified in Section 100.3 are met. The Contractor has assigned authority to the WPC Manager to mobilize crews and subcontractors, as necessary, for SWPPP and CGP compliance. The WPC Manager will be available at all times throughout duration of the project.

Duties of the Contractor's WPC Manager include but are not limited to the following

- ensuring full compliance with the SWPPP and the CGP
- implementing all elements of the SWPPP, including but not limited to implementing:
    - prompt and effective erosion and sediment control measures
    - all non-stormwater management, and materials and waste management activities such as: monitoring discharges (dewatering, diversion devices); performing general site cleanup; cleaning vehicles and equipment, performing fueling and maintenance activities; providing spill control; ensuring that no materials other than stormwater are discharged in quantities that will have an adverse effect on receiving waters or storm drain systems, etc.
- overseeing and ensuring that the following site inspections and visual site monitoring are conducted:
    - daily required BMP inspections
    - weekly routine stormwater site BMP inspections
    - quarterly non-stormwater site inspections
    - pre-storm inspections prior to forecasted storm events
    - daily inspections during extended forecasted storm events
    - post-storm inspections for qualifying rain events
- mobilizing crews to repair, replace, and/or implement additional BMPs due to deficiencies, failures or other shortcomings identified during inspections, to be completed within 24 hours of identification in compliance with Standard Specification 13-1.03A (the contractor's WPC Manager shall be assigned authority by the Contractor to mobilize crews), unless a longer period is authorized.
- coordinating with the RE to assure that if design changes to BMPs are required due to deficiencies, failures or other shortcomings identified during inspections, the changes are completed as soon as possible and the SWPPP is revised accordingly
- monitoring NWS Forecast Office forecasts for both forecasted storm events and qualifying rain events; these events are defined as follows:
    - a forecasted storm event is defined as a 50% or greater likelihood that 0.10 inch or more of precipitation will fall within a 24-hour period

  - a qualifying rain event is defined as a rain event that may produce or has produced ½ inch or greater of precipitation at the time of discharge, with a 72-hour dry period between events

- monitoring weather at the project site
- preparing and implementing qualifying rain event sampling and analysis plans
- preparing and implementing Rain Event Action Plans for forecasted storm events
- mobilizing crews immediately, in the event of NAL exceedances, to repair existing BMPs and/or implement additional BMPs (the Contractor's WPC Manager shall be assigned authority by the Contractor to mobilize crews),
- coordinating with the RE in the event of NAL exceedances to assure that any SWPPP revisions (corrective actions) are made immediately, either to prevent pollutants and authorized non-stormwater discharges from contaminating stormwater, or to substantially reduce the pollutants to levels consistently below the NALs, so that the project complies with the SWPPP, the CGP and approved plans at all times,
- submitting NAL exceedances reports to the RE
- submitting test results for stormwater samples to the RE
- preparing amendments to the SWPPP when required
- preparing contractor's SWPPP Annual Compliance Certification
- preparing the Stormwater Annual Reports
- ensuring elimination of all unauthorized discharges
- preparing and submitting Notice of Discharge reports to the RE
- preparing and submitting reports of illicit connections or illegal discharges to the RE

600.2 Site Inspections

Stormwater site inspections and visual monitoring are necessary to ensure that the project is in compliance with the requirements of the CGP. Project site visual monitoring requirements are covered in Section 700 Construction Site Monitoring Program. Project site inspections of stormwater BMPs are conducted to identify and record:

- that BMPs are properly installed
- what BMPs need maintenance to operate effectively
- what BMPs have failed
- what BMPs could fail to operate as intended.

Routine stormwater site inspections shall be conducted by the contractor's WPC Manager or other 24-hour trained staff at the following minimum frequencies:

- daily inspections of:
  - storage areas for hazardous materials and waste
  - hazardous waste disposal and transporting activities

- hazardous material delivery and storage activities
- vehicle and equipment cleaning facilities if vehicle and equipment cleaning occurs daily
- vehicle and equipment maintenance and fueling areas if vehicle and equipment maintenance and fueling occurs daily
- vehicles and equipment at the job site to verify that operators are inspecting vehicles and equipment each day of use.
- demolition sites within 50 feet of storm drain systems and receiving waters
- pile driving areas for leaks and spills if pile driving occurs daily
- temporary concrete washouts if concrete work occurs daily
- paved roads at job site access points for street sweeping if earthwork and other sediment or debris generating activities occur daily
- dewatering work if dewatering work occurs daily
- temporary active treatment system if temporary active treatment system activities occur daily
- work over water if work over water occurs daily

- daily inspections for projects within the Lake Tahoe Hydrologic Unit
- daily inspections of access roadways
- weekly inspection of site BMPs

Stormwater site inspections shall be documented on CEM-2030 Stormwater Site Inspection Report, in Appendix G. Completed stormwater inspection reports shall be submitted to the RE within 24 hours after completion of the inspection. Copies of completed inspection reports will be kept in SWPPP File Category 20.31: Contractor Stormwater Site Inspection Reports,

Deficiencies identified during site inspections and correction of deficiencies will be tracked on the CEM-2035 Stormwater Corrective Actions Summary, in Appendix I. Corrective Action Summary forms shall be submitted to the RE when corrections are completed but must be submitted within five (5) days after completion of the site inspection. Completed Stormwater Site Inspection Report Corrective Actions Summary forms shall be filed in SWPPP File Category 20.35: Corrective Actions Summary. A copy of the completed Corrective Actions Summary form will also be attached to the corresponding Stormwater Site Inspection Report that generated the need for the CEM-2035 Stormwater Corrective Actions Summary

600.3 Weather Forecast Monitoring

The WPC Manager shall have primary responsibility to monitor the National Weather Service Forecast Office for forecasted precipitation based on project site location. Precipitation forecast information shall be obtained from the National Weather Service Forecast Office accessible at: http://www.srh.noaa.gov/.

The project site location to be used for obtaining forecast from National Weather Forecast Office website is:

Forni Road and US-50

The WPC Manager shall monitor the weather forecast on a daily basis for predicted precipitation within the following 96 hours. The WPC Manager shall monitor the forecast for the next 24, 48, 72 and 96 hours to determine if the forecast for precipitation is 50 percent or greater for any 6-hour period. If the forecast for precipitation is 50 percent or greater, the WPC Manager shall calculate the amount of precipitation forecasted for each 24-hour period and the total precipitation for the forecasted storm event and record the information. Weather forecast monitoring shall be recorded be filed in File Category 20.40: Weather Monitoring Logs.

When the forecast for precipitation is 50 percent or greater and the forecasted amount of precipitation is 0.10 inch or more for any 24-hour period within the next 72 hours, the WPC Manager shall perform a pre-storm site inspection and ensure that the site is prepared for the likely forecasted storm event.

For Risk Level 2 and 3 the WPC Manager will prepare a Rain Event Action Plan for forecasted storm events.

Forecasted storm event site preparation shall include, but is not limited to, the installation of soil stabilization and sediment BMPs on active disturbed soil areas and stockpiles.

600.4 Weather Monitoring

The WPC Manager shall have primary responsibility to monitor weather at the project site. The WPC Manager, on a daily basis, shall monitor the weather and record the weather conditions.

When there is precipitation, the WPC Manager shall ensure that storm precipitation data is obtained from the project site rain gauge. Precipitation monitoring will include recording the time, amount of precipitation measured in the project site rain gauge, amount of precipitation within a 24-hour period, and total cumulative amount of precipitation for the forecasted storm event.

If no pre-storm visual site monitoring was performed, and the amount of precipitation for any 24-hour period is 0.10 inch or greater, the WPC Manager will implement during storm visual site monitoring, as discussed in Section 700.1.

When a forecasted storm event was not forecasted to be a qualifying rain event, but the measured cumulative amount of precipitation for the storm event and the expected severity of the continuing storm event results in ½ inch or more of precipitation, the WPC Manager will prepare to sample.

Weather monitoring will be conducted daily. Weather monitoring documentation shall be kept in File Category 20.40: Weather Monitoring Logs.

600.5 Best Management Practices Status Report

The WPC Manager shall prepare a monthly status report of the water pollution control BMPs (site BMPs) installed on the project site. The monthly BMP status report will be based on the progress of the work and the WPCBMPL for the project, with any additional BMPs the WPC Manager has determined are necessary based on the stage of construction and construction activities.

Because the SWPPP, including the WPCBMPL and WPCDs, are based on the entire project site and all construction activities, the monthly BMP status report should be a "snapshot" of which BMPs are deployed on the project site, so a project inspector or reviewer can easily determine what could be expected to be seen on the project site that month. The monthly status report will be used by stormwater inspectors and contractor personnel to ensure SWPPP compliance.

The weekly status report will be used to ensure that weekly training meetings cover BMPs that are required for work activities during the week. The weekly status report will be provided to regulatory agency staff who visit the project site to indicate which BMPs should be in place and which are scheduled to be implemented during the coming week.

The WPC Manager shall prepare a monthly status report of the water pollution control BMPs (site BMPs) installed on the project site. The monthly BMP status report will be based on the progress of the work and the WPCBMPL for the project, with any additional BMPs the WPC Manager has determined are necessary based on the stage of construction and construction activities.

Because the SWPPP, including the WPCBMPL and WPCDs, are based on the entire project site and all construction activities, the monthly BMP status report should be a "snapshot" of which BMPs are deployed on the project site, so a project inspector or reviewer can easily determine what could be expected to be seen on the project site that month. The monthly status report will be used by stormwater inspectors and contractor personnel to ensure SWPPP compliance.

The weekly status report will be used to ensure that weekly training meetings cover BMPs that are required for work activities during the week. The weekly status report will be provided to regulatory agency staff who visit the project site to indicate which BMPs should be in place and which are scheduled to be implemented during the coming week.

The monthly status of stormwater BMPs will be documented on CEM-2034 Stormwater Best Management Practices and Materials Inventory Report form, in Appendix H. Completed monthly status reports shall be submitted to the RE 48 hours prior to the beginning of the work week. Copies of the completed reports will be kept in SWPPP File Category 20.34: Monthly Best Management Practices and Materials Inventory Reports.

600.6 Rain Event Action Plans (REAP)

REAPs will be prepared by the WPC Manager when there is a forecasted storm event. A forecasted storm event is any weather pattern that is forecasted to have a 50 percent or greater probability of producing precipitation of 0.10 inch or more within any 24-hour period at the project site location. The WPC Manager will prepare the REAP for the forecasted storm event based on the current construction activity phase of the project. For REAPs, the construction activity phases are the Highway Construction Phase, Highway Planting / Erosion Control Establishment Phase or Inactive Project Phase. The construction activity phases are defined in Section 500.5.

When the NWS forecast for 72 hours and greater predicts a forecasted storm event, the WPC Manager will prepare a REAP using the REAP form appropriate to the current project stage. REAP forms are available in Appendix L. Prepared REAPs shall be submitted to the RE at least 48 hours prior to a forecasted stormevent. If the NWS forecast changes and a storm event is forecasted to occur within 24-72 hours then a REAP must be prepared. If the NWS forecast changes and a storm event is forecasted to occur within the next 24 hours a REAP will not be prepared and the WPC Manager will take immediate actions to ready the project site for the forecasted storm event.

The WPC Manager shall implement a REAP within the 48 hours prior to the forecasted storm event. A copy of the REAP shall be available on the job site at least 48 hours prior to the forecasted storm event. Copies of REAPs will be maintained in SWPPP File Category 20.45: Rain Event Action Plans in reverse chronologic order.

SECTION 700
CONSTRUCTION SITE MONITORING PROGRAM

700.1 Site Visual Monitoring Inspection

This Construction Site Monitoring Program includes conducting site visual monitoring inspections of the project site to address the following objectives:

- determine whether non-visible pollutants are present at the construction site and are causing or contributing to exceedances of water quality objectives
- determine whether BMPs included in the SWPPP are effective in preventing or reducing pollutants in stormwater discharges and authorized non-stormwater discharges
- determine whether BMPs included in the REAP are effective in preventing or reducing pollutants in stormwater discharges and authorized non-stormwater discharges
- demonstrate that the site is in compliance with the discharge prohibitions and applicable NALs and Receiving Water Monitor Triggers of the CGP
- determine whether immediate corrective actions, additional BMP implementation, or SWPPP amendments are necessary to reduce pollutants in stormwater and authorized non-stormwater discharges
- demonstrate that the site is in compliance with the discharge prohibitions
- document the presence or evidence of any non-stormwater discharge (authorized or unauthorized), pollutant characteristics (floating and suspended material, sheen, discoloration, turbidity, odor, etc.), and source, if applicable, and the response taken to eliminate unauthorized non-stormwater discharges and to reduce or prevent pollutants from contacting non-stormwater discharges

700.1.1 Visual Monitoring Locations

Locations of Visual Monitoring Prior To A Storm Event

Visual monitoring (a pre-storm inspection) of the project site is required when the forecast for precipitation is greater than 50 percent within the next 24, 48, 72, 96 hours, and the amount of precipitation forecasted for any 24-hour period is 0.10 inch or greater. Within 48 hours of a forecasted storm event, a stormwater visual monitoring site inspection shall be performed and shall include observations of:

- stormwater drainage areas to identify any spills, leaks, or uncontrolled pollutant sources
- BMPs to identify whether they have been properly implemented
- any stormwater storage and containment areas to detect leaks and ensure maintenance of adequate freeboard

6 drainage area(s) on the project site and the Contractor's yard, staging areas, and storage areas have been identified as required forecasted storm event visual observation location(s), according to Section I.3.e of Attachments C, D, and E of the CGP. Drainage area(s) are shown on the WPCDs in Attachment BB and are listed by drainage area location number and location description in Table 700.1.1.1: Drainage Areas.

TABLE 700.1.1.1
DRAINAGE AREAS

Drainage Area No.	Location
2.	Right of the "ED-50" Line from approximately 546+00 to 554+00. The construction of the HMA ditch and drainage facilities right of about 546+00. Including the highway and shoulder area grading, resurfacing, and newly constructed drainage facilities (2-j through 2h) in this area.
6.	Right and left of the "RL-2" Line from approximately 555+50 to 566+50. This includes the drainage facilities of DS-4 and 5, parts of DS-6, DS-7, DS-13 and 14 including the detention/infiltration basin.
3.	Right and left of the "F" Line on both sides from approximately 23+00 to 28+00. his includes the grading and the work on the retaining wall from about 23+50 to 27+50 and the grading and earthwork on the right side of the "F" Line.
1.	Right and left of the "F" Line from approximately 28+50 to 37+00. This includes the grading and earthwork on the right side of the "F" Line and the grading and resurfacing on the "CJ" Line.
4.	Right and left of the "F" Line from 37+00 to 42+00 of the "RL" Line. This includes the "F-1" Line and associated drainage facilities.
5.	In the Park and Ride area left of the "F" Line from approximately 30+00 to 37+00. This includes the grading and associated drainage facilities.

2 stormwater storage or containment area(s) are located on the project site. These stormwater storage and containment area(s) have been identified as required forecasted storm event visual observation location(s). Stormwater storage or containment area(s) are shown on the WPCDs from Attachment BB and are listed by storage or containment area location number and location description in Table 700.1.1.2: Stormwater Storage and Containment Areas.

TABLE 700.1.1.2
STORMWATER STORAGE AND CONTAINMENT AREAS

Location No.	Location
2.	Biofiltration swale at 556+25 of "F" Line.
1.	Detention/Infiltration Basin at 563+00 of "F" Line.

Locations of Visual Monitoring during Extended Forecasted Storm Events and within 48 Hours After a Qualifying Rain Event

During any extended forecasted storm events and within 48 hours after a qualifying rain event (a rain event that has produced ½ inch or more of precipitation), a stormwater visual monitoring site inspection is required to observe:

- stormwater discharges at all discharge locations
- BMPs to identify and record those that need maintenance to operate effectively, those that have failed, and those that could fail to operate as intended
- the discharge of stored or contained stormwater

3 discharge location(s) are located on the project site. These stormwater discharge location(s) have been identified as required visual observation location(s). Stormwater discharge location(s) are shown on the WPCDs in Attachment BB and are listed in Table 700.1.1.3: Stormwater Discharge Locations.

TABLE 700.1.1.3
STORMWATER DISCHARGE LOCATIONS

Unique Sampling Location Identifier	Location
2.	Existing drainage item from previous design phase. Dishcarge from a concrete FES to small channel on private property on northwest side of US-50/Fair Lane at approximately "ED-50" 554+00.
3.	Drainage item 17d. Discharge to hillside on the northeast side of Ray Lawyer Drive from a 18" CSP DD TEE dissapator at 56' Rt "RL" 41+99.
1.	Drainage item 1c. Discharge to a OMP riser from an HMA ditch before discharge to large cross-culvert. On southeast side of US-50 between the highway and Forni Road at 64' Rt "ED-50" 545+97.

BMP locations shown on the WPCDs in Attachment BB and are listed on the WPCBMPL in Attachment CC.

2 stormwater storage or containment area(s) are located on the project site. Stormwater storage or containment area(s) are shown on the WPCDs in Attachment BB and are listed on Table 700.1.1.2: Stormwater Storage and Containment Areas.

Locations of Visual Monitoring for Non-Stormwater Discharges

A visual monitoring site inspection for non-stormwater discharges requires that each drainage area be observed for the presence of or indications of prior unauthorized and authorized non-stormwater discharges.

6 drainage area(s) are located on the project site and in the contractor's yard, staging areas, and storage areas that have been identified as observation location(s) for non-stormwater discharges. Drainage area(s) are shown on the WPCDs in Attachment BB and are listed in Table 700.1.1.1: Drainage Areas.

700.1.2 Visual Monitoring Schedule

On a daily basis, contractor personnel will visual monitor the all immediate access roadways.

On a daily basis contractor personnel will visually monitor BMPs during applicable activities:

- storage areas for hazardous materials and waste
- hazardous waste disposal and transporting activities
- hazardous material delivery and storage activities
- vehicle and equipment cleaning facilities if vehicle and equipment cleaning occurs daily
- vehicle and equipment maintenance and fueling areas if vehicle and equipment maintenance and fueling occurs daily

- vehicles and equipment at the job site to verify that operators are inspecting vehicles and equipment each day of use.
- demolition sites within 50 feet of storm drain systems and receiving waters
- pile driving areas for leaks and spills if pile driving occurs daily
- temporary concrete washouts if concrete work occurs daily
- paved roads at job site access points for street sweeping if earthwork and other sediment or debris generating activities occur daily
- dewatering work if dewatering work occurs daily
- temporary active treatment system if temporary active treatment system activities occur daily
- work over water if work over water occurs daily

Stormwater site visual monitoring inspections shall be conducted at a minimum:

- within 48 hours prior to a forecasted storm event (any weather pattern that is forecasted to have a 50 percent or greater probability of producing 0.1 inches or more of precipitation in the project area within a 24 period)
- at 24-hour intervals during any extended forecasted storm event
- within 48 hours after a qualifying rain event (a rain event that has produced ½ inch or more of precipitation)

Non-stormwater discharge site visual monitoring inspections shall be conducted, at a minimum, during each of the following periods: January-March, April-June, July-September, and October-December.

If visual monitoring of the site for stormwater is unsafe because of dangerous weather conditions, such as flooding and electrical storms, then the site inspector shall document the conditions that prevented the inspection. The documentation of the site visual monitoring inspection shall be filed in SWPPP File Category 20.33: Site Visual Monitoring Inspection Reports.

700.1.3 Visual Monitoring Procedures

Site visual monitoring inspections shall be overseen by the contractor's WPC Manager. Stie visual monitoring will be conducted by the WPC Manager , appointed QSP or stormwater inspector.

The name(s) and contact number(s) of the site visual monitoring inspection personnel are listed below and their training qualifications are provided in Attachment E:

- Assigned Inspector: To be determined Contact phone:
- Alternate Inspector: To be determined Contact phone:

Daily Access Road Monitoring

All immediate access roads must be inspected on a daily basis. Any sediment or other construction-related materials deposited on the roads must be removed daily (or more frequently when necessary) and prior to any rain event.

Daily BMP Monitoring During Applicable Activities

Standard Specification 13-1.03C requires that the contractor personnel on the site shall inspect the following activities on a daily basis:

- storage areas for hazardous materials and waste
- hazardous waste disposal and transporting activities
- hazardous material delivery and storage activities
- vehicle and equipment cleaning facilities if vehicle and equipment cleaning occurs daily
- vehicle and equipment maintenance and fueling areas if vehicle and equipment maintenance and fueling occurs daily
- vehicles and equipment at the job site to verify that operators are inspecting vehicles and equipment each day of use.
- demolition sites within 50 feet of storm drain systems and receiving waters
- pile driving areas for leaks and spills if pile driving occurs daily
- temporary concrete washouts if concrete work occurs daily
- paved roads at job site access points for street sweeping if earthwork and other sediment or debris generating activities occur daily
- dewatering work if dewatering work occurs daily
- temporary active treatment system if temporary active treatment system activities occur daily
- work over water if work over water occurs daily

Discharge Monitoring

During inspections, the contractor personnel shall be observant of any discharges or evidence of a prior discharge that could cause adverse conditions in the storm sewer system or the receiving water. If a discharge or evidence of a prior discharge is discovered by the contractor, the WPC Manager or contractor shall immediately notify the RE, and shall file a written report on the CEM-2061 Notice of Discharge form with the RE within 24 hours of the discharge or discovery of evidence of a prior discharge. Corrective measures shall be implemented immediately following the discovery of the discharge. Form CEM-2061 for reporting discharges is available in Appendix K.

Caltrans will notify the owner/operator of the MS4 and the RWQCB as soon as practicable, but no later than 24 hours after onset of or threat of discharge which can cause adverse conditions to the storm sewer system or the receiving water. This applies to any such discharge that is not covered by California Emergency Management Agency procedures for discharges from a highway to a storm sewer system subject to a MS4 permit.

Discharges requiring reporting include:

- stormwater from a DSA discharged to a waterway without treatment by an effective combination of temporary erosion and sediment control BMPs
- non-stormwater, except conditionally exempted discharges, discharged to a waterway or a storm drain system, without treatment by an approved control measure (BMP)
- stormwater discharged to a waterway or a storm drain system where the control measures (BMPs) have been overwhelmed or not properly maintained or installed
- discharge of hazardous substances above the reportable quantities, as provided in 40 CFR 110.3, 117.3 or 302.4
- stormwater runoff containing hazardous substances from spills discharged to a waterway or storm drain system

The initial notification to the RWQCB of a discharge or threat of discharge will be made immediately for any discharge that can cause adverse conditions to the storm sewer system or the receiving water, with a follow-up in writing within 24 hours. Adverse conditions include, but are not limited to, serious violations or serious threatened violations of Waste Discharge Requirements (WDRs), significant spills of petroleum products or toxic chemicals, or serious damage to control facilities that could affect compliance. Caltrans shall perform follow-up monitoring of major spills and/or perform confirmation sampling to ensure that threats to waters of the U.S. have been eliminated as determined by the local RWQCB.

Weekly BMP Monitoring

Weekly monitoring is required to identify and record BMPs that need maintenance to operate effectively, that have failed, or that could fail to operate as intended. The weekly BMP monitoring shall include observations of:

- all stormwater storage and containment areas identified in Table 700.1.1.2 to detect leaks and ensure maintenance of adequate freeboard
- all BMPs for proper installation and adequate maintenance.

Observations of the site and any recommended corrective actions will be documented in the CEM-2030 Stormwater Site Inspection Report. Any photographs used to document observations will be referenced in the stormwater site inspection report. Corrective actions documented in site inspection reports shall be immediately reviewed by the WCP Manager and, if deemed necessary, implemented within 24 hours.

Visual Monitoring Prior To A Forecasted Storm Event

Visual monitoring of the project site is required when the forecast for precipitation is greater than 50 percent within the next 24, 48, 72, or 96 hours and the amount of precipitation forecasted for any 24-hour period during the storm event is 0.10 inch or greater within a 24-hour period. Site visual monitoring shall be conducted within 48 hours prior to a forecasted storm event. The pre-storm site visual monitoring shall include observations of:

- all drainage areas identified in Table 700.1.1.1 to identify any spills, leaks, or uncontrolled pollutant sources;
- all stormwater storage and containment areas identified in Table 700.1.1.2 to detect leaks and ensure maintenance of adequate freeboard
- all BMPs for proper installation and adequate maintenance.

Observations of the site and any recommended corrective actions will be documented in the CEM-2030 Stormwater Site Inspection Report. Any photographs used to document observations will be referenced in the stormwater site inspection report. Corrective actions documented in site inspection reports shall be immediately reviewed by the WCP Manager and, if deemed necessary, implemented within 24 hours and prior to the forecasted storm event.

Any corrective actions identified by a pre-storm visual monitoring site inspection shall be included in the REAP for the forecasted storm event.

Visual Monitoring during Extended Forecasted Storm Events

Stormwater visual monitoring site inspections shall be conducted at least once each 24-hour period during any extended forecasted storm events. During any extended forecasted storm event, the site visual monitoring inspector shall visually observe:

- stormwater discharges at all discharge locations (Table 700.1.1.3)

- all stored or contained stormwater that is derived from and discharged subsequent to the qualifying rain event producing precipitation of ½ inch or more at the time of discharge; stored or contained stormwater that will likely discharge after working hours, due to anticipated precipitation, shall be observed prior to the discharge during working hours

Stormwater discharges and stored or contained stormwater will be observed for the presence or absence of floating and suspended materials, sheens on the surface, discolorations, turbidity, odors, and source(s) of any observed pollutants.

During any forecasted storm event, stormwater visual monitoring site inspections will include the observation of all site BMPs for:

- proper installation
- achievement of maintenance requirements
- possible failure
- BMPs that could fail to operate as intended
- effectiveness, so that design changes can be implemented as soon as feasible if needed

Observations of the site and any recommended corrective actions will be documented in the CEM-2030 Stormwater Site Inspection Report. Any photographs used to document observations will be referenced on the stormwater site inspection report. Corrective actions documented in site inspection reports shall be immediately reviewed by the WCP Manager and, if deemed necessary, implemented , as required by Standard Specification 13-1.03A, within 24 hours of identification unless a longer period is authorized (but cannot be authorized longer than required by the CGP: implemented within 72 hours of identification and completed as soon as possible thereafter). If BMPs require design changes, the changes shall be implemented and the SWPPP shall be amended to include the changes.

Visual Monitoring Within 48 Hours after a Qualifying Rain Event

Site visual monitoring post-qualifying rain events shall be conducted within 48 hours after the qualifying rain event. The post-storm site visual monitoring inspection shall include observations of:

- discharges of stormwater that have not been processed by a BMP or evidence of stormwater that has not been processed by a BMP at all discharge locations
- evidence of a breach at stored or contained stormwater that is derived from and discharged subsequent to the qualifying rain event producing precipitation of ½ inch or more at the time of discharge; stored or contained stormwater that will likely discharge after working hours, due to anticipated precipitation, shall be observed prior to the discharge during working hours

Stormwater discharges and stored or contained stormwater will be observed for the presence or absence of floating and suspended materials, sheens on the surface, discolorations, turbidity, odors, and source(s) of any observed pollutants.

Post-qualifying rain event stormwater visual monitoring site inspections will include observation of all site BMPs to determine if BMPs have failed to operate as intended because of:

- improper installation
- lack of maintenance
- lack of effectiveness

Observations of the site and any recommended corrective actions will be documented in the CEM-2030 Stormwater Site Inspection Report. Any photographs used to document observations will be referenced on the stormwater site inspection report. Corrective actions documented in site inspection reports shall be immediately reviewed by the WCP Manager and, if deemed necessary, necessary implemented, as required by Standard Specification 13-1.03A, within 24 hours of identification unless a longer period is authorized (but cannot be authorized longer than required by the CGP: implemented within 72 hours of identification and completed as soon as possible thereafter). If BMPs require design changes, the changes shall be implemented and the SWPPP shall be amended to include the changes.

Visual Monitoring of Non-Stormwater Discharges

For non-stormwater site visual monitoring, each drainage area will be monitored quarterly for the presence or prior indications of unauthorized and authorized non-stormwater discharges, and their sources. The presence or absence of non-stormwater discharges based on site observations will be documented in the CEM-2030 Stormwater Site Inspection Report. Documentation of observed non-stormwater discharges will include presence or absence of floating and suspended materials, sheens on the surface, discolorations, turbidity, odors, and source(s) of any observed pollutants.

Site observations of the site and any recommended corrective actions will be documented. Corrective actions documented in site inspection reports shall be immediately reviewed by the WCP Manager and, if deemed necessary implemented, as required by Standard Specification 13-1.03A, within 24 hours of identification unless a longer period is authorized (but cannot be authorized longer than required by the CGP: implemented within 72 hours of identification and completed as soon as possible thereafter). If BMPs require design changes, the changes shall be implemented and the SWPPP shall be amended to include the changes. Corrective actions shall be documented in the CEM-2035 Stormwater Corrective Actions Summary. Any photographs used to document observations will be referenced in the CEM-2030 Stormwater Site Inspection Report.

700.1.4 Visual Monitoring Follow-up and Tracking Procedures

For deficiencies identified during visual monitoring (site inspections), the required repairs or maintenance of BMPs shall begin and be completed as soon as possible, while taking into consideration worker safety. For deficiencies identified during visual site inspections that require design changes, including additional BMPs, the implementation, as required by Standard Specification 13-1.03A, will begin within 24 hours of identification unless a longer period is authorized (but cannot be authorized longer than required by the CGP: implemented within 72 hours of identification and completed as soon as possible thereafter). When design changes to BMPs are required, the SWPPP shall be amended, including the WCBMPL and WPCDs. If NALs are exceeded, corrective actions shall be approved by the WPC Manager and implemented immediately.

Deficiencies identified on site inspection reports, as well as corrections of deficiencies, will be tracked on the CEM-2035 Stormwater Corrective Actions Summary, in Appendix I. Corrective action summaries shall be submitted to the RE when corrections are completed, but must be submitted within five (5) days of a site inspection.

700.1.5 Data Management and Reporting

The results of site visual monitoring (pre-storm, during storm, post-storm, and quarterly inspections) shall be recorded on the CEM-2030 Stormwater Site Inspection Report, in Appendix G. A copy of each report shall be kept in SWPPP File Category 20.33.

All reports shall be provided to the RE within 24 hours of the site inspection.

Deficiencies identified during visual monitoring (site inspections) and correction of deficiencies will be tracked on the CEM-2035 Stormwater Corrective Actions Summary, in Appendix I. Corrective Action Summary forms shall be submitted to the RE when corrections are completed, but must be submitted within five (5) days of the site inspection. Completed Stormwater Corrective Actions Summary forms shall be filed in SWPPP File Category 20.35: Corrective Actions Summary. A copy of the completed Corrective Actions Summary form will also be attached to the corresponding inspection report and shall be kept in the SWPPP Category 20.33.

If a discharge or evidence of a prior discharge that could cause adverse condition in the storm sewer or the receving water is discovered by the Contractor, the WPC Manager or Contractor shall immediately notify the RE, and no more than 6 hours after discovery, and will file a written report to the RE within 24 hours of the discovery of evidence of a prior discharge. The written report to the RE will contain:

- the date, time, location, and type of unauthorized discharge;
- The nature of the operation that caused the discharge;
- An initial assessment of any impacts caused by the discharge;
- the BMPs deployed before the discharge;
- the date of deployment and type of BMPs deployed after the discharge, including additional measures installed or planned to reduce or prevent re-occurrence
- steps taken or planned to reduce, eliminate and/or prevent recurrence of the discharge

Reporting of discharges shall be documented on the CEM-2061 Notice of Discharge form, in Appendix K. Completed Notice of Discharge reports shall be submitted to the RE within 24 hours of discovery of evidence of a discharge. Copies of the Notice of Discharge reports will be kept in SWPPP File Category 20.61: Notice of Discharge Reports.

700.2 Sampling and Analysis Plans

700.2.1 General SAP

A sampling and analysis plan (SAP) describes how samples will be collected, under what conditions, where and when the samples will be collected, what the sample will be tested for, what test methods and detection limits will be used, and what methods/procedures will be performed to ensure the integrity of the sample during collection, storage, shipping and testing (i.e., quality assurance/quality control protocols). Therefore, a SAP shall include the components listed below.

1. Scope of Monitoring Activities
2. Monitoring Preparation
3. Monitoring Strategy
4. Sample Collection and Handling
5. Sampling Analysis
6. Quality Control and Assurance
7. Data Management and Reporting
8. Data Evaluation

9. Change of Conditions

This SWPPP contains a non-visible pollutants SAP. The SWPPP may also contain four additional specific SAPS based on the project risk level, project dewatering requirements, RWQCB sampling and analysis requirements, and a SAP for monitoring an active treatment system.

700.2.1.1 Scope of Monitoring Activities

For specific details with regard to monitoring activities, refer to the specific SAP identified below.

- Non-visible Pollutants (Section 700.2.2.1)
- Non-Stormwater Discharges (Section 700.2.3.1)
- Stormwater pH and Turbidity (Section 700.2.4.1)
- Monitoring required by the Regional Board (Section 700.2.5.1)
- Monitoring for Active Treatment Systems (ATS) (Section 700.2.6.1)

700.2.1.2 Monitoring Preparation

To ensure an effective construction site monitoring and reporting program, the following monitoring preparation activities are required:

- identifying qualified sampling personnel
- ensuring the availability of an adequate quantity of monitoring supplies
- ensuring the availability of field instruments; field instruments must be properly maintained and calibrated prior to sampling events
- identifying a qualified testing laboratory that is capable of performing stormwater and non-stormwater analysis for those constituents that must be tested in a laboratory

700.2.1.2.1 Qualified Sampling Personnel

Sampling personnel shall be trained to collect, maintain, and ship samples in accordance with the Surface Water Ambient Monitoring Program (SWAMP) 2008 Quality Assurance Program Plan (QAPrP).

Samples on the project site will be collected by the following To be determined:

Company Name: **To be determined**

Address:

,

Contact Name: **To be determined**

Title:

Phone Number:

Emergency Phone Number (24/7)

Email Address:

- Stormwater sampling and field analysis will be performed by the following primary and alternative stormwater samplers: To be determined
-

The primary stormwater sampler has received the following stormwater sampling training:

-
-

The primary stormwater sampler has the following stormwater sampling experience:

-
-

The alternate stormwater sampler has received the following stormwater sampling training:

-
-

The alternate stormwater sampler has the following stormwater sampling experience:

-
-

Training records of designated contractor sampling personnel are provided in Attachment D, Contractor Personnel Stormwater Training.

Safety practices for sample collection will be in accordance with the To be determined.

700.2.1.2.2 Monitoring Supplies

To be determined will provide monitoring supplies and equipment, including, but not limited to, surgical gloves, sample collection equipment, coolers, appropriate number and volume of sample bottles, identification labels, re-sealable storage bags, paper towels, personal rain gear, and ice.

To be determined will obtain and maintain the field testing instruments, identified in Section 700.2.1.2.3, for analyzing samples in the field by their sampling and testing personnel.

700.2.1.2.3 Field Instruments

The field instrument(s) shown in Table 700.2.1.2.3: Field Instruments will be used to analyze the constituents shown:

TABLE 700.2.1.2.3
FIELD INSTRUMENTS

Field Instrument	Constituent

The instrument(s) shall be maintained in accordance with manufacturer's instructions.

The instrument(s) shall be calibrated before each sampling and analysis event.

A Standard Operating Procedure (SOP) for calibration and maintenance of field instruments shall be implemented based on the meter manufacturer's instructions. A copy of the manufacturer's instructions shall be attached to the SOP so that they are readily available.

Maintenance and calibration records shall be maintained in SWPPP File Category 20.55: Field Testing Equipment Maintenance and Calibration Records.

The instrument(s) shall be maintained in accordance with manufacturer's instructions.

The instrument(s) shall be calibrated before each sampling and analysis event.

A Standard Operating Procedure (SOP) for calibration and maintenance of field instruments shall be implemented based on the meter manufacturer's instructions. A copy of the manufacturer's instructions shall be attached to the SOP so that they are readily available.

700.2.1.2.4 Testing Laboratory

Samples collected on the project site that require laboratory testing will be tested by a laboratory certified by the State Department of Health Services. Samples collected on the project site will be analyzed by:

Laboratory Name: **To be determined**

Address:

,

Contact Name: **To be determined**

Title:

Phone Number:

Emergency Phone Number (24/7):

Email Address:

700.2.1.3 Monitoring Strategy

The monitoring strategy includes identifying analytical constituents, potential sampling locations, identification of actual sampling locations, and sampling schedule,

700.2.1.3.1 Analytical Constituents

Stormwater and non-stormwater discharges shall be monitored for the analytical constituents specified in the specific SAP(s) in this SWPPP.

700.2.1.3.2 Potential Sampling Locations

Potential sampling locations must be representative of the stormwater and non-stormwater discharges from the construction site. Existing conditions and associated construction activities within each drainage area form the basis for determining representative stormwater sampling locations.

Project drainage areas and potential sampling locations have been determined by:

- reviewing project plans
- visiting project site
- reviewing topography maps

The WPCDs show the demarcation of all drainage areas that are either:

- within the project site
- cover part of the project site

The QSD must identify potential sampling locations where concentrated run-off:

- leaves the Caltrans right-of-way
- drains into an MS4
- discharges into a receiving water

Potential run-on sampling locations were determined where concentrated run-on:

- enters the right-of-way
- combines with the stormwater on site and then discharges into an MS4, including the location(s) of discharge into the MS4

The following locations were determined when runoff discharges directly into receiving water bodies:

- the discharge location(s) into the receiving water
- a potential sampling location upstream of all discharge locations
- a potential sampling location downstream from all discharge location(s) into the receiving water.

Necessary potential sampling locations were determined when:

- there are potential sources of non-visible pollutants, as discussed in Section 500.1, and discharge locations are downgradient
- run-on locations are present that may contribute non-visible pollutants
- there are potential non-stormwater discharges and corresponding discharge locations are downgradient
- there are proposed dewatering construction activities

If an ATS is used on site, then sample locations must be included in Section 700.2.6.

Potential stormwater and non-stormwater sampling locations must be shown on the WPCDs in Attachment BB and listed in Attachment EE: Stormwater Sample Locations. The QSD has identified each of the potential sampling locations with a unique sample location identification code, as shown below. The identification code must start with a number and must be different for each location. If the construction site lies in a west-to-east orientation, starting with one (01) from the east, the potential sampling locations shall be numbered toward the west. If the construction site lies in a south-to-north orientation, the potential sampling locations shall be numbered toward the north.

To further distinguish among the locations, each potential sampling location has been identified with one of the following abbreviations based on the sampling location type:

- discharge locations leaving Caltrans right-of-way: DL
- discharge locations from areas with known non-visible pollutants: NVP
- discharge locations upgradient of areas with known non-visible pollutants: UNVP
- discharge locations to an MS4: MS
- run-on locations: RO
- discharge locations into a receiving water: RW
- downstream of all discharge locations: RWD
- upstream of all discharge locations: RWU
- dewatering discharge locations: DDL
- contained stormwater discharge locations: CSDL
- discharge locations for ATS: ATS

The unique sample location identification code shall follow this format,**SSSTTTTXX** , where:

SSS	=	sampling location identifier number (e.g., 010)
TTTT	=	sampling location type (e.g. DL)
XX	=	identifier number for the type of sampling location

For example, the sampling location identification for the 15th sampling location based on starting from the south end of the project for a stormwater discharge location that has been identified to be the ninth discharge location would be **015DL09.**

Potential sampling locations shown on the WPCDs shall be identified with unique sampling location identifiers. Each potential sample location must be listed on Stormwater Sample Locations in Attachment EE. The unique identification of each potential sampling location based on its number and abbreviation of type shall be used on all sampling documentation.

The WPC Manager may have to revise and/or add additional sampling locations during the course of construction as conditions dictate.

700.2.1.3.3 Identification of Actual Sampling Locations

For each forecasted storm event, actual sampling locations will be determined by the WPC Manager based on the strategy described in each specific SAP.

700.2.1.3.4 Sampling Schedule

For the sampling schedule, see the specific SAPs in this CSMP. If a scheduled sampling activity is unsafe because of dangerous weather conditions, such as flooding and electrical storms, then the stormwater sampler shall document why an exception to performing the sampling was necessary.

700.2.1.4 Sample Collection and Handling

Sample collection procedures shall be used to ensure that representative samples are collected and that the potential for contamination of samples is minimized. Sample handing procedures are followed to ensure that samples are identified accurately and that the required analysis is clearly documented. Chain-of-custody requirements for samples are necessary to trace the possession of the sample from collection through analysis.

700.2.1.4.1 Sample Collection Procedures

Samples shall be collected, maintained and shipped in accordance with the SWAMP's 2008 QAPrP.

Grab samples shall be collected and preserved in accordance with the methods identified in each specific SAP. Only personnel trained in proper water quality sampling shall collect samples.

Samples from areas of sheet flow can be collected using the collection procedures shown in the video at http://www.youtube.com/watch?v=AmEJUNp44aU. For pH and turbidity sampling, sheet flow sampling can be conducted as described below to concentrate the flow in order to collect a sample or follow other procedures approved by the RE.

- Place several rows of sandbags in a half circle directly in the path of the sheet flow to pond water, and wait for enough water to spill over. Then place a cleaned or decontaminated flexible hose along the top, and cover with another sandbag so that ponded water will only pour through the flexible hose and into sample bottles. Do not reuse the same sandbags during future sampling events as they may cross-contaminate future samples.

- Place a cleaned or decontaminated dustpan with open handle in the path of the sheet flow so that water will pour through the handle and into sample bottles.

For receiving water sampling, upstream samples shall be collected to represent the water body upgradient of the construction site. Downstream samples shall be collected to represent the water body mixed with direct discharge from the construction site. Samples shall not be collected directly from ponded, sluggish, or stagnant water.

Receiving water upstream and downstream samples shall be collected using one of the following methods:

- placing a sample bottle directly into the stream flow in or near the main current upstream of sampling personnel and allowing the sample bottle to fill completely;

  OR

- placing a decontaminated or sterile bailer or other sterile collection devise in or near the main current to collect the sample and then transferring the collected water to appropriate sample bottles allowing the sample bottle to fill completely.

To maintain sample integrity and prevent cross-contamination, sampling collection personnel shall follow the procedures listed below.

- Wear a clean pair of surgical gloves donned prior to the collection and handling of each sample at each location.

- Decontaminate sampling equipment prior to sample collection using a TSP-soapy water wash, distilled water rinse, and final rinse with distilled water. Dispose of decontamination water/soaps appropriately (i.e., do not discharge to the storm drain system or receiving water).
- Do not allow the inside of the sample bottle to come into contact with any material other than the run-off sample.
- Discard sample bottles or sample lids that have been dropped onto the ground prior to sample collection.
- Do not leave the cooler lid open for an extended period of time once samples are placed inside.
- Do not sample near a running vehicle where exhaust fumes may impact the sample.
- Do not touch the exposed end of a sampling tube, if applicable.
- Avoid allowing rainwater to drip from rain gear or other surfaces into sample bottles.
- Do not eat, smoke, or drink during sample collection/field measurement.
- Do not sneeze or cough in the direction of an open sample bottle.
- Minimize the exposure of the samples to direct sunlight, as sunlight may cause biochemical transformation of the sample.

700.2.1.4.2 Sample Handling Procedures

Immediately following collection, sample bottles to be forwarded for laboratory analytical testing shall be capped, labeled, documented on the Chain-of-Custody Record, sealed in a re-sealable storage bag, placed in an ice-chilled cooler, at 0 ±4 degrees Celsius, and delivered within 24 hours to the laboratory shown in sub-section 700.2.1.2.4.

Immediately following collection, samples used for field analysis shall be tested in accordance with the field instrument manufacturer's instructions and results recorded on the CEM-2052 Stormwater Sample Field Test Report form.

700.2.1.4.3 Sample Documentation Procedures

All original data documented on sample bottle identification labels, the Chain-of-Custody, and the CEM-2051 Stormwater Sampling and Testing Activity Log - Optional Form, shall be recorded using waterproof ink. These shall be considered accountable documents. If an error is made on an accountable document, the individual shall make corrections by lining through the error and entering the correct information. The erroneous information shall not be obliterated. All corrections shall be initialed and dated.

The following form, used for sample documentation, is provided in the SWPPP appendices:

- CEM-2051 Stormwater Sampling and Testing Activity Log - Optional Form, in Appendix M

Duplicate samples shall be identified in a manner consistent with the numbering system for other samples to prevent the laboratory from identifying duplicate samples. Duplicate samples can be identified in the CEM-2051 Stormwater Sampling and Testing Activity Log - Optional Form.

Sample Bottle Identification Labels: Sampling personnel shall attach an identification label to each sample bottle, which shall include, at a minimum, the following information:

- project name
- contract number and/or project identifier number

- unique sample identification code, which shall follow this format, **SSSSSYYMMDDHHmmTT** , where

SSSSS	=	sampling location identifier number (e.g., 01MS1)
YY	=	last two digits of the year (e.g. 11)
MM	=	month (01-12)
DD	=	day (01-31)
HH	=	hour sample collected (00-23)
mm	=	minute sample collected (00-59)
TT	=	Type or QA/QC Identifier (if applicable)
G	=	grab
FS	=	field duplicate

For example, the sample number for a grab sample collected at Station 01MS1, collected at 4:15PM on December 8, 2011 would be **01MS11112081615G.**

- constituent to be analyzed
- initials of person who collected the sample

Stormwater Sampling and Testing Activity Log: A log of sampling events and test results shall include:

- sampling date
- separate times for collected samples and QA/QC samples, recorded to the nearest minute
- unique sample identification number and location
- constituent analyzed
- names of sampling personnel
- weather conditions (including precipitation amount)
- test results
- other pertinent data

Sample Information, Identification and Chain-of-Custody Record Forms: All samples to be analyzed by a laboratory will be accompanied by a Chain-of-Custody. The samplers will sign the Chain-of-Custody when samples are turned over to the testing laboratory. Chain-of-custody procedures will be strictly adhered to for QA/QC purposes.

700.2.1.5 Sample Analysis

For the analytical methods to be used to determine the presence of pollutant(s), see the specific SAPs in this CSMP.

700.2.1.6 Quality Assurance/Quality Control

For verification of laboratory or field analysis, duplicate samples shall be collected at a rate of 10 percent or 1 minimum duplicate per sampling event. The duplicate sample shall be collected, handled, and analyzed using the same protocols as primary samples. A duplicate sample shall be collected immediately after the primary sample has been collected. Duplicate samples shall not influence any evaluations or conclusions; however, they shall be used as a check on laboratory or field analysis quality assurance.

700.2.1.7 Data Management and Reporting

All test results shall be documented on either the CEM-2052 Stormwater Sample Field Test Report form and/or may be entered on the CEM-2051 Stormwater Sampling and Testing Activity Log - Optional Form. These shall be considered accountable documents. If an error is made on an accountable document, the individual shall make corrections by lining through the error and entering the correct information. The erroneous information shall not be obliterated. All corrections shall be initialed and dated.

For field tests, the submitted information shall include a signed copy of the Chain-of-Custody and CEM-2052 Stormwater Sample Field Test Report form. Appendix N contains the CEM-2052 Stormwater Sample Field Test Report form , which must accompany the Chain-of-Custody Record. The test results can be recorded on the CEM-2051 Stormwater Sampling and Testing Activity Log - Optional Form, in Appendix M.

For laboratory testing, all laboratory analysis results shall be reviewed for consistency among laboratory methods, sample identifications, dates, and times for both primary samples and QA/QC samples. The test results may be recorded on the CEM-2051 Stormwater Sampling and Testing Activity Log - Optional Form.

All sampling and testing documentation, including the Chain-of-Custody, CEM-2051 Stormwater Sampling and Testing Activity Logs - Optional Form, CEM-2052 Stormwater Sample Field Test Reports, and Laboratory Test Reports shall be kept in the appropriate SWPPP file category. Sampling and testing documentation shall be filed in the appropriate following SWPPP file category based on the specific SAP that required the sampling and analysis:

- non-visible pollutant sampling and testing – SWPPP File Category 20.51;
- non-stormwater discharge sampling and testing – SWPPP File Category 20.50
- turbidity, pH, and SSC sampling and testing – SWPPP File Category 20.52
- required RWQCB sampling and testing – SWPPP File Category 20.53
- ATS sampling and testing – SWPPP File Category 20.54

If corrective actions are taken as a result of the data evaluation, a copy of the completed CEM-2035 Stormwater Corrective Actions Summary shall be filed in File Category 20.35: Corrective Actions Summary.

A copy of completed sampling records and reports and an updated CEM-2051 Stormwater Sampling and Testing Log - Optional shall be submitted to the RE. All water quality analytical results, including QA/QC data, shall be submitted to the RE within 48 hours of sampling for field analyzed samples, and within 30 days for laboratory analyses.

In addition to a paper copy of the water quality test results, the test results shall be submitted electronically in Microsoft Excel (.xls) format, and shall include, at a minimum, the following information from the lab: Sample ID Number, Contract Number, Constituent, Reported Value, Laboratory Name, Method Reference, Method Number, Method Detection Limit, and Reported Detection Limit. Electronic copies of stormwater data shall be forwarded by email to at for inclusion into a statewide database.

700.2.1.8 Data Evaluation

For data evaluation of stormwater sample test results, see specific SAPs.

700.2.1.9 Change of Conditions

Whenever stormwater visual monitoring site inspections indicate a change in site conditions that might affect the appropriateness of sampling locations, sampling and testing protocols shall be revised accordingly. All such revisions shall be implemented as soon as feasible, and the SWPPP updated or amended.

700.2.2 Sampling and Analysis Plan for Non-Visible Pollutants

This SAP has been prepared for monitoring non-visible pollutants in stormwater and non-stormwater discharges from the project site and off-site activities directly related to the project, in accordance with the requirements of the CGP and applicable requirements of the Caltrans Construction Site Monitoring Program Guidance Manual, August 2013. This SAP for monitoring non-visible pollutants includes all of the components listed in Section 700.2.1.

700.2.2.1 Scope of Monitoring Activities

The scope of monitoring for discharges of non-visible pollutants from the construction site is based on the construction materials and construction activities to be performed on the project site, potential for the presence of non-visible pollutants, based on the historical use of the site, and potential non-visible pollutants in run-off from areas where soil amendments have been used on the project site.

The construction materials, wastes or activities listed below, and identified in Section 500.1.1, are potential sources of non-visible pollutants to stormwater discharges from the project. Storage, use, and operational locations are shown on the WPCDs in Attachment BB.

- ●Demolition of the roadway
- ●Concrete and asphalt work and waste
- ●Vehicle and equipment cleaning, fueling, and maintenance
- ●Hazardous, solid, liquid, and sanitary septic waste

The existing site features listed below, and identified in Section 500.1.2, are potential sources of non-visible pollutants to stormwater discharges from the project.

- ●None
-

The soil amendments listed below have the potential to change the chemical properties, engineering properties, or erosion resistance of the soil and will be used on the project site.

- ●Compost
- ●Imported soil (bioretention area)

700.2.2.2 Monitoring Preparation

Refer to the general requirements in General SAP Section 700.2.1.2 for monitoring preparation.

700.2.2.2.1 Qualified Sampling Personnel

Refer to the general requirements in General SAP Section 700.2.1.2.1 for Qualified Sampling Personnel.

Refer to the general requirements in General SAP Section 700.2.1.2.1 for Qualified Sampling Personnel.

700.2.2.2.2 Monitoring Supplies

Refer to the general information in General SAP Section 700.2.1.2.2 regarding monitoring supplies.

Refer to the general information in General SAP Section 700.2.1.2.2 regarding monitoring supplies.

700.2.2.2.3 Field Instruments

Refer to the general information in General SAP Section 700.2.1.2.3 regarding field instruments.

Refer to the general information in General SAP Section 700.2.1.2.3 regarding field instruments.

700.2.2.2.4 Testing Laboratory

Refer to the contact information found in General SAP Section 700.2.1.2.4 for the Testing Laboratory.

Refer to the contact information found in General SAP Section 700.2.1.2.4 for the Testing Laboratory.

700.2.2.3 Monitoring Strategy

The monitoring strategy for non-visible pollutants in stormwater discharges is to identify all potential non-visible pollutants that may be on the project site, non-visible pollutant sources, and water quality indicators that will indicate the presence of the non-visible pollutant in stormwater discharges. Locations will be identified where sources of non-visible pollutants will be used, stored or exist because of historical use of the project site so that these areas are monitored prior to and during forecasted storm events.

Non-visible pollutant monitoring is only required where a discharge can cause or contribute to an exceedance of a water quality standard based on one of the following triggers:

- construction materials are waste are exposed
- the site contains historical non-visible pollutants
- construction activity has occurred or material has been placed within the past 24 hours that may cause an exceedance of a water quality standard
- there is run-on to the site that may contains non-visible pollutants
- there is a breach, malfunction, leak or spill from a BMP

When one of the triggers that indicates a non-visible pollutant source may have come in contact with stormwater is discovered during a site inspection conducted prior to, during or after a forecasted storm event, the WPC Manager will require that sampling and analysis of the stormwater discharge be conducted for the applicable non-visible pollutant water quality indicator(s).

For the forecasted storm event in which a trigger for a non-visible pollutant sampling and analysis has occurred, the WPC Manager will also require the collection of an uncontaminated sample of runoff as a background sample for comparison with the samples being analyzed for non-visible pollutants. The WPC Manager will perform an evaluation of the analysis results from the non-visible pollutant stormwater discharge sampling location and the analysis results from the uncontaminated run-off sampling location to determine if there is an increased level of the tested non-visible pollutant analyte in the stormwater discharge.

700.2.2.3.1 Analytical Constituents

Identification of Potential Non-Visible Pollutants

The following table lists the specific sources and types of potential non-visible pollutants on the project site and the applicable water quality indicator constituent(s) for that pollutant.

TABLE 700.2.2.3.1
POTENTIAL NON-VISIBLE POLLUTANTS AND WATER QUALITY INDICATOR CONSTITUENTS

Pollutant Source	Pollutant	Water Quality Indicator Constituent
Adhesives	Adhesives	COD, phenols, SVOC
Vehicle	Antifreeze, batteries, fuel, lubricants	Sulfuric acid, lead, pH
Concrete	Sealant, curing compounds	pH, alkalinity, methyl methacrylate, cobalt, zinc, calcium, SVOC, VOC
Hydromulch	Tackifier	BOD, COD, DOC, nitrate, and sulfate

700.2.2.3.2 Potential Sampling Locations

Using the criteria in Section 700.2.1.3.2, the potential sampling locations on the project site for monitoring non-visible pollutants were identified. Sampling locations are based on: proximity to planned non-visible pollutant storage; occurrence or use; accessibility for sampling and personnel safety; and other factors in accordance with the applicable requirements in the Caltrans Construction Site Monitoring Program Guidance Manual, latest edition. Sampling locations shall be shown on the WPCDs in Attachment BB and listed on Stormwater Sampling Locations in Attachment EE:

Using the criteria in Section 700.2.1.3.2, the potential sampling locations on the project site for monitoring non-visible pollutants were identified. Sampling locations are based on: proximity to planned non-visible pollutant storage; occurrence or use; accessibility for sampling and personnel safety; and other factors in accordance with the applicable requirements in the Caltrans Construction Site Monitoring Program Guidance Manual, latest edition. Sampling locations shall be shown on the WPCDs in Attachment BB and listed on Stormwater Sampling Locations in Attachment EE:

TABLE 700.2.2.3.2.1
POTENTIAL NON-VISIBLE POLLUTANT SAMPLING LOCATIONS

Sampling Location Identifier	Location Description

Potential non-visible pollutant sampling locations shall be shown on the WPCDs in Attachment BB and listed on Stormwater Sampling Locations in Attachment EE:

Y sampling location(s) has been identified for the collection of an uncontaminated sample of runoff as a background sample for comparison with the samples being analyzed for non-visible pollutants. This location(s) was selected such that the sample will not have come in contact with (1) operational or storage areas associated with the materials, wastes, and activities identified in Section 500.1.1; (2) potential non-visible pollutants due to historical use of the site, as identified in Section 500.1.2; (3) areas in which soil amendments that have the potential to change the chemical properties, engineering properties, or erosion resistance of the soil have been applied; or (4) disturbed soils areas. Potential non-visible pollutant uncontaminated sampling locations are listed in Table 700.2.2.3.2.2: Potential Uncontaminated Non-visible Pollutant Sampling Locations. sampling location(s) has been identified for the collection of an uncontaminated sample of runoff as a background sample for comparison with the samples being analyzed for non-

TABLE 700.2.2.3.2.2
POTENTIAL UNCONTAMINATED NON-VISIBLE POLLUTANT SAMPLING LOCATIONS

Sampling Location Identifier	Location Description

Potential non-visible pollutant uncontaminated sampling locations shall be shown on the WPCDs from Attachment BB and listed on Stormwater Sampling Locations in Attachment EE.

700.2.2.3.3 Actual Sampling Locations

Sampling for non-visible pollutants at any potential non-visible pollutant sampling location will be based on any of the conditions listed below having been identified during the visual monitoring site inspections.

- Locations where materials or wastes containing potential non-visible pollutants are not stored under watertight conditions. Watertight conditions are defined as (1) storage in a watertight container, (2) storage under a watertight roof or within a building, or (3) protected by temporary cover and containment that prevents stormwater contact and runoff from the storage area.

- Locations where materials or wastes containing potential non-visible pollutants are stored under watertight conditions, but (1) a breach, malfunction, leakage, or spill is observed, (2) the leak or spill is not cleaned up prior to the forecasted storm event, and (3) the potential exists for discharge of non-visible pollutants to surface waters or a storm drain system.

- Locations where a construction activity (including but not limited to those identified in Section 500.1.1) with the potential to contribute non-visible pollutants (1) was occurring during or within 24 hours prior to the forecasted storm event, (2) involved the use of applicable BMPs that were observed to be breached, malfunctioning, or improperly implemented, and (3) resulted in the potential for discharge of non-visible pollutants to surface waters or a storm drain system.

- Locations where soil amendments that have the potential to change the chemical properties, engineering properties, or erosion resistance of the soil have been applied, and the potential exists for discharge of non-visible pollutants to surface waters or a storm drain system.

- Locations where stormwater runoff from an area contaminated by historical usage of the site has been observed to combine with stormwater runoff from the site, and the potential exists for discharge of non-visible pollutants to surface waters or a storm drain system.

If the presence of a material storage, waste storage, or operations area where spills have been observed or the potential for the discharge of non-visible pollutants to surface waters or a storm drain system was noted during a site inspection conducted prior to or during a forecasted storm event and such an area has not been identified on the list of potential non-visible pollutant sampling locations, the WPC Manager must identify the corresponding discharge location and the corresponding upgradient sampling location as actual non-visible sampling locations. The additional sampling location for non-visible pollutant monitoring shall be shown on the WPCDs from Attachment BB and added to Attachment EE: Stormwater Sampling Locations.

For forecasted storm events, the selection of the actual sampling locations for non-visible pollutants by the WPC Manager will be documented on the CEM-2048 Storm Event Sampling and Analysis Plan form, in Appendix N. The completed SAP for each storm event will be filed in File Category 20.46: Storm/Rain Event Action, Sampling and Analysis Plans. Within 24 hours prior to a storm event, a copy of the storm event SAP shall be submitted to the RE.

For qualifying rain events, the selection of the actual sampling locations for non-visible pollutants by the WPC Manager will be documented on the CEM-2049 Qualifying Rain Event Sampling and Analysis Plan, in Appendix O. The completed SAP for each qualifying rain event will be filed in File Category 20.46: Storm/Rain Event Sampling and Analysis Plans. Within 24 hours prior to a storm event, a copy of the SAP shall be attached to the REAP and submitted to the RE.

700.2.2.3.4 Sampling Schedule

In addition to the general scheduling requirements in General SAP Section 700.2.1.3.4, samples for non-visible pollutant monitoring, including both the non-visible pollutants samples and uncontaminated background samples, shall be collected during the first two hours of discharge from storm events that result in a sufficient discharge for sample collection. Samples shall be collected during daylight hours, 7 days a week.

In addition to the general scheduling requirements in General SAP Section 700.2.1.3.4, samples for non-visible pollutant monitoring, including both the non-visible pollutants samples and uncontaminated background samples, shall be collected during the first two hours of discharge from storm events that result in a sufficient discharge for sample collection. Samples shall be collected during daylight hours, 7 days a week.

700.2.2.4 Sample Collection and Handling

Refer to the general requirements for sample collection and handling in General SAP Section 700.2.1.4.

Refer to the general requirements for sample collection and handling in General SAP Section 700.2.1.4.

700.2.2.4.1 Sample Collection Procedures

Refer to the general procedures for sample collection in General SAP Section 700.2.1.4.1.

Refer to the general procedures for sample collection in General SAP Section 700.2.1.4.1.

700.2.2.4.2 Sample Handling Procedures

Refer to the general procedures for sample handling in General SAP Section 700.2.1.4.2.

Refer to the general procedures for sample handling in General SAP Section 700.2.1.4.2.

700.2.2.4.3 Sample Documentation Procedures

In addition to the general sample documentation procedures provided in General SAP Section 700.2.1.4.3, when applicable, the contractor's stormwater inspector will document in the CEM-2030 Stormwater Site Inspection Report, that samples for non-visible pollutants were taken during a storm event, based on the criteria for non-visible pollutant sampling described in Section 700.2.2.3.3.

In addition to the general sample documentation procedures provided in General SAP Section 700.2.1.4.3, when applicable, the contractor's stormwater inspector will document in the CEM-2030 Stormwater Site Inspection Report, that samples for non-visible pollutants were taken during a storm event, based on the criteria for non-visible pollutant sampling described in Section 700.2.2.3.3.

700.2.2.5 Sample Analysis

Samples collected for monitoring of non-visible pollutants will be analyzed by the laboratory identified in Section 700.2.1.2.4. Samples shall be analyzed for the constituents identified in Table 700.2.2.3.1, using the analytical methods identified in the following table, entitled "Sample Collection, Preservation and Analysis for Monitoring Non-Visible Pollutants."

TABLE 700.2.2.5
SAMPLE COLLECTION, PRESERVATION AND ANALYSIS FOR MONITORING NON-VISIBLE

Constituent	Analytical Method	Minimum Sample Volume	Sample Bottle	Sample Preservation	Reporting Limit	Maximum Holding Time
VOCs-Solvent	EPA 8260B	3 x 40 mL	VOA-glass	Store at 4˚C, HCl to pH<2	1 µg/L	14 days
SVOCs	EPA 8270C	1 x 1 L	Glass-Amber	Store at 4˚C	10 µg/L	7 days
COD	EPA 410.04	1 x 250 mL	Glass-Amber	Store at 4˚C, H2SO4 to pH<2	5 mg/L	28 days
pH	pH Field test with calibrated portable instrument	1 x 100 mL	Polypropylene	None	Unitless	15 minutes
Lead	EPA 200.8 (Pb)	1 x 500 mL	Polypropylene or Glass	Store at 4˚C, HCl to pH<2	1 µg/L	7 days

700.2.2.6 Quality Assurance/Quality Control

Refer to the general requirements regarding Quality Assurance/Quality Control (QA/QC) in General SAP Section 700.2.1.6.

700.2.2.7 Data Management and Reporting

Refer to general requirements for data management and reporting in Section General SAP 700.2.1.7.

700.2.2.8 Data Evaluation

Water quality sample analytical results for non-visible pollutants shall be compared to the uncontaminated background sample results. Should the discharge (downgradient) sample show an increased level of the tested non-visible pollutant analyte relative to the background sample, the BMPs, site conditions, and surrounding influences shall be assessed to determine the probable cause for the increase.

As determined by the site and data evaluation, appropriate BMPs shall be repaired or modified to mitigate discharges of non-visual pollutant concentrations. Once deemed necessary, corrective actions shall be implemented , as required by Standard Specification 13-1.03A, within 24 hours of identification unless a longer period is authorized (but cannot be authorized longer than required by the CGP: implemented within 72 hours of identification and completed as soon as possible thereafter), and documented on the CEM-2035 Stormwater Corrective Actions Summary. Revisions/design changes to BMPs required as a result of data evaluation and site assessment shall be implemented based on an amendment to the SWPPP.

Water quality sample analytical results for non-visible pollutants shall be compared to the uncontaminated background sample results. Should the discharge (downgradient) sample show an increased level of the tested non-visible pollutant analyte relative to the background sample, the BMPs, site conditions, and surrounding influences shall be assessed to determine the probable cause for the increase.

As determined by the site and data evaluation, appropriate BMPs shall be repaired or modified to mitigate discharges of non-visual pollutant concentrations. Once deemed necessary, corrective actions shall be implemented , as required by Standard Specification 13-1.03A, within 24 hours of identification unless a longer period is authorized (but cannot be authorized longer than required by the CGP: implemented within 72 hours of identification and completed as soon as possible thereafter), and documented on the CEM-2035 Stormwater Corrective Actions Summary. Revisions/design changes to BMPs required as a result of data evaluation and site assessment shall be implemented based on an amendment to the SWPPP.

700.2.2.9 Change of Conditions

Refer to the general requirements for change of conditions in General SAP Section 700.2.1.9.

700.2.3 Sampling and Analysis Plan for Non-Stormwater Discharges

This SAP has been prepared for monitoring non-stormwater discharges from the project site and off-site activities directly related to the project, in accordance with the requirements of the CGP and applicable requirements of the Caltrans Construction Site Monitoring Program Guidance Manual, August 2013. This SAP for monitoring non-stormwater discharges includes all of the components listed in Section 700.2.1.

700.2.3.1 Scope of Monitoring Activities

Non-stormwater discharges can be authorized by a separate NPDES permit or conditional exemption. For non-stormwater discharges that are unauthorized where runoff is discharged off site, sampling and testing of the discharge must be conducted in compliance with the CGP.

Examples of unauthorized non-stormwater discharges common to construction activities include:

- vehicle and equipment wash water, including concrete washout water
- slurries from concrete cutting and coring operations, or grinding operations
- slurries from concrete or mortar mixing operations

- residue from high-pressure washing of structures or surfaces
- wash water from cleaning painting equipment
- runoff from dust control applications of water or dust palliatives
- sanitary and septic wastes
- chemical leaks and/or spills of any kind, including but not limited to, petroleum, paints, cure compounds, etc

When an unauthorized non-stormwater discharge is discovered, the WPC Manager will require sampling and analysis of the effluent to detect whether non-visible pollutants are present in the discharge. Sampling and analysis of non-stormwater discharges shall be performed in accordance with Section 700.2.2, the SAP for non-visible pollutants.

Sampling and analysis for pH and turbidity of stored or impounded stormwater discharges subsequent to a qualifying rain event (a rain event that has produced ½ inch or more of precipitation at the time of discharge) shall be performed in accordance with Section 700.2.4, the SAP for stormwater pH and turbidity.

Non-stormwater discharges can be authorized by a separate NPDES permit or conditional exemption. For non-stormwater discharges that are unauthorized where runoff is discharged off site, sampling and testing of the discharge must be conducted in compliance with the CGP.

Examples of unauthorized non-stormwater discharges common to construction activities include:

- vehicle and equipment wash water, including concrete washout water
- slurries from concrete cutting and coring operations, or grinding operations
- slurries from concrete or mortar mixing operations
- residue from high-pressure washing of structures or surfaces
- wash water from cleaning painting equipment
- runoff from dust control applications of water or dust palliatives
- sanitary and septic wastes
- chemical leaks and/or spills of any kind, including but not limited to, petroleum, paints, cure compounds, etc.

When an unauthorized non-stormwater discharge is discovered, the WPC Manager will require sampling and analysis of the effluent to detect whether non-visible pollutants are present in the discharge. Sampling and analysis of non-stormwater discharges shall be performed in accordance with Section 700.2.2, the SAP for non-visible pollutants.

Non-stormwater from dewatering operations or impounded stormwater may be discharged off site during this project. Stored stormwater is defined as rain collected in trenches, foundation excavations, and excavations for pavement structural sections. Non-stormwater dewatering discharges or discharges of impounded stormwater shall be monitored for turbidity, pH and potential non-visible pollutants.

Sampling and analysis for pH and turbidity of stored or impounded stormwater discharges subsequent to a qualifying rain event (a rain event that has produced ½ inch or more of precipitation at the time of discharge) shall be performed in accordance with Section 700.2.4, the SAP for stormwater pH and turbidity.

700.2.3.2 Monitoring Preparation

Refer to the general requirements for monitoring preparation in General SAP Section 700.2.1.2.

700.2.3.2.1 Qualified Sampling Personnel

Refer to the general requirements for Qualified Sampling Personnel in General SAP Section 700.2.1.2.1.

Refer to the general requirements in General SAP Section 700.2.1.2.1 for Qualified Sampling Personnel.

700.2.3.2.2 Monitoring Supplies

Refer to the general information regarding monitoring supplies in General SAP Section 700.2.1.2.2.

Refer to the general information in General SAP Section 700.2.1.2.2 regarding monitoring supplies.

700.2.3.2.3 Field Instruments

Refer to the general information regarding field instruments in General SAP Section 700.2.1.2.3.

Refer to the general information in General SAP Section 700.2.1.2.3 regarding field instruments.

700.2.3.2.4 Testing Laboratory

Refer to the contact information for the testing laboratory found in General SAP Section 700.2.1.2.4.

Refer to the contact information found in General SAP Section 700.2.1.2.4 for the Testing Laboratory.

700.2.3.3 Monitoring Strategy

Non-stormwater discharges from the construction site will be monitored for exceedances of water quality standards.

Non-stormwater discharges from the construction site will be monitored for exceedances of water quality standards.

700.2.3.3.1 Analytical Constituents

For non-stormwater dewatering discharges and discharges of stored stormwater, samples shall be analyzed for the following constituents:

- turbidity
- pH
-
-

For non-stormwater dewatering discharges and discharges of stored stormwater, samples shall be analyzed for the following constituents:

- turbidity
- pH

700.2.3.3.2 Potential Sampling Locations

Using the criteria in Section 700.2.1.3.2, potential sampling locations on the project site for monitoring dewatering discharges, discharges of impounded stormwater, and other non-stormwater discharges were identified. Sampling locations were based on: proximity to planned non-stormwater dewatering; non-stormwater occurrence or use; accessibility for sampling and personnel safety; and other factors in accordance with the applicable requirements in the

Caltrans Construction Site Monitoring Program Guidance Manual, August 2013
Sampling locations shall be shown on the WPCDs in Attachment BB and listed on Stormwater Sampling Locations in Attachment EE.

0 sampling location(s) on the project site have been identified as potential locations for the collection of non-stormwater dewatering samples. sampling location(s) on the project site have been identified as potential locations for the collection of non-stormwater dewatering samples and the sampling location(s) are listed in Table 700.2.3.3.2.1: Potential Non-stormwater Dewatering Sampling Locations.

TABLE 700.2.3.3.2.1
POTENTIAL NON-STORMWATER DEWATERING SAMPLING LOCATIONS

Sampling Location Identifier	Location Description

2 sampling location(s) on the project site been identified as potential locations for the collection of discharge samples of impounded stormwater and the sampling location(s) are listed in Table 700.2.3.3.2.2: Potential Impounded Stormwater Discharge Sampling Locations. sampling location(s) on the project site been identified as potential locations for the collection of discharge samples of impounded stormwater and the sampling location(s) are listed in Table 700.2.3.3.2.2: Potential Impounded Stormwater Discharge Sampling Locations.

TABLE 700.2.3.3.2.2
POTENTIAL IMPOUNDED STORMWATER DISCHARGE SAMPLING LOCATIONS

Sampling Location Identifier	Location Description
006CSDL02	Drainage item 3e. 29.19' Rt "RL-2" 556+30.64
004CSDL01	Drainage item 4h. 100.27' Rt "ED-50" 562+47.02

Using the criteria in Section 700.2.1.3.2, potential sampling locations on the project site for monitoring dewatering discharges, discharges of impounded stormwater, and other non-stormwater discharges were identified. Sampling locations were based on: proximity to planned non-stormwater dewatering; non-stormwater occurrence or use; accessibility for sampling and personnel safety; and other factors in accordance with the applicable requirements in the Caltrans Construction Site Monitoring Program Guidance Manual,August 2013
Sampling locations shall be shown on the WPCDs in Attachment BB and listed on Stormwater Sampling Locations in Attachment EE.

700.2.3.3.3 Actual Sampling Locations

Actual sampling locations will be determined by the WPC Manager prior to dewatering activities based on the potential dewatering discharge sample locations initially selected.

When stormwater is impounded in excavations on the project site and the impounded stormwater has the pontential to create runoff from the project site, the WPC Manager will determine the actual sampling location for collecting impounded stormwater discharge samples.

If new locations for dewatering discharges or impounded stormwater discharges that have not been identified on the list of potential stormwater and non-stormwater sampling locations are identified during the course of construction, the WPC Manager must create sampling location identifiers for the dewatering discharge sampling location. The additional sampling location for dewatering discharge monitoring shall be shown on the WPCDs in Attachment BB and added to Attachment EE: Stormwater Sampling Locations.

Actual sampling locations will be determined by the WPC Manager prior to dewatering activities based on the potential dewatering discharge sample locations initially selected.

When stormwater is impounded in excavations on the project site and the impounded stormwater has the potential to create runoff from the project site, the WPC Manager will determine the actual sampling location for collecting impounded stormwater discharge samples.

If new locations for dewatering discharges or impounded stormwater discharges that have not been identified on the list of potential stormwater and non-stormwater sampling locations are identified during the course of construction, the WPC Manager must create sampling location identifiers for the dewatering discharge sampling location. The additional sampling location for dewatering discharge monitoring shall be shown on the WPCDs in Attachment BB and added to Attachment EE: Stormwater Sampling Locations.

700.2.3.3.4 Sampling Schedule

Whenever there are dewatering discharges or impounded stormwater discharges, sampling will be performed daily during discharging. Sampling will be performed upon commencement of the dewatering discharge or impounded stormwater discharge, and then at least a minimum of three (3) samples per day will be collected for analysis, depending on visual monitoring.

For the sampling schedule, see the specific SAPs in this CSMP. If a scheduled sampling activity is unsafe because of dangerous weather conditions, such as flooding and electrical storms, then the stormwater sampler shall document why an exception to performing the sampling was necessary.

700.2.3.4 Sample Collection and Handling

Refer to the general requirements for sample collection and handling in General SAP Section 700.2.1.4.

700.2.3.4.1 Sample Collection Procedures

Refer to the general procedures for sample collection in General SAP Section 700.2.1.4.1.

Refer to the general procedures for sample collection in General SAP Section 700.2.1.4.1.

700.2.3.4.2 Sample Handling Procedures

Refer to the general procedures for sample handling in General SAP Section 700.2.1.4.2.

Refer to the general procedures for sample handling in General SAP Section 700.2.1.4.2.

700.2.3.4.3 Sample Documentation Procedures

In addition to the general procedures for sample documentation in General SAP Section 700.2.1.4.3, when applicable, the contractor's stormwater inspector will document on the CEM-2030 Stormwater Site Inspection Report that samples for non-stormwater discharge pollutants were taken based on a visual monitoring site inspection.

In addition to the general procedures for sample documentation in General SAP Section 700.2.1.4.3, when applicable, the contractor's stormwater inspector will document on the CEM-2030 Stormwater Site Inspection Report that samples for non-stormwater discharge pollutants were taken based on a visual monitoring site inspection.

700.2.3.5 Sample Analysis

Samples from non-stormwater discharges shall be analyzed for pH and turbidity.

The WPC Manager may determine that samples of non-stormwater discharges, need to be analyzed for non-visible pollutants. If the WPC Manager determines that non-visible pollutants may have contaminated the discharge, the samples shall be analyzed for the suspected pollutants. Sampling and analysis for non-visible pollutants in non-stormwater discharges shall be performed following the guidance in Section 700.2.2, the SAP for non-visible pollutants.

Samples shall be analyzed for the constituents indicated in the following table, titled "Sample Collection, Preservation and Analysis for Monitoring Water Extracted by Dewatering or Impounded Stormwater Discharges."

TABLE 700.2.3.5
SAMPLE COLLECTION, PRESERVATION AND ANALYSIS FOR MONITORING WATER EXTRACTED BY DEWATERING OR IMPOUNDED STORMWATER DISCHARGES

Parameter	Test Method	Sample Preservation	Minimum Sample Volume(1)	Sample Bottle	Maximum Holding Time	Detection Limit (min)
Turbidity	Field test with calibrated portable instrument	Store at 4˚ C (39.2˚ F)	100 mL	Polypropylene or Glass	48 hours	1 NTU
pH	Field test with calibrated portable instrument	Store at 4˚ C (39.2˚ F)	100 mL	Polypropylene	15 Minutes	0.2

Notes: 1. Minimum sample volume recommended. Specific volume requirements will vary by instrument; check instrument manufacturer instructions.

°C - degrees Celsius
°F - degrees Fahrenheit
L - liter
Ml - milliliters
NTU - Nephelometric Turbidity Unit

700.2.3.6 Quality Assurance/Quality Control

Refer to the general requirements regarding Quality Assurance/Quality Control (QA/QC) in Section General SAP 700.2.1.6. For samples analyzed for turbidity and pH the following replaces the requirements for QA/QC in Section 700.2.1.6:

The contractor shall coordinate with the Caltrans RE on sampling locations and timing for quality assurance verification of field sampling and analysis. The contractor shall notify the RE at least 24 hours prior to dewatering discharge or impounded stormwater discharge sampling events.

Refer to the general requirements regarding Quality Assurance/Quality Control (QA/QC) in Section General SAP 700.2.1.6. For samples analyzed for turbidity and pH the following replaces the requirements for QA/QC in Section 700.2.1.6:

The contractor shall coordinate with the County RE on sampling locations and timing for quality assurance verification of field sampling and analysis. The contractor shall notify the RE at least 24 hours prior to dewatering discharge or impounded stormwater discharge sampling events.

700.2.3.7 Data Management and Reporting

Refer to the general requirements for data management and reporting in General SAP Section 700.2.1.7.

700.2.3.8 Data Evaluation

An evaluation of the water quality sample analytical results, including sampling locations and the QA/QC data, shall be submitted to the RE for every day that the water from dewatering is discharged. Should the dewatering discharge concentrations exceed applicable water quality standards, discharging will be stopped immediately and the WPC Manager or other personnel shall evaluate the dewatering BMPs to determine the probable cause for the exceedance. For dewatering discharges, Caltrans requires that the turbidity of any sample must not exceed 200 NTU. The pH value of any sample must be within the range of 6.7 to 8.3 pH units.

Samples of non-stormwater collected during discharge shall be evaluated by determining if suspected contaminants are present. Unauthorized discharges will be stopped as soon as possible and the RE will be notified immediately and a written report of discharge shall be completed and submitted to the RE. Authorized discharges shall be sampled for pH and turbidity and all suspected pollutants. For pH and turbidity, sample results shall be compared to the NAL.

As determined by the data evaluation and project site assessment, appropriate BMPs shall be repaired or modified to mitigate the exceedances. Corrective actions taken shall be documents on the CEM-2035 Stormwater Corrective Actions Summary. Any revisions/design changes to BMPs shall be implemented based on an amendment to the SWPPP.

700.2.3.9 Changes of Conditions

Refer to the general requirements for changes of conditions in General SAP Section 700.2.1.9.

700.2.4 Sampling and Analysis Plan for Stormwater pH and Turbidity

This SAP has been prepared for monitoring pH and turbidity in stormwater discharges from the project site and off-site activities directly related to the project in accordance with the requirements of the CGP and applicable requirements of the Caltrans Construction Site Monitoring Program Guidance Manual, August 2013. This SAP for monitoring pH and turbidity includes all of the components listed in Section 700.2.1.

700.2.4.1 Scope of Monitoring Activities

The scope of monitoring for this SAP includes monitoring for pH and turbidity in stormwater discharges from the project site and, run-on to the project site.

700.2.4.2 Monitoring Preparation

Refer to the general requirements for monitoring preparation in General SAP Section 700.2.1.2.

700.2.4.2.1 Qualified Sampling Personnel

Refer to the general requirements for Qualified Sampling Personnel in General SAP Section 700.2.1.2.1.

Refer to the general requirements for Qualified Sampling Personnel in General SAP Section 700.2.1.2.1.

700.2.4.2.2 Monitoring Supplies

Refer to the general information regarding monitoring supplies in General SAP Section 700.2.1.2.2.

Refer to the general information regarding monitoring supplies in General SAP Section 700.2.1.2.2.

700.2.4.2.3 Field Instruments

Refer to the general information regarding field instruments in General SAP Section 700.2.1.2.3.

Refer to the general information regarding field instruments in General SAP Section 700.2.1.2.3.

700.2.4.2.4 Testing Laboratory

Refer to the contact information for the testing laboratory found in General SAP Section 700.2.1.2.4.

Refer to the contact information for the testing laboratory found in General SAP Section 700.2.1.2.4.

700.2.4.3 Monitoring Strategy

Monitor representative stormwater discharges from the project site for pH and turbidity during qualifying rain events (a rain event that has produced precipitation in the form of rain and produced run-off at the time of discharge).

700.2.4.3.1 Analytical Constituents

Stormwater discharge samples are to be analyzed for pH and turbidity.

Stormwater discharge samples are to be analyzed for pH and turbidity.

When a stormwater discharge exceeds the turbidity daily average Receiving Water Monitoring Trigger of 500 Nephelometric Turbidity Units (NTUs), then, for subsequent discharges, samples must be analyzed for SSC.

700.2.4.3.2 Potential Sampling Locations

Using the criteria in Section 700.2.1.3.2, the potential sampling locations on the project site for monitoring pH and turbidity were identified. Potential sampling locations for monitoring stormwater discharges for pH and turbidity are based on drainage areas; run-on and runoff locations; accessibility for sampling and personnel safety; and other factors in accordance with the applicable requirements in the Caltrans Construction Site Monitoring Program Guidance Manual, August 2013. Stormwater discharge locations shall be shown on the WPCDs in Attachment BB and listed on Stormwater Sample Locations in Attachment EE:

The stormwater discharge locations on the project site are listed in Table 700.2.4.3.2.1 "Stormwater Discharge Locations."

TABLE 700.2.4.3.2.1
STORMWATER DISCHARGE LOCATIONS

Sampling Location Identifier	Location
002DL01	Drainage item 17d. 56.03' Rt "RL" 41+98.90
007DL02	Existing drainage item (Concrete FES). 110' Lt "RL-1" 553+95
004CSDL01	Drainage item 4h. 100.27' Rt "ED-50" 562+47.02
006CSDL02	Drainage item 3e. 29.19' Rt "RL-2" 556+30.64

Using the criteria in Section 700.2.1.3.2, the potential sampling locations on the project site for monitoring pH and turbidity were identified. Potential sampling locations for monitoring stormwater discharges for pH and turbidity are based on drainage areas; run-on and runoff locations; accessibility for sampling and personnel safety; and other factors in accordance with the applicable requirements in the Caltrans Construction Site Monitoring Program Guidance Manual, August 2013. Stormwater discharge locations shall be shown on the WPCDs in Attachment BB and listed on Stormwater Sample Locations in Attachment EE:

The stormwater discharge locations on the project site are listed in Table 700.2.4.3.2.1 "Stormwater Discharge Locations."

The project receives run-on with the potential to combine with stormwater discharges at the locations listed in Table 700.2.4.3.2.4 "Run-on Locations With Potential to Combine With Stormwater Discharges."

TABLE 700.2.4.3.2.4
RUN-ON LOCATIONS WITH POTENTIAL TO COMBINE WITH STORMWATER DISCHARGES

Sampling Location Identifier	Location
001RO01	Drainage item 7j. 28.20' Rt "F-1" 11+50.00
003RO02	Drainage item 11b. 15.97' Rt "CJ" 11+31.66
005RO03	Drainage item 6p. 49.39' Rt "F" 29+91.50

Potential run-on sampling locations shall be shown on the WPCDs in Attachment BB and listed on Stormwater Sampling Locations in Attachment EE:

The project receives run-on with the potential to combine with stormwater discharges at the locations listed in Table 700.2.4.3.2.4 "Run-on Locations With Potential to Combine With Stormwater Discharges."

Potential run-on sampling locations shall be shown on the WPCDs in Attachment BB and listed on Stormwater Sampling Locations in Attachment EE:

If stormwater discharge location test results exceed the Receiving Water Monitoring Trigger and the stormwater discharges into receiving waters, then sampling of the receiving waters is required for the duration of the project.

Upstream and downstream receiving water sampling locations are listed in the Table 700.2.4.3.2.5 "Receiving Water Sampling Locations."

700.2.4.3.3 Actual Sampling Locations

The WPC Manager shall select sampling locations from the list of potential sampling locations for stormwater discharge sampling shown on the WPCDs from Attachment BB and listed on Stormwater Sampling Locations in Attachment EE. If the construction activity has not started within the drainage area at a sampling location, and there is no disturbed soil within a drainage area, sampling from the stormwater discharge location from that drainage area is not required.

Within 72 to 48 hours prior to each qualifying rain event, the WPC Manager must identify the drainage areas that must be sampled. To identify these drainage areas, the WPC Manager must refer to the WPCDs and consider the conditions described below and activities within each drainage area that could have an effect on the stormwater discharge pH or turbidity.

1. Turbidity: The area of the disturbed soil at the time of precipitation could have an impact on the stormwater run-off turbidity. The area of the disturbed soil at the time of predicted precipitation must be expressed as a percentage of the total drainage area. It is reasonable to assume that a larger percentage of disturbed soil area could result in a more turbid run-off.
2. pH: The type of construction activities that could have an impact on stormwater run-off pH (for example, concrete work and saw cutting, lime stabilization work, use of crushed concrete, etc).

For representative sampling of construction site discharges, 20 percent of the drainage areas with disturbed soil areas and 20 percent of the drainage areas where activities that could potentially have an impact on the discharge pH must be sampled. At least five (5) drainage area discharge locations for each qualifying rain event must be sampled. If there are five (5) or fewer drainage area sampling locations in a project, then all drainage area sampling locations must be sampled. The drainage areas with the largest percentage of disturbed soil area must be included in the selected drainage areas to be sampled. The drainage areas where the most extensive activities (activities that potentially can alter discharge pH) are in progress must be included in the selected drainage areas to be sampled.

This representative monitoring strategy for stormwater discharges requires collection of additional samples based upon the preceding sampling event stormwater discharge pH or turbidity analysis results when the:

- turbidity analysis results – even in one sampling location – in the previous sampling event have exceeded 200 NTU, the number of drainage areas with disturbed soil areas requiring sampling will be raised to 50 percent.
- turbidity analysis results – even in one sampling location – in the previous sampling event have exceeded 250 NTU, the number of drainage areas with disturbed soil areas requiring sampling will be raised to 100 percent.
- pH analysis results – even in one sampling location – in the previous sampling event have not fallen within 6.5 to 8.5 pH unit range, the number of drainage areas requiring sampling where construction activities could have an impact on the discharge pH readings will be raised to 50 percent.
- pH analysis results – even in one sampling location – in the previous sampling event have not fallen within 6.0 to 9.0 pH unit range, the number of drainage areas requiring sampling where construction activities could have an impact on the discharge pH readings will be raised to 100 percent.

The selection of additional sampling locations, based on turbidity results, will involve drainage areas with the highest percentage of disturbed soil area. The selection of additional sampling locations, based on pH results, will be involve drainage areas with construction activities that are most likely to affect stormwater discharge pH.

This project receives run-on from surrounding area that may contribute to exceedances of NALs or Receiving Water Monitoring Triggers. Potential sampling locations have been selected from locations where run-on enters the Caltrans right-of-way.

The WPC Manager shall select sampling locations from the list of potential sampling locations for stormwater discharge sampling shown on the WPCDs from Attachment BB and listed on Stormwater Sampling Locations in Attachment EE.
If the construction activity has not started within the drainage area at a sampling location, and there is no disturbed soil within a drainage area, sampling from the stormwater discharge location from that drainage area is not required.

Within 72 to 48 hours prior to each qualifying rain event, the WPC Manager must identify the drainage areas that must be sampled. To identify these drainage areas, the WPC Manager must refer to the WPCDs and consider the conditions described below and activities within each drainage area that could have an effect on the stormwater discharge pH or turbidity.

1.Turbidity: The area of the disturbed soil at the time of precipitation could have an impact on the stormwater run- off turbidity. The area of the disturbed soil at the time of predicted precipitation must be expressed as a percentage of the total drainage area. It is reasonable to assume that a larger percentage of disturbed soil area could result in a more turbid run-off.

2.pH: The type of construction activities that could have an impact on stormwater run-off pH (for example, concrete work and saw cutting, lime stabilization work, use of crushed concrete, etc.).

For representative sampling of construction site discharges, 20 percent of the drainage areas with disturbed soil areas and 20 percent of the drainage areas where activities that could potentially have an impact on the discharge pH must be sampled. At least five (5) drainage area discharge locations for each qualifying rain event must be sampled. If there are five (5) or fewer drainage area sampling locations in a project, then all drainage area sampling locations must be sampled. The drainage areas with the largest percentage of disturbed soil area must be included in the selected drainage areas to be sampled. The drainage areas where the most extensive activities (activities that potentially can alter discharge pH) are in progress must be included in the selected drainage areas to be sampled.

This representative monitoring strategy for stormwater discharges requires collection of additional samples based upon the preceding sampling event stormwater discharge pH or turbidity analysis results when the:

●turbidity analysis results – even in one sampling location – in the previous sampling event have exceeded 200 NTU, the number of drainage areas with disturbed soil areas requiring sampling will be raised to 50 percent.

●turbidity analysis results – even in one sampling location – in the previous sampling event have exceeded 250 NTU, the number of drainage areas with disturbed soil areas requiring sampling will be raised to 100 percent.

●pH analysis results – even in one sampling location – in the previous sampling event have not fallen within 6.5 to 8.5 pH unit range, the number of drainage areas requiring sampling where construction activities could have an impact on the discharge pH readings will be raised to 50 percent.

●pH analysis results – even in one sampling location – in the previous sampling event have not fallen within 6.0 to 9.0 pH unit range, the number of drainage areas requiring sampling where construction activities could have an impact on the discharge pH readings will be raised to 100 percent.

The selection of additional sampling locations, based on turbidity results, will involve drainage areas with the highest percentage of disturbed soil area. The selection of additional sampling locations, based on pH results, will be involve drainage areas with construction activities that are most likely to affect stormwater discharge pH.

The stormwater discharge sampling locations identified in Table 700.2.4.3.2.1 are based on the drainage outfalls shown

on the Drainage Plan. This table does not reflect stormwater discharge locations considering the pre-Project condition or as needed during construction prior to completion of the permanent drainage.

This project receives run-on from surrounding area that may contribute to exceedances of NALs or Receiving Water Monitoring Triggers. Potential sampling locations have been selected from locations where run-on enters the County right-of-way.

1 potential sampling location(s) have been identified for the collection of samples of run-on with the potential to combine with runoff from the construction site, which discharge either to an MS4 or to a sediment-sensitive water body. Run-on samples taken from these locations will be analyzed to identify potential turbidity and pH that originates off the project site and contributes directly to stormwater discharges from the construction site to the MS4 or receiving water body.

The selection of run-on sampling locations will be made by the WPC Manager. Run-on sampling locations will be selected based on stormwater discharge locations. If there is an NAL or Receiving Water Monitoring Trigger exceedance at a stormwater discharge location, any stormwater run-on location that contributes to the stormwater discharges from the construction site shall be selected for sampling.

The one run-on sampling location identified in Table 700.2.4.3.2.4 is based on the Drainage Plan where there is a drainage system conveying concentrated run-on across the roadway. Because much of project is in cut, other run-on locations will be encountered and must be sampled.

If test results from stormwater discharge locations exceed a Receiving Water Monitoring Trigger and the runoff discharges to the receiving water, then sampling of the receiving water is required for the duration of the project.

Sampling location (designated number) is upstream of all direct discharges from the construction site. Upstream samples shall be collected and analyzed for the prevailing condition of the receiving water without any influence from the construction site. The upstream samples will be used to determine the background levels of turbidity, suspended sediment concentration, and pH in the sediment-sensitive listed water body upstream of the project.

Sampling location number is 004RWU01 located upstream end of temporary creek diversion system.

Sampling location (designated number) is immediately downstream from the last point of direct discharge from the construction site for the collection of a sample to be analyzed for potential increases in turbidity, suspended sediment concentration, or potential exceedance in pH level in the sediment-sensitive listed water body caused by stormwater discharges from the project.

Sampling location number 005RWD01 is located downstream end of temporary creek diversion. potential sampling location(s) have been identified for the collection of samples of run-on with the potential to combine with runoff from the construction site, which discharge either to an MS4 or to a sediment-sensitive water body. Run-on samples taken from these locations will be analyzed to identify potential turbidity and pH that originates off the project site and contributes directly to stormwater discharges from the construction site to the MS4 or receiving water body.

The selection of run-on sampling locations will be made by the WPC Manager. Run-on sampling locations will be selected based on stormwater discharge locations. If there is an NAL or Receiving Water Monitoring Trigger exceedance at a stormwater discharge location, any stormwater run-on location that contributes to the stormwater discharges from the construction site shall be selected for sampling.

700.2.4.3.4 Sampling Schedule

Discharge samples shall be collected for turbidity and pH for qualifying rain events that result in a discharge from the project site. When applicable, upstream, downstream, and run-on samples shall be collected for analysis of turbidity and pH. Sampling and testing for turbidity and pH will be performed daily during all qualifying rain events. Samples shall be collected during working hours.

At least 48 hours prior to each qualifying rain event, the WPC Manager must prepare a list of sampling locations that must be sampled for the qualifying rain event.

The locations shall include all of the following sampling location types:

- discharge locations from the drainage areas with the largest percentage of disturbed soil areas,
- discharge locations from the drainage areas where construction activities that could have an impact on stormwater run-off pH are in progress, and
- if applicable, at least one sampling location from drainage areas where the disturbed soil areas have been stabilized.

The sampling locations must be sampled in the following order: starting with the sampling location on the northwest corner of the WPCDs as the first entry and move clockwise on the WPCDs.

The Caltrans stormwater site inspector and contractor inspector must coordinate and select the sampling locations and the time to meet and collect simultaneous samples for the purposes of QA/QC.

Every reasonable attempt has to be made to collect at least three grab samples per day from each sampling location during the qualifying rain event.

Sampling must start immediately after the flow begins or as soon as possible thereafter. The individual responsible for collecting samples must begin sampling with the first sampling location identified and move on to the next sampling location until all locations are sampled. It is preferable that the three rounds of sampling are performed over the first three hours of the flow; however, depending on the time of the day or other dictating conditions in the field, the three rounds of sampling could be performed over a shorter period of time to ensure that three samples per location are collected.

If stormwater sampling is unsafe because of dangerous weather conditions, such as flooding and electrical storms, then the stormwater sampler shall document the conditions resulting in the sampling not being performed as planned.

Discharge samples shall be collected for turbidity and pH for qualifying rain events that result in a discharge from the project site. When applicable, upstream, downstream, and run-on samples shall be collected for analysis of turbidity and pH. Sampling and testing for turbidity and pH will be performed daily during all qualifying rain events. Samples shall be collected during working hours.

At least 48 hours prior to each qualifying rain event, the WPC Manager must prepare a list of sampling locations that must be sampled for the qualifying rain event.

The locations shall include all of the following sampling location types:

●discharge locations from the drainage areas with the largest percentage of disturbed soil areas,

●discharge locations from the drainage areas where construction activities that could have an impact on stormwater run-off pH are in progress, and

●if applicable, at least one sampling location from drainage areas where the disturbed soil areas have been stabilized.

The sampling locations must be sampled in the following order: starting with the sampling location on the northwest corner of the WPCDs as the first entry and move clockwise on the WPCDs.

The County stormwater site inspector and contractor inspector must coordinate and select the sampling locations and the time to meet and collect simultaneous samples for the purposes of QA/QC.

Every reasonable attempt has to be made to collect at least three grab samples per day from each sampling location during the qualifying rain event.

Sampling must start immediately after the flow begins or as soon as possible thereafter. The individual responsible for collecting samples must begin sampling with the first sampling location identified and move on to the next sampling location until all locations are sampled. It is preferable that the three rounds of sampling are performed over the first three hours of the flow; however, depending on the time of the day or other dictating conditions in the field, the three rounds of sampling could be performed over a shorter period of time to ensure that three samples per location are collected.

If stormwater sampling is unsafe because of dangerous weather conditions, such as flooding and electrical storms, then the stormwater sampler shall document the conditions resulting in the sampling not being performed as planned.

700.2.4.4 Sample Collection and Handling

Refer to the general requirements for sample collection and handling in General SAP Section 700.2.1.4.

700.2.4.4.1 Sample Collection Procedures

In addition to the general procedures for sample collection in General SAP Section 700.2.1.4.1, the procedures described below apply to sample collection for monitoring of pH and turbidity.

- Grab samples shall be collected and preserved in accordance with the methods identified in Table 700.2.4.5.1: Sample Collection, Preservation and Analysis for Monitoring Turbidity and pH, provided in Section 700.2.4.5.
- Only personnel trained in proper water quality sampling shall collect samples.

In addition to the general procedures for sample collection in General SAP Section 700.2.1.4.1, the procedures described below apply to sample collection for monitoring of pH and turbidity.

●Grab samples shall be collected and preserved in accordance with the methods identified in Table 700.2.4.5.1: Sample Collection, Preservation and Analysis for Monitoring Turbidity and pH, provided in Section 700.2.4.5.

●Only personnel trained in proper water quality sampling shall collect samples.

700.2.4.4.2 Sample Handling Procedures

Refer to the general procedures for sample handling in General SAP Section 700.2.1.4.2.

Refer to the general procedures for sample handling in General SAP Section 700.2.1.4.2.

700.2.4.4.3 Sample Documentation Procedures

Refer to the general procedures for sample documentation in General SAP Section 700.2.1.4.3.

Refer to the general procedures for sample documentation in General SAP Section 700.2.1.4.3.

700.2.4.5 Sample Analysis

Samples shall be analyzed for the constituents indicated in Table 700.2.4.5.1: "Sample Collection, Preservation and Analysis for Monitoring Turbidity and pH."

TABLE 700.2.4.5.1
SAMPLE COLLECTION, PRESERVATION AND ANALYSIS FOR MONITORING TURBIDITY AND PH

Parameter	Test Method	Sample Bottle	Minimum Sample Volume(1)	Sample Preservation	Maximum Holding Time	Detection Limit (min)
Turbidity	Field test with calibrated portable instrument	Polypropylene or Glass	100 mL	Store at 4˚ C (39.2˚ F)	48 hours	1 NTU
pH	Field test with calibrated portable instrument	Polypropylene	100 mL	Store at 4˚ C (39.2˚ F)	15 minutes	0.2

Acronyms/Notes:

C = Celsius
F = Fahrenheit
Min = minimum
mL = milliliter
NTU = Nephelometric Turbidity Units

(1) Minimum sample volume recommended. Specific volume requirements will vary by instrument; check instrument manufacturer instructions.

If turbidity exceeds the Receiving Water Monitoring Trigger of 500 NTU, samples shall be analyzed for the constituents indicated in Table 700.2.4.5.2, titled "Sample Collection, Preservation and Analysis for Monitoring Suspended Sediment Concentration."

700.2.4.6 Quality Assurance/Quality Control

Refer to the general requirements regarding Quality Assurance/Quality Control (QA/QC) in General SAP Section 700.2.1.6. The following replaces the requirements for QA/QC in Section 700.2.1.6 for turbidity and pH quality assurance testing. However, Section 700.2.1.6 requirements apply for SSC quality assurance testing: The contractor shall coordinate with Caltrans RE on sampling locations and timing for quality assurance verification of field sampling and analysis activities. The contractor shall notify the RE at least 24 hours prior to sampling events.

The following replaces the requirements for QA/QC in Section 700.2.1.6 for turbidity and pH quality assurance testing. However, Section 700.2.1.6 requirements apply for SSC quality assurance testing: The contractor shall coordinate with County RE on sampling locations and timing for quality assurance verification of field sampling and analysis activities. The contractor shall notify the RE at least 24 hours prior to sampling events.

700.2.4.7 Data Management and Reporting

Refer to general requirements for data management and reporting in General SAP Section 700.2.1.7.

In addition to the general requirements for data management and reporting in Section 700.2.1.7, the additional reporting described below is required.

Numeric Action Limit Exceedance Reporting - This project is subject to NALs for pH and turbidity as shown in Table 700.2.4.7.1 "NALs for Monitoring pH and Turbidity."

If the NAL for pH or turbidity or both are exceeded, then form CEM-2062 NAL Exceedance Report will be completed and submitted to the RE within 48 hours after the sampling and analysis event. The NAL Exceedance Report will

- test results, analytical methods, reporting units, and detection limits
- date, sampling location, time of sampling, and visual observations
- predicted quantity of precipitation of the forecasted storm event, and estimated quantity of precipitation at the time of sampling
- description of BMPs
- corrective actions taken to manage the NAL exceedance

Once deemed necessary, corrective actions shall be immediately implemented and documented. Appendix I contains the CEM-2035 Stormwater Corrective Actions Summary form and Appendix O contains the CEM-2062 NAL Exceedance Report form. NAL exceedance reports will be filed in SWPPP File Category 20.62: Numeric Action Level Exceedance Reports.

In addition to the general requirements for data management and reporting in Section 700.2.1.7, the additional reporting described below is required.

Numeric Action Limit Exceedance Reportin - This project is subject to NALs for pH and turbidity as shown in Table 700.2.4.7.1 "NALs for Monitoring pH and Turbidity."

TABLE 700.2.4.7.1
NALs FOR MONITORING pH AND TURBIDITY

Parameter	Test Method	Detection Limit (min)	Unit	Numeric Action Level
pH	Field test with calibrated portable instrument	0.2	pH units	Lower NAL = 6.5 Upper NAL = 8.5
Turbidity	Field test with calibrated portable instrument	1	NTU	250 NTU

Acronyms:

Min = Minimum

NAL = numeric action level

NTU = Nephelometric Turbidity Units

If the NAL for pH or turbidity or both are exceeded, then form CEM-2062 NAL Exceedance Report will be completed and submitted to the RE within 48 hours after the sampling and analysis event. The NAL Exceedance Report will

- test results, analytical methods, reporting units, and detection limits
- date, sampling location, time of sampling, and visual observations

- predicted quantity of precipitation of the forecasted storm event, and estimated quantity of precipitation at the time of sampling
- description of BMPs
- corrective actions taken to manage the NAL exceedance

Once deemed necessary, corrective actions shall be immediately implemented and documented. Appendix I contains the CEM-2035 Stormwater Corrective Actions Summary form and Appendix O contains the CEM-2062 NAL Exceedance Report form. NAL exceedance reports will be filed in SWPPP File Category 20.62: Numeric Action Level Exceedance Reports.

700.2.4.8 Data Evaluation

An evaluation of the water quality sample analytical results, including sampling locations and the QA/QC data, shall be submitted to the RE for every day of stormwater sampling. If the stormwater discharge concentrations exceed applicable water quality standards, the WPC Manager or other personnel shall evaluate the project site BMPs to determine the probable cause for the exceedance.

As determined by the data evaluation and project site assessment, appropriate BMPs shall be repaired or modified to mitigate the exceedances. Corrective actions taken shall be documented on the CEM-2035 Stormwater Corrective Actions Summary. Any revisions/design changes to BMPs shall be implemented based on an amendment to the SWPPP.

An evaluation of the water quality sample analytical results, including sampling locations and the QA/QC data, shall be submitted to the RE for every day of stormwater sampling. If the stormwater discharge concentrations exceed applicable water quality standards, the WPC Manager or other personnel shall evaluate the project site BMPs to determine the probable cause for the exceedance.

As determined by the data evaluation and project site assessment, appropriate BMPs shall be repaired or modified to mitigate the exceedances. Corrective actions taken shall be documented on the CEM-2035 Stormwater Corrective Actions Summary. Any revisions/design changes to BMPs shall be implemented based on an amendment to the SWPPP.

700.2.4.9 Change of Condition

Refer to the general requirements for changes of conditions in General SAP Section 700.2.1.9.

700.2.5 Sampling and Analysis Plan for Monitoring Required by Regional Board

This project does not require a Sampling and Analysis Plan for Monitoring required by a RWQCB.

SECTION 800
POST-CONSTRUCTION CONTROL PRACTICES

800.1 Post-Construction Control Practices

The following are the post-construction BMPs for the project site

- Rock slope protection
- Flared end sections
- Permanent erosion control (netting, hydromulch, fiber rolls, straw, hydroseed, and compost)
- Infiltration/detention basin
- Bioretention areas

Please refer to the Storm Water Data Report for a description of the Post-Construction BMPs.

800.2 Post-Construction Operation/Maintenance

The post-construction BMPs that are listed above will be funded and maintained in the following manner.

short-term funding: El Dorado County and the City of Placerville.

long-term funding: El Dorado County and the City of Placerville.

The responsible party for the long-term maintenance of post-construction BMPs is Caltrans maintenance for all BMPs within Caltrans Right-of-Way and the Placerville Public Works Department for everything outside Caltrans Right-of-Way.

SECTION 900
SWPPP REPORTING REQUIREMENTS

900.1 Recordkeeping

To manage the various documents required by the SWPPP and to provide easy access to the documents, the following SWPPP file categories will be used to file SWPPP compliance documents:

File Category 20.01 .....Stormwater Pollution Prevention Plan (SWPPP)
File Category 20.02 .....Stormwater Pollution Prevention Plan Amendments
File Category 20.03 .....Water Pollution Control Schedule Updates
File Category 20.05 .....Notice of Construction or Notice of Intent
File Category 20.06 .....Legally Responsible Person Authorization of Approved Signatory
File Category 20.10 .....Correspondence
File Category 20.21 .....Subcontractor Contact Information and Notification Letters
File Category 20.22 .....Material Suppliers Contact Information and Notification Letters
File Category 20.23 .....Contractor Personnel Training Documentation
File Category 20.31 .....Contractor Stormwater Site Inspection Reports
File Category 20.32 .....Caltrans Stormwater Site Inspection Reports
File Category 20.33 .....Site Visual Monitoring Inspection Reports
File Category 20.34 .....Best Management Practices Weekly Status Reports
File Category 20.35 .....Corrective Actions Summary
File Category 20.40 .....Weather Monitoring Logs
File Category 20.45 .....Rain Event Action Plans
File Category 20.46 .....Storm/Rain Event Sampling and Analysis Plan
File Category 20.50 .....Non-Stormwater Discharge Sampling and Test Results
File Category 20.51 .....Non-Visible Pollutant Sampling and Test Results
File Category 20.52 .....Turbidity, pH and SSC Sampling and Test Results
File Category 20.53 .....Required Regional Water Board Monitoring Sampling and Test Results
File Category 20.54 .....ATS Monitoring Sampling and Test Results
File Category 20.55 .....Field Testing Equipment Maintenance and Calibration Records
File Category 20.61 .....Notice of Discharge Reports
File Category 20.62 .....Numeric Action Level Exceedance Reports
File Category 20.63 .....Numeric Effluent Limitation Violation Reports
File Category 20.70 .....Annual Certification of Compliance
File Category 20.80 .....Stormwater Annual Reports
File Category 20.90 .....Notice of Termination

Records shall be retained for a minimum of three years for the following items:

- approved SWPPP document and amendments
- Stormwater Site Inspection Reports
- Site Inspection Report Corrections Summary
- Rain Event Action Plans (REAPs)
- Notice of Discharge Reports
- Numeric Action Limit (NAL) Exceedance Reports
- Numeric Effluent Limitaion (NEL) Violation Reports
- sampling records and analysis reports
- Annual Compliance Certifications
- copies of all applicable permits

900.2 Stormwater Annual Report

A Stormwater Annual Report will be prepared for this project to document the stormwater monitoring information and training information.

The stormwater monitoring information listed below shall be included in the Stormwater Annual Report.

- A summary and evaluation of all sampling and analysis results, including copies of laboratory reports.
- The analytical method(s), method reporting unit(s), and method detection limit(s) of each analytical parameter.
- A summary of all corrective actions taken during the compliance year.
- Identification of any compliance activities or corrective actions that were not implemented.
- •A summary of all violations of the CGP.
- The names of individual(s) who performed site inspections, sampling, site visual monitoring inspections and/or measurements.
- The date, place, and time of site inspections, sampling, site visual monitoring inspections, and/or measurements, including precipitation (rain gauge).
- Any site visual monitoring inspection and sample collection exception records.

The stormwater training information listed below shall be included in the Stormwater Annual Report.

- Documentation of all training for individuals responsible for all activities associated with compliance with the CGP.
- Documentation of all training for individuals responsible for BMP installation, inspection, maintenance, and repair.
- Documentation of all training for individuals responsible for overseeing, revising and amending the SWPPP.

900.3 Discharge Reporting

If an unauthorized discharge is discovered or evidence of a previously unseen discharge is discovered, the Contractor shall notify the RE within 6 hours of the discovery, and will file a written report with the RE within 24 hours after the discovery. The written report to the RE will contain the following items:

- date, time, location, and type of unauthorized discharge
- nature of operation that caused the discharge
- initial assessment of any impacts caused by the discharge
- BMPs deployed before the discharge event and date(s) of deployment
- BMPs deployed after the discharge event, including re-installation, maintenance or repair of initial BMPs
- steps taken or planned to reduce, eliminate and/or prevent recurrence of the discharge

Reporting of discharges shall be documented on the CEM-2061 Notice of Discharge form in Appendix M. A log of all reportable discharges shall be documented on CEM-2065 Discharge Reporting Log form in Appendix Z. Completed CEM-2061 Notice of Discharge forms shall be submitted to the RE within 24 hours after the discharge event or discovery of evidence of a prior discharge. Copies of completed forms will be kept in File Category 20.61: Notice of Discharge Reports.

900.4 Regulatory Agency Notice or Order Reporting

If a written notice or order is issued to the project by any regulatory agency, the Contractor will notify the RE within 6 hours of receiving the notice or order and will file a written report to the RE within 48 hours of receiving the notice or order. Corrective measures will be implemented immediately following receipt of the notice or order.

The report to the RE will contain the following items

- the date, time, location, and cause or nature of the notice or order
- the BMPs deployed prior to receiving the notice or order
- the date of deployment and type of BMPs deployed after receiving the notice or order, including additional BMPs installed or planned to reduce or prevent recurrence
- an implementation and maintenance schedule for any affected BMPs

900.5 Illicit Connection/Illegal Discharge Reporting

If the Contractor discovers an illicit connection to a storm drain system or any pipe discharging onto the project site, not shown on the project plans, the Contractor shall notify the RE within 6 hours of the discovery and shall file a written report to the RE within 48 hours of the discovery.

If the Contractor discovers any illegal discharge, including illegal disposing of material on the project site, the Contractor shall immediately notify the RE and shall file a written report to the RE within 3 days of discovery.

The report to the RE will contain the following items:

- the date, time, and location of the discovery
- the details for the illicit connection or illegal discharge, including any photographs taken
- any actions taken to contain the illegal discharge

- any sampling and testing performed on material that was illegally disposed of or discharged

ATTACHMENT A

LEGALLY RESPONSIBLE PERSON
AUTHORIZATION OF APPROVED SIGNATORY

**Not provided – This has been completed in-house by the City of Placerville

ATTACHMENT B

NOTICE OF INTENT (NOI)

**Will be provided by the City of Placerville once the NOI has been certified

ATTACHMENT C

Risk Level Determination

R Factor

Facility Information

- Start Date: 03/01/2018
- End Date: 03/31/2019
- Latitude: 38.7275
- Longitude: -120.8248

Erosivity Index Calculator Results

An erosivity index value Of **90.18** has been determined for the construction period of **03/01/2018 - 03/31/2019.**

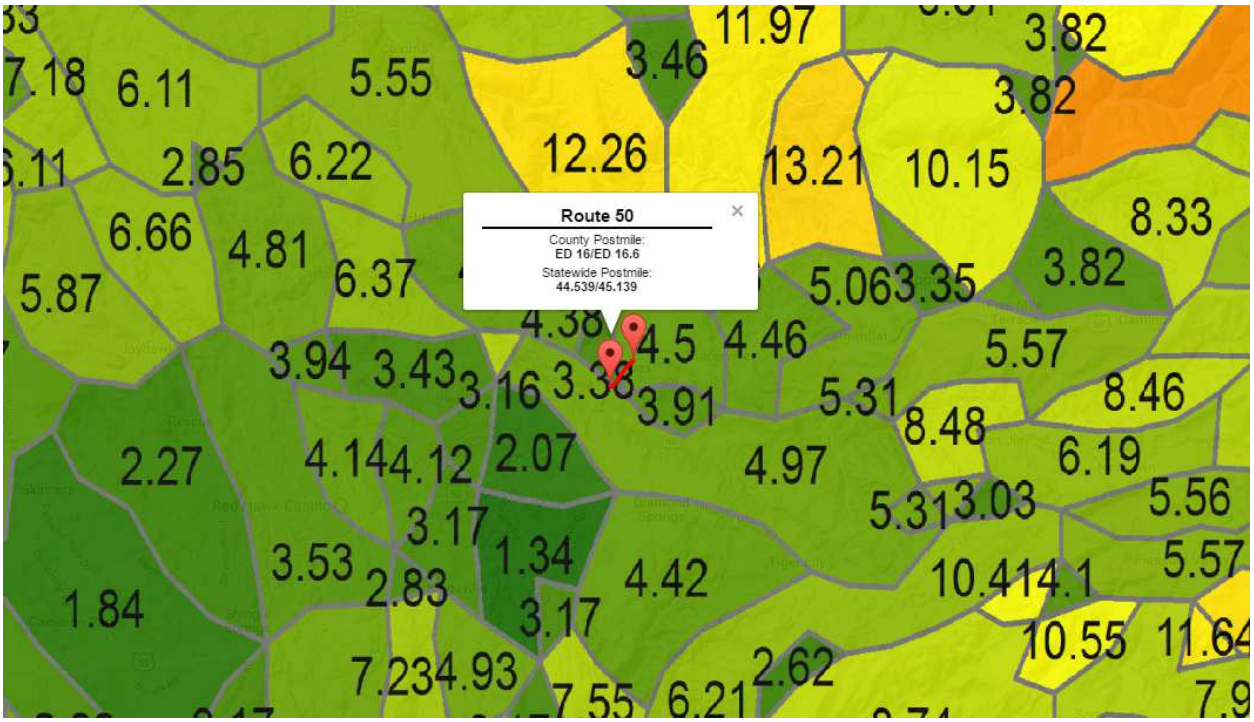
A rainfall erosivity factor of 5.0 or greater has been calculated for your site and period of construction. **You do NOT qualify for a waiver from NPDES permitting requirements.**

Source: U.S. EPA

K Factor

Source: State Water Resources Control Board

LS Factor



Source: State Water Resources Control Board

Sediment Risk Factor Worksheet	Entry
A) R Factor	
Analyses of data indicated that when factors other than rainfall are held constant, soil loss is directly proportional to a rainfall factor composed of total storm kinetic energy (E) times the maximum 30-min intensity (I30) (Wischmeier and Smith, 1958). The numerical value of R is the average annual sum of EI30 for storm events during a rainfall record of at least 22 years. "Isoerodent" maps were developed based on R values calculated for more than 1000 locations in the Western U.S. Refer to the link below to determine the R factor for the project site.	
http://cfpub.epa.gov/npdes/stormwater/LEW/lewCalculator.cfm	
R Factor Value	90.18
B) K Factor (weighted average, by area, for all site soils)	
The soil-erodibility factor K represents: (1) susceptibility of soil or surface material to erosion, (2) transportability of the sediment, and (3) the amount and rate of runoff given a particular rainfall input, as measured under a standard condition. Fine-textured soils that are high in clay have low K values (about 0.05 to 0.15) because the particles are resistant to detachment. Coarse-textured soils, such as sandy soils, also have low K values (about 0.05 to 0.2) because of high infiltration resulting in low runoff even though these particles are easily detached. Medium-textured soils, such as a silt loam, have moderate K values (about 0.25 to 0.45) because they are moderately susceptible to particle detachment and they produce runoff at moderate rates. Soils having a high silt content are especially susceptible to erosion and have high K values, which can exceed 0.45 and can be as large as 0.65. Silt-size particles are easily detached and tend to crust, producing high rates and large volumes of runoff. Use Site-specific data must be submitted.	
Site-specific K factor guidance	
K Factor Value	0.32
C) LS Factor (weighted average, by area, for all slopes)	
The effect of topography on erosion is accounted for by the LS factor, which combines the effects of a hillslope-length factor, L, and a hillslope-gradient factor, S. Generally speaking, as hillslope length and/or hillslope gradient increase, soil loss increases. As hillslope length increases, total soil loss and soil loss per unit area increase due to the progressive accumulation of runoff in the downslope direction. As the hillslope gradient increases, the velocity and erosivity of runoff increases. Use the LS table located in separate tab of this spreadsheet to determine LS factors. Estimate the weighted LS for the site prior to construction.	
LS Table	
LS Factor Value	4.5
Watershed Erosion Estimate (=RxKxLS) in tons/acre	130
Site Sediment Risk Factor Low Sediment Risk: < 15 tons/acre Medium Sediment Risk: >=15 and <75 tons/acre High Sediment Risk: >= 75 tons/acre	**High**

Receiving Water (RW) Risk Factor Worksheet	Entry	Score
A. Watershed Characteristics	**yes/no**	
A.1. Does the disturbed area discharge (either directly or indirectly) to a **303(d)-listed waterbody impaired by sediment** (For help with impaired waterbodies please visit the link below) or has a **USEPA approved TMDL implementation plan for sediment**?: http://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2010.shtml	**No**	**Low**
OR		
A.2. Does the disturbed area discharge to a waterbody with designated beneficial uses of SPAWN & COLD & MIGRATORY? (For help please review the appropriate Regional Board Basin Plan) http://www.waterboards.ca.gov/waterboards_map.shtml		

Combined Risk Level Matrix

Receiving Water Risk	Sediment Risk: Low	Sediment Risk: Medium	Sediment Risk: High
Low	Level 1	Level 2	
High	Level 2		Level 3

Project Sediment Risk:	**High**
Project RW Risk:	**Low**
Project Combined Risk:	**Level 2**

Beneficial Uses

Watershed Information

CALWATER WATERSHED

Hydrologic Unit	AMERICAN RIVER	**Hydrologic Area**	South Fork American	**Hydrologic Sub-Area #**	514.31
Hydrologic Sub-Area Name	Weber Creek	**Planning Watershed**	5514310201	**HSA Area (acres)**	64154
Latitude, Longitude	38.7266, -120.8245				

WATERSHED BOUNDARY DATASET

Watershed	Weber Creek	**Subwatershed**	Indian Creek-Weber Creek	**Hydrologic Unit Code**	180201290603
Average Annual Precipitation (inches)	37.94				

TMDLs & 303(d) Listed Water Bodies (2012 List)

Key: Water body on 303(d) list | Water body with a TMDL

Name	Pollutant	Size	Status
No listings found.			

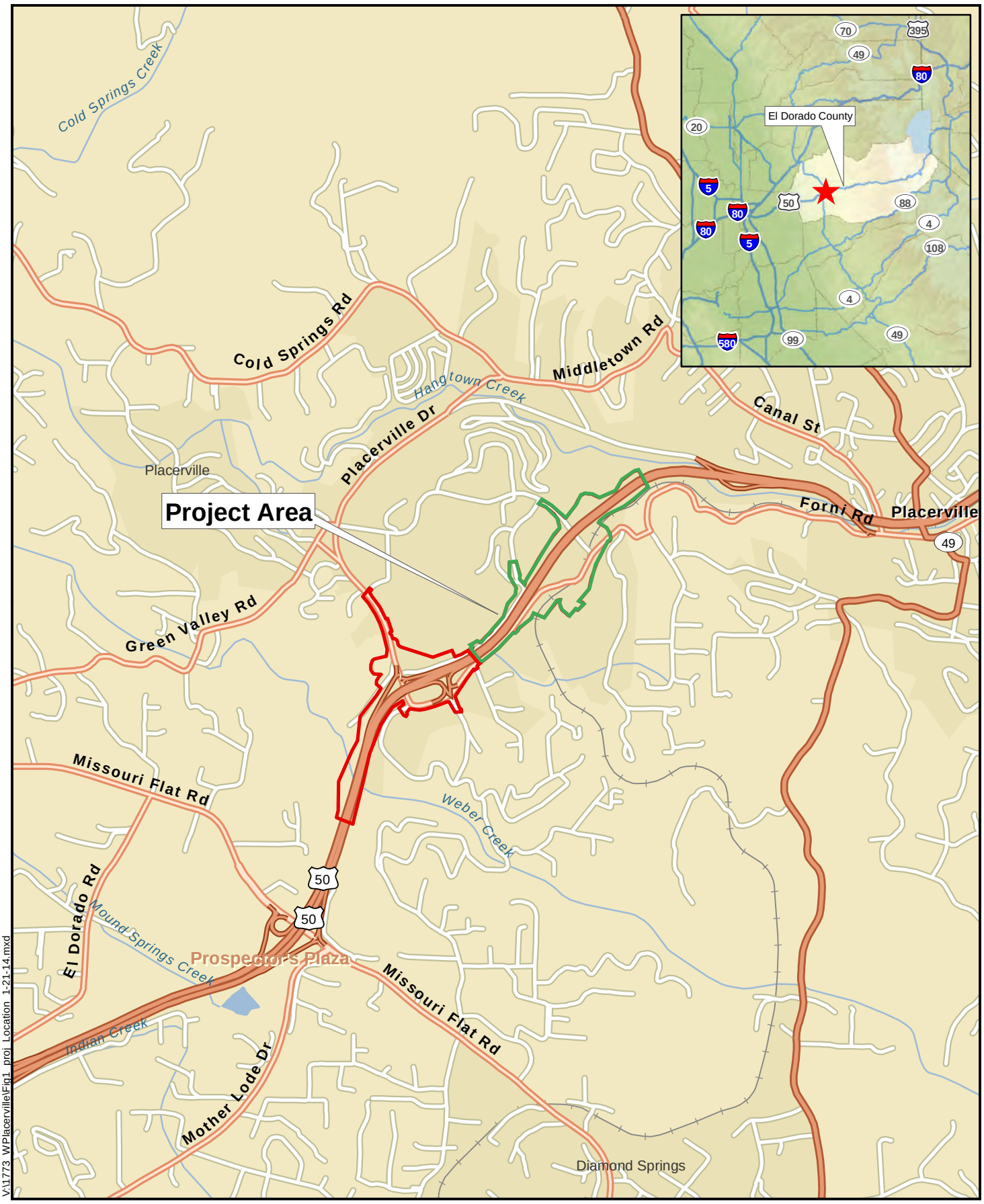
Water Quality Objectives

The following waterbodies are in or near HSA 514.31. Click on the waterbody to get information on water quality objectives and beneficial uses

Waterbody Name	Beneficial Uses	Sediment-Sensitive Waterbod
American River - Placerville to Folsom Lake	AGR, COLD, MUN, POW, REC1, REC2, WARM, WILD	False

ATTACHMENT D

Vicinity Map and Site Map



Source: ESRI 2014; Dokken Engineering: 1/21/2014; Created By: jamesh

0 0.25 0.5 0.75 1 Miles

Figure 1
Project Location
Western Placerville Interchange Project
City of Placerville, El Dorado County, California

ATTACHMENT E

CONTRACTOR PERSONNEL STORMWATER TRAINING

**Will be provided by the Contractor

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

SWPPP/WPCP ATTACHMENT
CONTRACTOR PERSONNEL TRAINING RECORD

CEM-20DCON (NEW 9/2012)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM PROJECT IDENTIFIER NUMBER	
CONTRACTOR NAME AND ADDRESS	PROJECT WATER POLLUTION CONTROL ☐ WPCP ☐ SWPPP	SWPPP PROJECT SITE RISK LEVEL ☐ Risk Level 1 ☐ Risk Level 2 ☐ Risk Level 3
Submitted by Contractor (Print and Sign Name)		Date

CONTRACTOR PERSONNEL STORMWATER TRAINING RECORD

Project Manager

NAME	TITLE		PHONE
Training Course Title	**Training Objective**	**Date Training Completed**	**Course Length (Hours)**

Water Pollution Control Manager

NAME	COMPANY		PHONE
TITLE			AFTER HOURS PHONE NUMBER
Training Course Title	**Training Objective**	**Date Training Completed**	**Course Length (Hours)**

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SWPPP/WPCP ATTACHMENT D
CONTRACTOR PERSONNEL TRAINING RECORD

CEM-20DCON (NEW 9/2012)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER

STORMWATER TRAINING RECORD CONTINUED

Include the following when the WPC Manager does not develop the SWPPP.

Qualified SWPPP Developer (QSD)

NAME	COMPANY	PHONE
TITLE		AFTER HOURS PHONE NUMBER

Training Course Title	Training Objective	Date Training Completed	Course Length (Hours)

Include the following when a Qualified SWPPP Practitioner will be assisting the WPC Manager with SWPPP/WPCP implementation.

Qualified SWPPP Practitioner (QSP)

NAME	COMPANY	PHONE
TITLE		AFTER HOURS PHONE NUMBER

Training Course Title	Training Objective	Date Training Completed	Course Length (Hours)

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SWPPP/WPCP ATTACHMENT D
CONTRACTOR PERSONNEL TRAINING RECORD

CEM-20DCON (NEW 9/2012)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER

STORMWATER TRAINING RECORD CONTINUED

Include the following training record information when a storm water inspector will be assisting the WPC Manager.

Stormwater Inspector

NAME	COMPANY	PHONE
TITLE		AFTER HOURS PHONE NUMBER

Training Course Title	Training Objective	Date Training Completed	Course Length (Hours)

Include the following when contractor employees will be responsible for stormwater discharge sampling testing.

Primary Stormwater Discharge Sampler and Tester

NAME	COMPANY	PHONE
TITLE		AFTER HOURS PHONE NUMBER

Training Course Title	Training Objective	Date Training Completed	Course Length (Hours)

Alternate Stormwater Discharge Sampler and Tester

NAME	COMPANY	PHONE
TITLE		AFTER HOURS PHONE NUMBER

Training Course Title	Training Objective	Date Training Completed	Course Length (Hours)

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SWPPP/WPCP ATTACHMENT D
CONTRACTOR PERSONNEL TRAINING RECORD

CEM-20DCON (NEW 9/2012)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER

STORMWATER TRAINING RECORD CONTINUED

Include the following when contractor employees will be responsible for BMP installation, maintenance, and repair.

Employees Responsible for BMP Installation, Maintenance, and Repair

EMPLOYEE NAME

Training Course Title	Training Objective	Date Training Completed	Course Length (Hours)

EMPLOYEE NAME

Training Course Title	Training Objective	Date Training Completed	Course Length (Hours)

EMPLOYEE NAME

Training Course Title	Training Objective	Date Training Completed	Course Length (Hours)

EMPLOYEE NAME

Training Course Title	Training Objective	Date Training Completed	Course Length (Hours)

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SWPPP/WPCP ATTACHMENT D
CONTRACTOR PERSONNEL TRAINING RECORD

CEM-20DCON (NEW 9/2012)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER

STORMWATER TRAINING RECORD CONTINUED

CONTRACTOR EMPLOYEES STORMWATER TRAINING RECORD

Employee Name	Training Course Title	Date Training Completed	Course Length (Hours)

I have reviewed this document and based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, to the best of my knowledge and belief, the information submitted is, true accurate, and complete.

Water Pollution Control Manager Name	Date

Water Pollution Control Manager Signature

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SWPPP/WPCP ATTACHMENT
SUBCONTRACTOR PERSONNEL STORMWATER TRAINING RECORD

CEM-20DSUB (NEW 9/2012)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM	
	PROJECT IDENTIFIER NUMBER	
CONTRACTOR NAME AND ADDRESS	PROJECT WATER POLLUTION CONTROL ☐ WPCP ☐ SWPPP	SWPPP PROJECT SITE RISK LEVEL ☐ Risk Level 1 ☐ Risk Level 2 ☐ Risk Level 3
SUBCONTRACTOR NAME AND ADDRESS		

Subcontractor (Print and Sign Name)	Date
Submitted by Contractor (Print and Sign Name)	Date

SUBCONTRACTOR PERSONNEL STORMWATER TRAINING RECORD

Subcontractor Superintendent/Foreman

NAME	TITLE	PHONE

Training Course Title	Training Objective	Date Training Completed	Course Length (Hours)

SUBCONTRACTOR EMPLOYEES STORMWATER TRAINING RECORD

Employee Name	Title of Training Course	Date Training Completed	Course Length (Hours)

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SWPPP/WPCP ATTACHMENT D
SUBCONTRACTOR PERSONNEL STORMWATER TRAINING RECORD

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER

STORMWATER TRAINING RECORD CONTINUED

Include the following when subcontractor employees will be responsible for BMP installation, maintenance, and repair.

Employees Responsible for BMP Installation, Maintenance, and Repair

EMPLOYEE NAME

Training Course Title	Training Objective	Date Training Completed	Course Length (Hours)

EMPLOYEE NAME

Training Course Title	Training Objective	Date Training Completed	Course Length (Hours)

EMPLOYEE NAME

Training Course Title	Training Objective	Date Training Completed	Course Length (Hours)

EMPLOYEE NAME

Training Course Title	Training Objective	Date Training Completed	Course Length (Hours)

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SWPPP/WPCP ATTACHMENT D
SUBCONTRACTOR PERSONNEL STORMWATER TRAINING RECORD

CEM-20DSUB (NEW 9/2012)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER

STORMWATER TRAINING RECORD CONTINUED

SUBCONTRACTOR EMPLOYEES STORMWATER TRAINING RECORD

Employee Name	Title of Training Course	Date Training Completed	Course Length (Hours)

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ATTACHMENT AA

SWPPP AMENDMENTS

**Will be provided by the Contractor

ATTACHMENT BB

WATER POLLUTION CONTROL DRAWINGS

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
03	ED	50	16.0/16.6		XX

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

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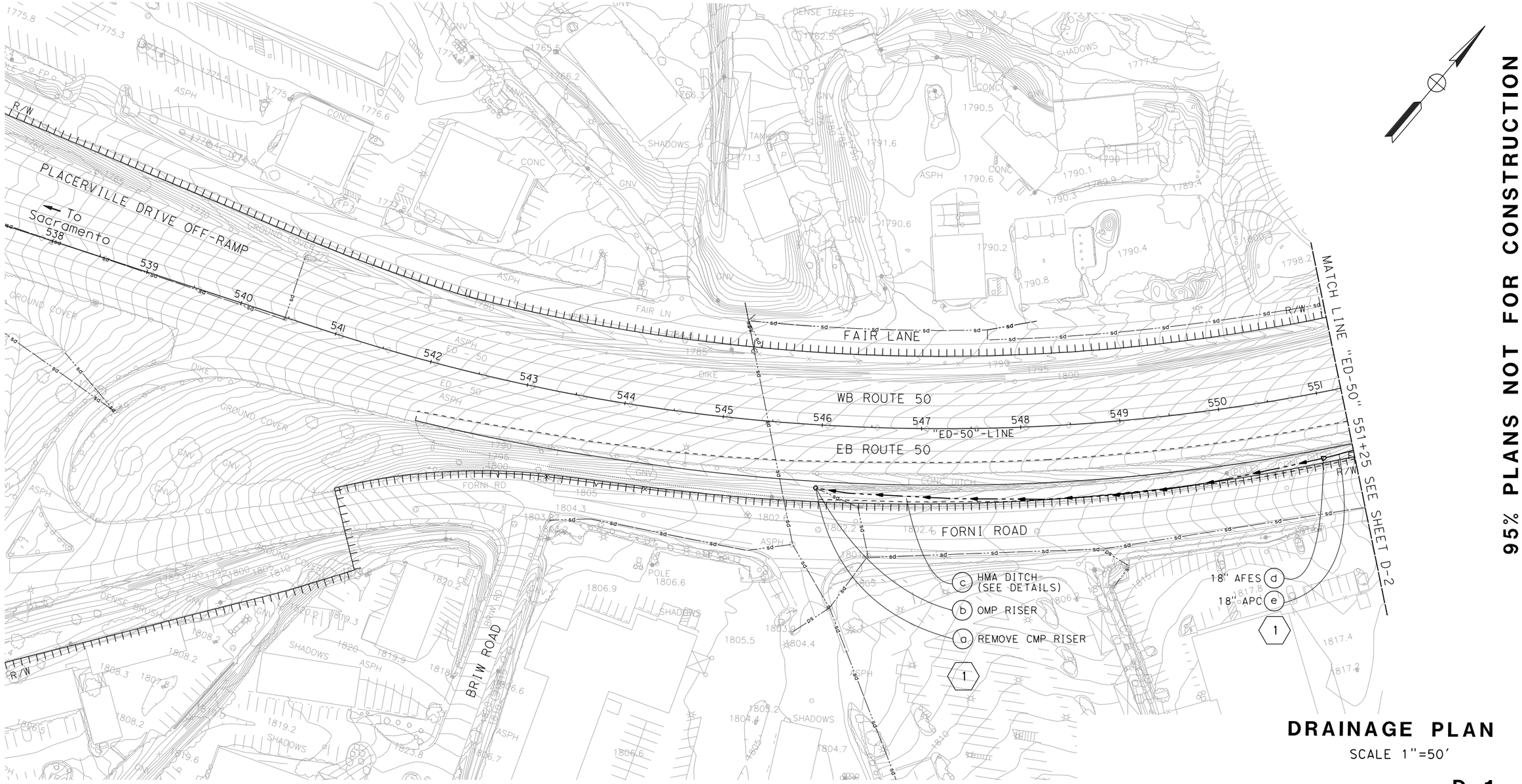
2. FOR UTILITIES, SEE LAYOUT SHEETS.
3. STATION & OFFSET TIES TO DRAINAGE STRUCTURES ARE MEASURED PER DETAILS ON SHEET DD-1.
4. LOCATIONS OF EXISTING DRAINAGE FACILITIES ARE APPROXIMATE. VERIFY LOCATION AND ELEVATION OF EXISTING DRAINAGE FACILITIES PRIOR TO MODIFYING.
5. FOR GCP INLET INFO, SEE Std PLAN D75B

LEGEND:

- DRAINAGE INLET (DI)
- EXISTING DI
- FLARED END SECTION (FES)
- GRADE TO DRAIN
- STORM DRAIN MANHOLE (SDMH)
- ROCK SLOPE PROTECTION (RSP)
- GCP INLET
- Conc LINED DITCH

ABBREVIATIONS:

SDMH STORM DRAIN MANHOLE



DRAINAGE PLAN

SCALE 1"=50'

D-1

95% PLANS NOT FOR CONSTRUCTION

LAST REVISION	DATE PLOTTED => 2/15/2017
00-00-00	TIME PLOTTED => 5:18:52 PM

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CALCULATED-DESIGNED BY | CHECKED BY

CONSULTANT FUNCTIONAL SUPERVISOR: HAN-BIN LIANG

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans

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DGN FILE => ...\Dwg\Drainage Plan\DRN_1.dgn

CU 00000

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3. SEE SHEET D-1 FOR LEGEND & COMPLETE NOTES

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DRAINAGE PLAN

SCALE 1"=50'

D-2

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
03	ED	50	16.0/16.6		XX

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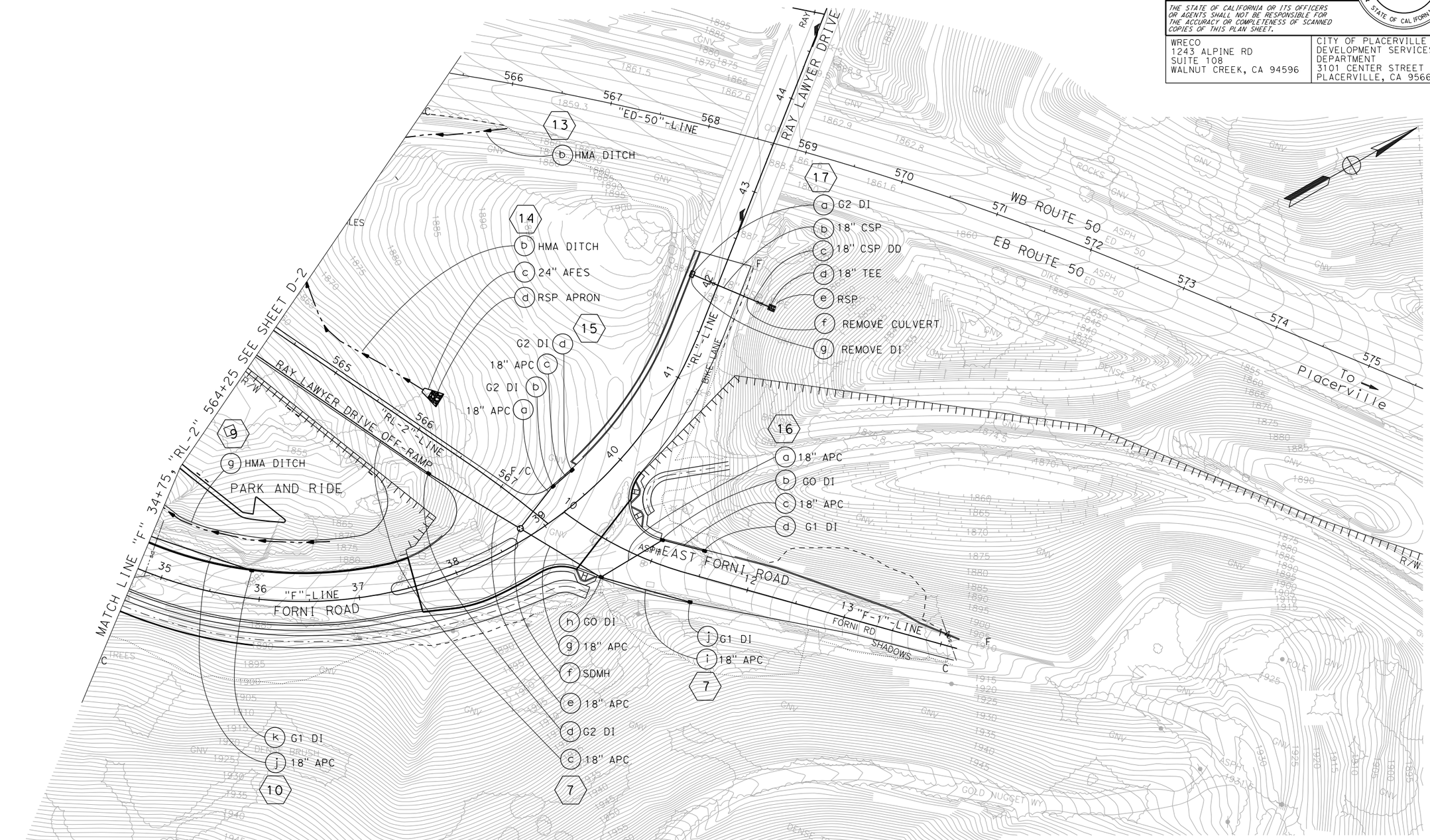

DRAINAGE PLAN

SCALE 1"=50'

D-3

95% PLANS NOT FOR CONSTRUCTION

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CALCULATED-DESIGNED BY: JEREMY MILLER-SCHULZE

CHECKED BY: CHRISTOPHER SEWELL

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EA 000000

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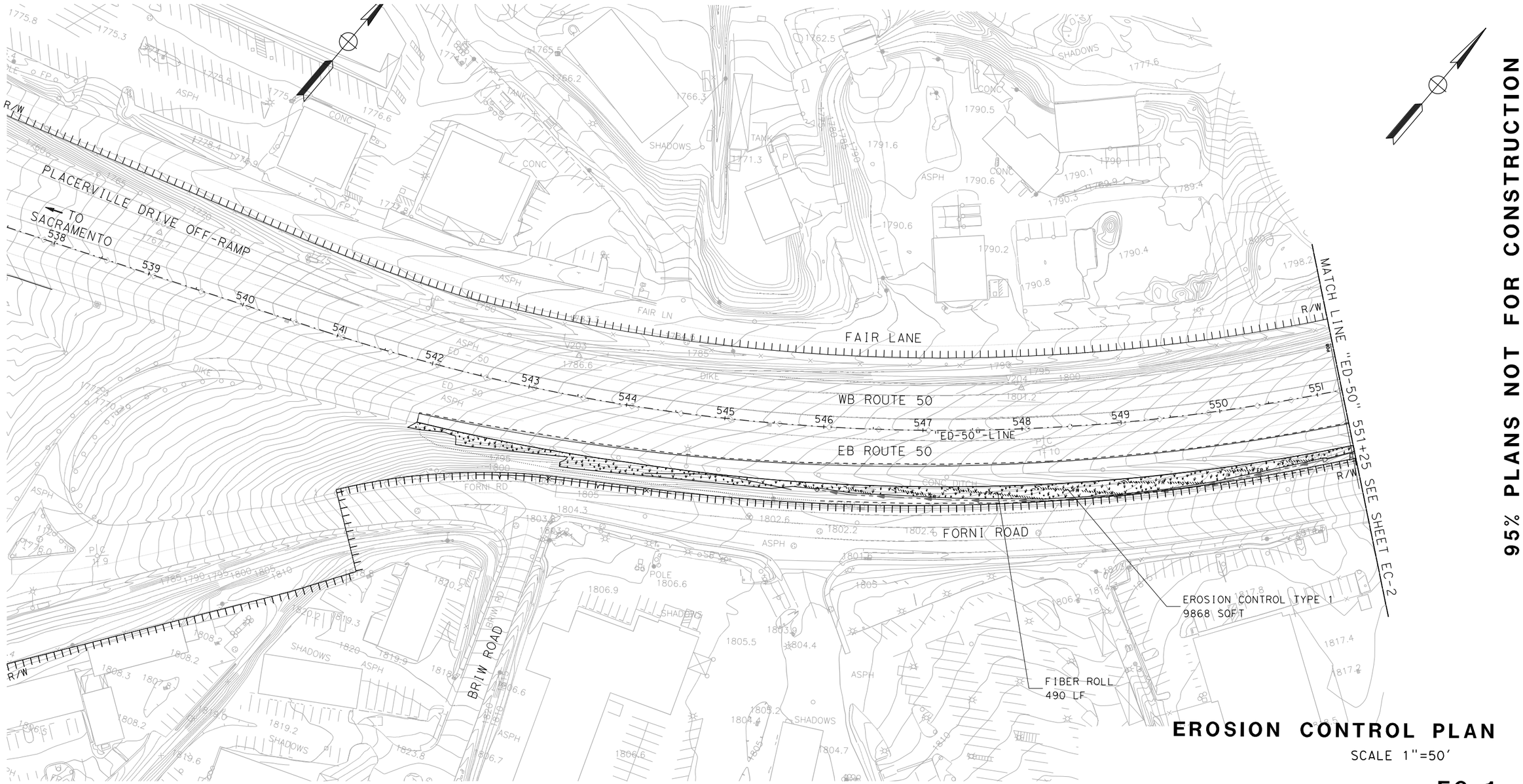
2. FOR UTILITIES, SEE LAYOUT SHEETS.
3. STATION & OFFSET TIES TO DRAINAGE STRUCTURES ARE MEASURED PER DETAILS ON SHEET ECD-1.

LEGEND:

EROSION CONTROL TYPE 1
CUT AND FILL SLOPES

EROSION CONTROL TYPE 2
BIOFILTRATION SWALES

FR FIBER ROLL



EROSION CONTROL PLAN

SCALE 1"=50'

EC-1

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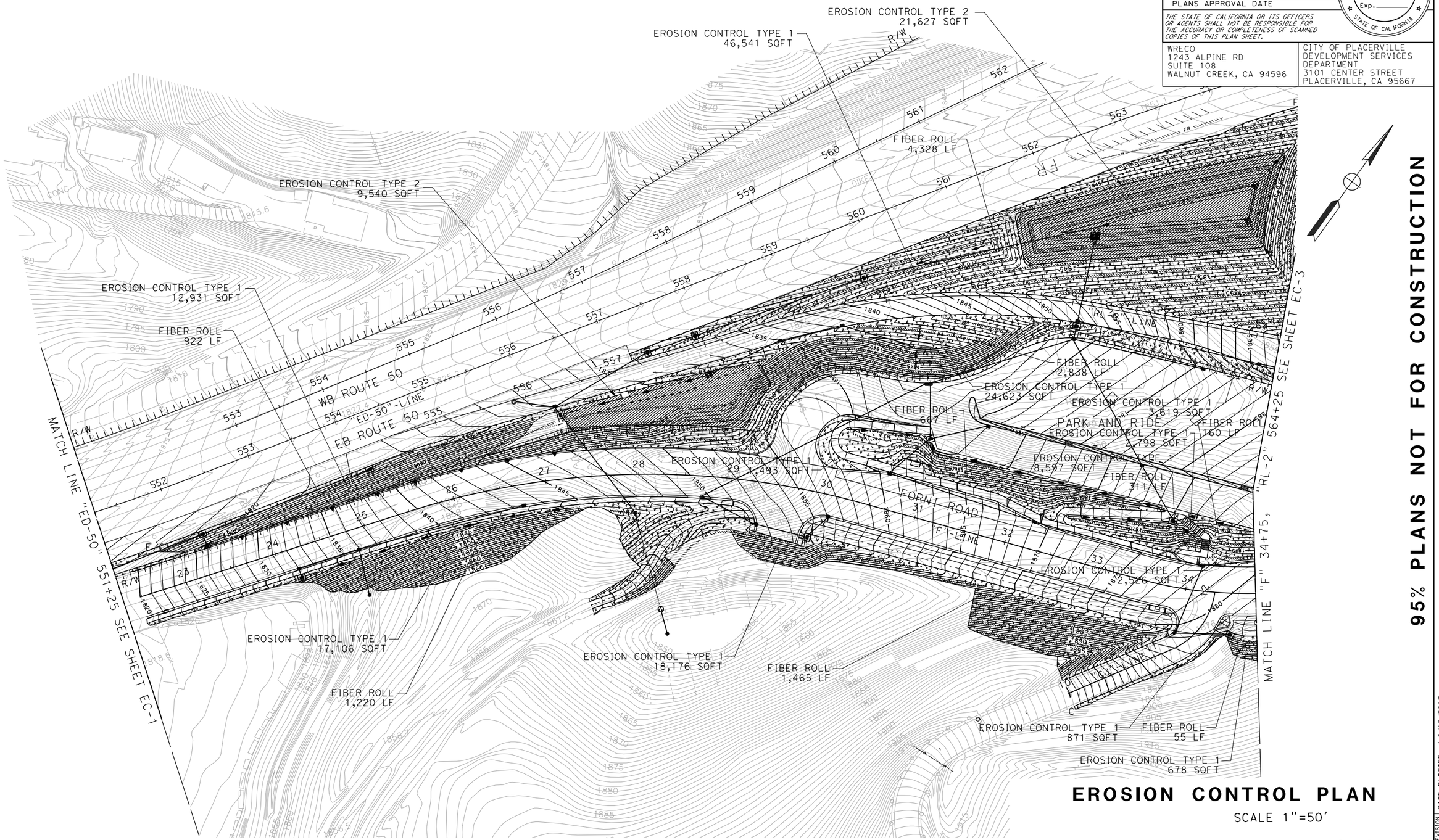
2. SEE SHEET EC-1 FOR LEGEND & COMPLETE NOTES.



EROSION CONTROL PLAN

SCALE 1"=50'

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EC-2

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CU 00000

EA 000000

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
03	ED	50	16.0/16.6		XX

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PLANS APPROVAL DATE

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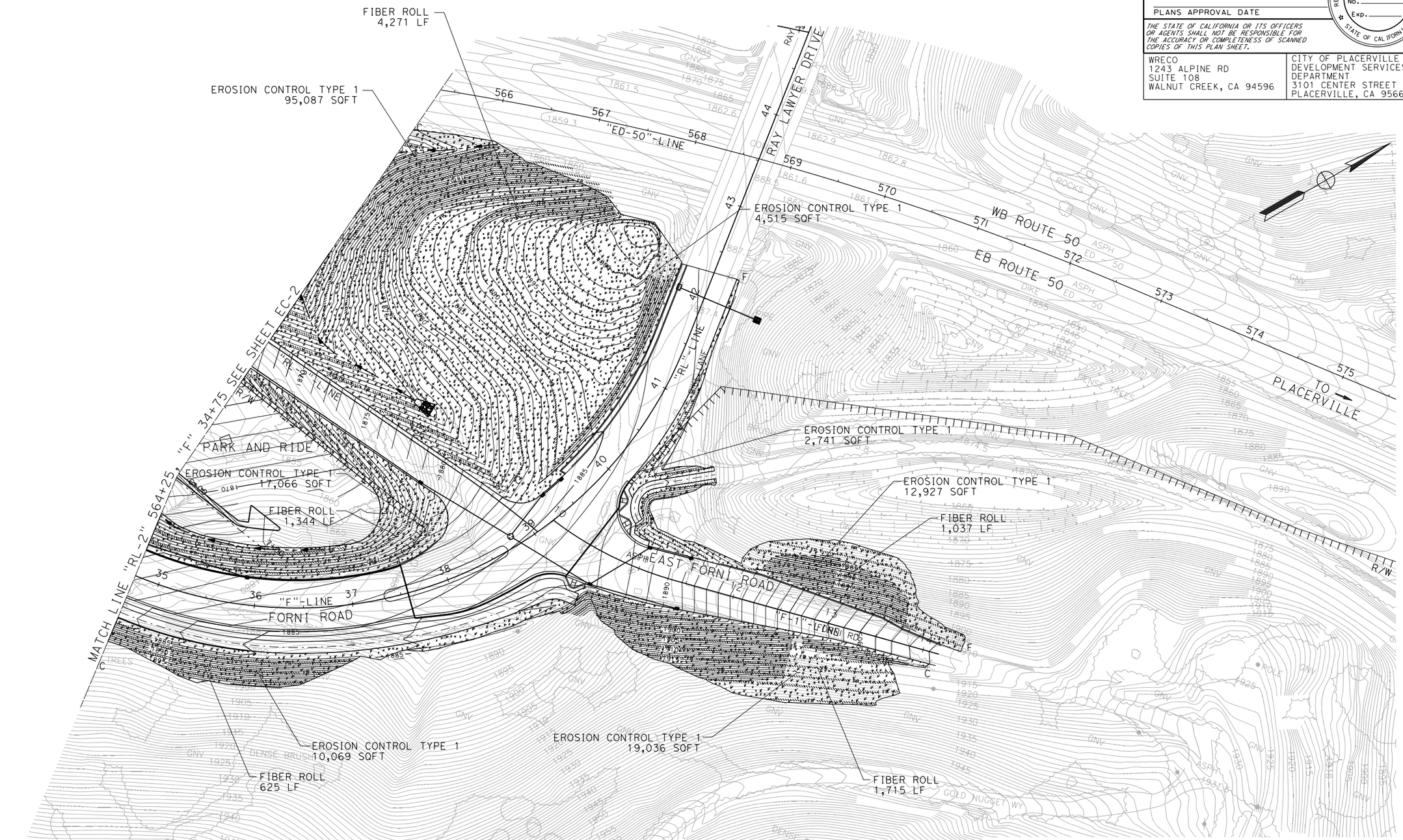
2. SEE SHEET EC-1 FOR LEGEND & COMPLETE NOTES.



EROSION CONTROL PLAN

SCALE 1"=50'

EC-3

95% PLANS NOT FOR CONSTRUCTION

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CONSULTANT FUNCTIONAL SUPERVISOR: HAN-BIN LIANG

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CU 00000

EA 000000

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
03	ED	50	16.0/16.6		XX

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

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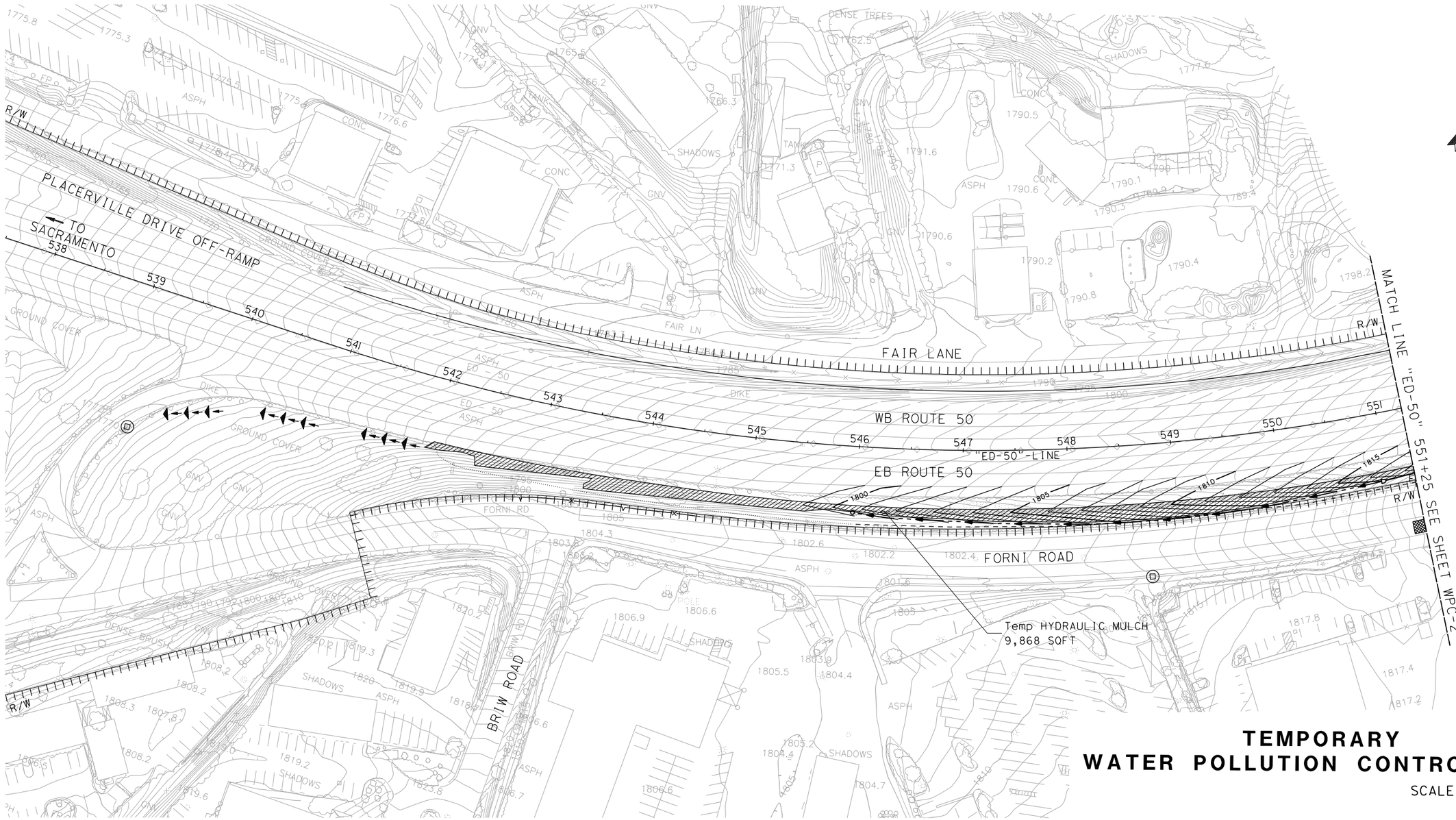
DEPARTMENT
3101 CENTER STREET
PLACERVILLE, CA 95667

NOTES:

1. FOR COMPLETE RIGHT-OF-WAY AND ACCURATE ACCESS DATA, SEE RIGHT-OF-WAY RECORD MAPS AT DISTRICT OFFICE.

LEGEND:

- TEMPORARY HYDRAULIC MULCH
- TEMPORARY DRAINAGE INLET PROTECTION
- TEMPORARY CONSTRUCTION ENTRANCE
- WASH — TEMPORARY CONCRETE WASHOUT
- TEMPORARY CHECK DAM
- xx—xx—TSF—xx— TEMPORARY SILT FENCE



TEMPORARY WATER POLLUTION CONTROL PLAN

SCALE 1"=50'

THIS PLAN ACCURATE FOR WATER POLLUTION CONTROL WORK ONLY

WPC-1

95% PLANS NOT FOR CONSTRUCTION

REVISED BY	DATE REVISED
JEREMY MILLER-SCHULZE	CHRISTOPHER SEWELL
CALCULATED-DESIGNED BY	CHECKED BY
CONSULTANT FUNCTIONAL SUPERVISOR	HAN-BIN LIANG

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EA 000000

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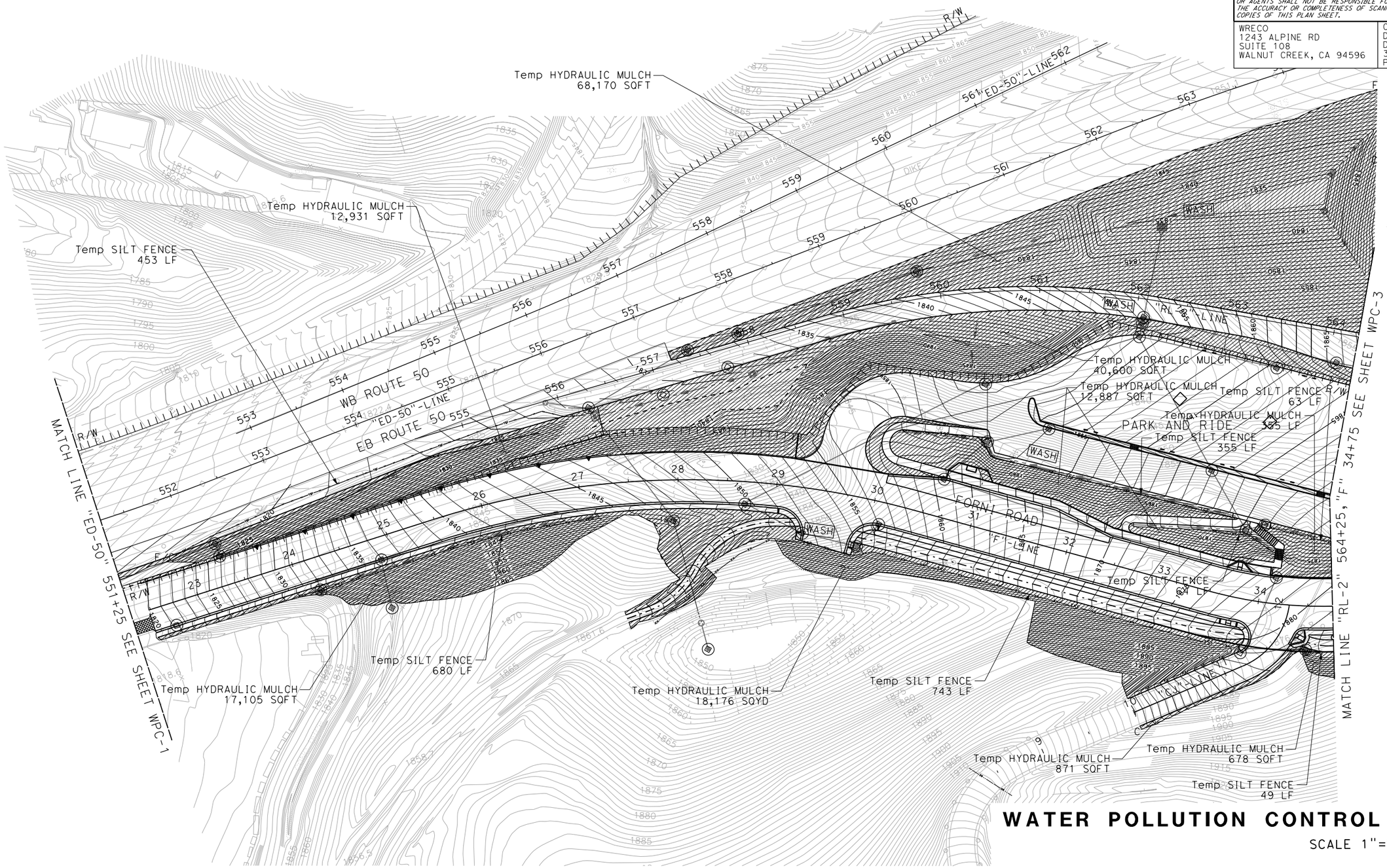
DEVELOPMENT SERVICES DEPARTMENT
3101 CENTER STREET
PLACERVILLE, CA 95667

NOTES:

1. FOR COMPLETE RIGHT-OF-WAY AND ACCURATE ACCESS DATA, SEE RIGHT-OF-WAY RECORD MAPS AT DISTRICT OFFICE.
2. SEE SHEET WPC-1 FOR LEGEND & COMPLETE NOTES.



WATER POLLUTION CONTROL PLAN

SCALE 1"=50'

WPC-2

95% PLANS NOT FOR CONSTRUCTION

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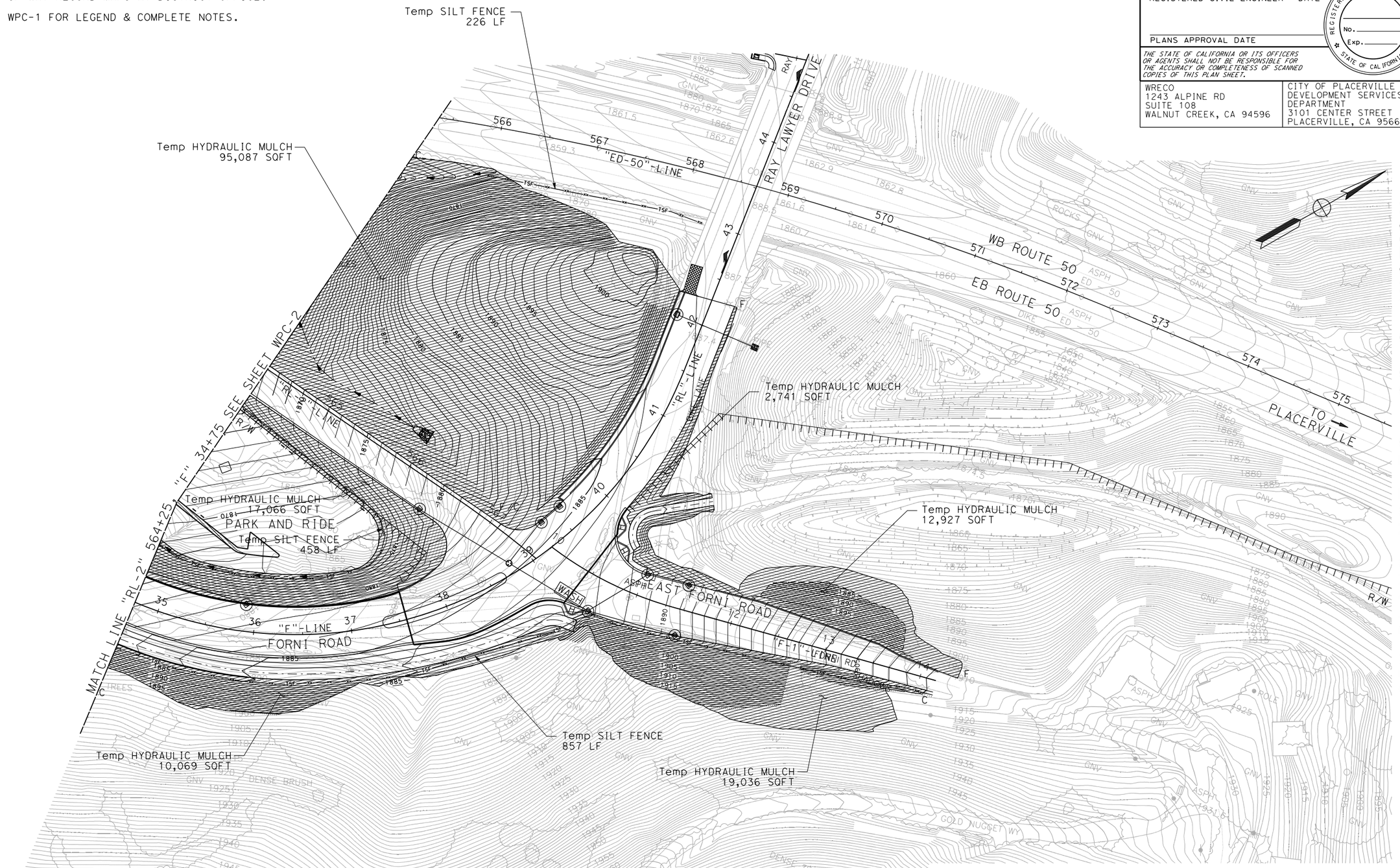

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WATER POLLUTION CONTROL PLAN

SCALE 1"=50'

WPC-3

REVISED BY	DATE REVISED

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RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
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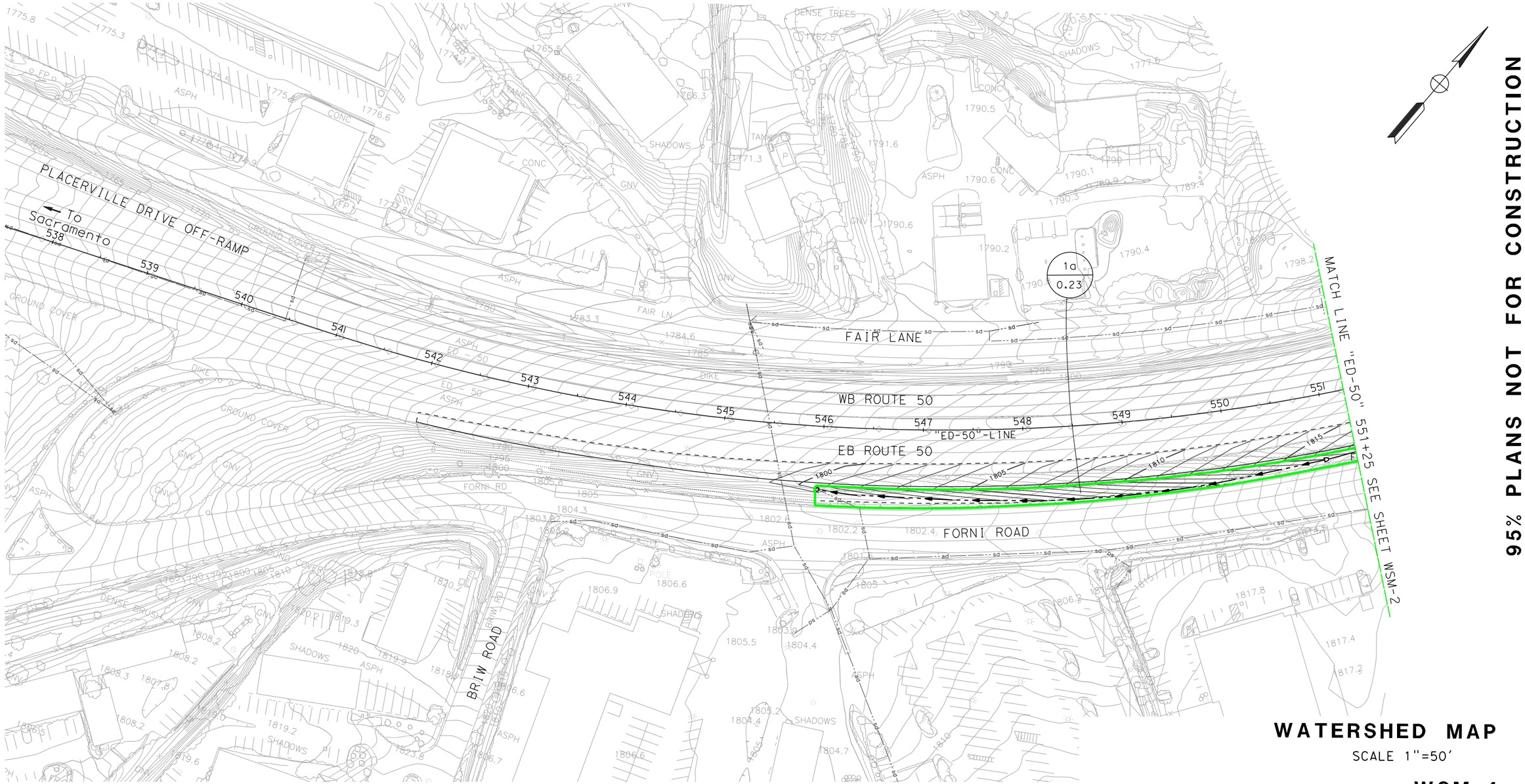
DRAINAGE SYSTEM UNIT / AREA (ac)

FLOW DIRECTION

ONSITE WATERSHED

OFFSITE WATERSHED



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WATERSHED MAP

SCALE 1"=50'

WSM-1

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR: HAN-BIN LIANG	CALCULATED-DESIGNED BY: JEREMY MILLER-SCHULZE	CHECKED BY: CHRISTOPHER SEWELL

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MATCH LINE "ED-50" 551+25 SEE SHEET WSM-1

MATCH LINE "F" 34+75, "RL-2" 564+25 SEE SHEET WSM-3

WB ROUTE 50
"ED-50"-LINE
EB ROUTE 50

"RL-1"-LINE

"RL-2"-LINE

"F"-LINE

"GJ"-LINE

FURNT ROAD

PARK AND RIDE

1j 0.10 | 1f 0.09 | 2d 0.20 | 1h 0.18 | 1h 0.17 | 3c 0.49 | 3c 0.16 | 4b 0.02 | 4d 0.11 | 5d 0.04 | 5f 0.14 | 5h 0.30 | 4f 0.28 | 10l 0.18 | 9b 0.17 | 6j 0.65 | 6h 0.37 | 6d 0.17 | 4h 3.78 | 6d 0.06 | 6d 0.29 | 4h 0.45

2o 0.18 | 2a 0.07 | 2n 0.28 | 2c 0.51 | 1f 0.27 | 3e 0.24 | 6l 0.18 | 3i 8.17 | 6n 0.19 | 6n 0.18 | 6p 0.39 | 10b 0.23 | 6r 0.35 | 10e 0.08 | 9f 0.20 | 10g 0.30 | 12b 8.56 | 11b 0.37 | 11b 0.06 | 11b 0.17

Run-on Watersheds

WATERSHED MAP

SCALE 1"=50'

WSM-2

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CHECKED BY: CHRISTOPHER SEWELL

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03	ED	50	16.0-16.6	14	XX

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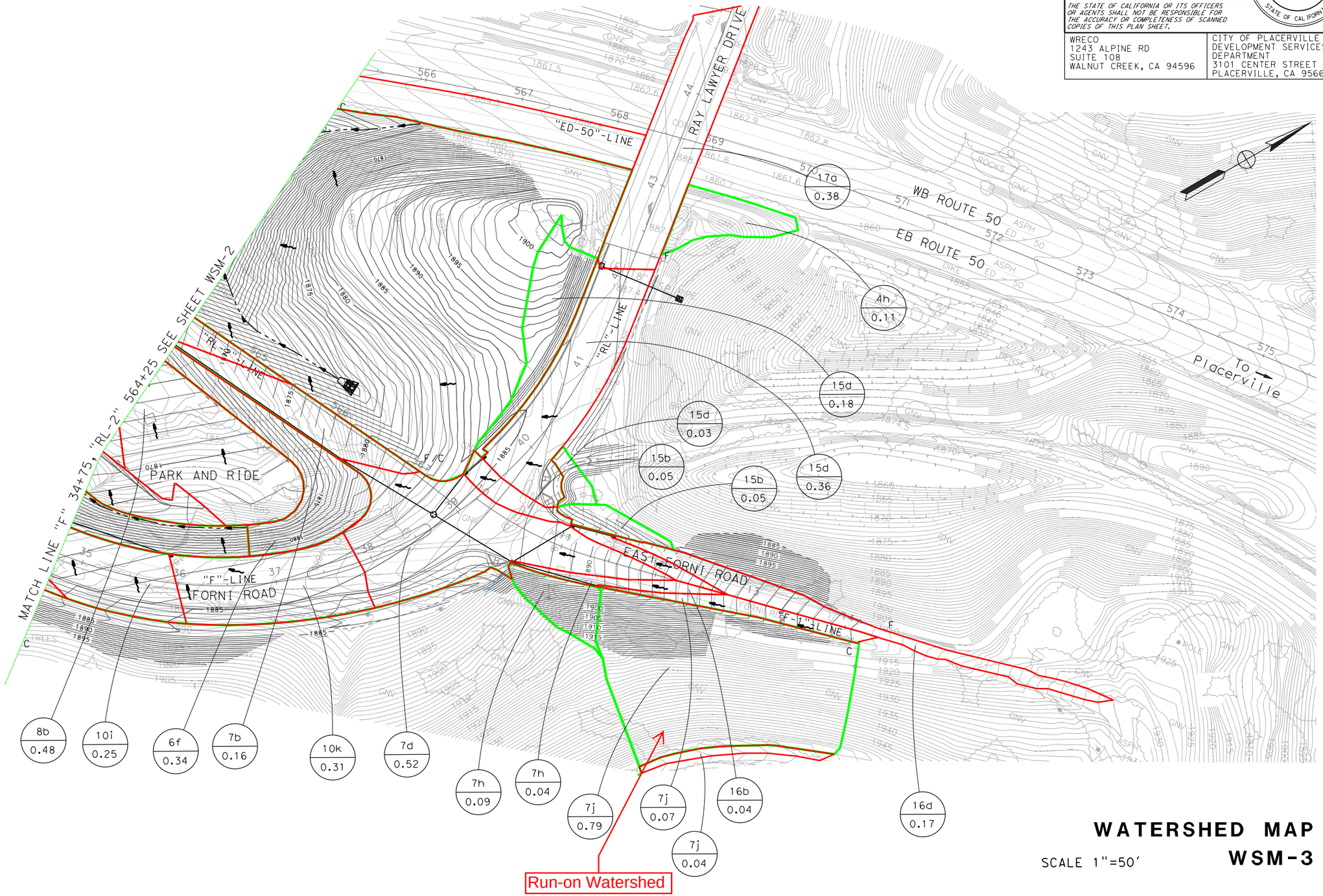

WATERSHED MAP
WSM-3

SCALE 1"=50'

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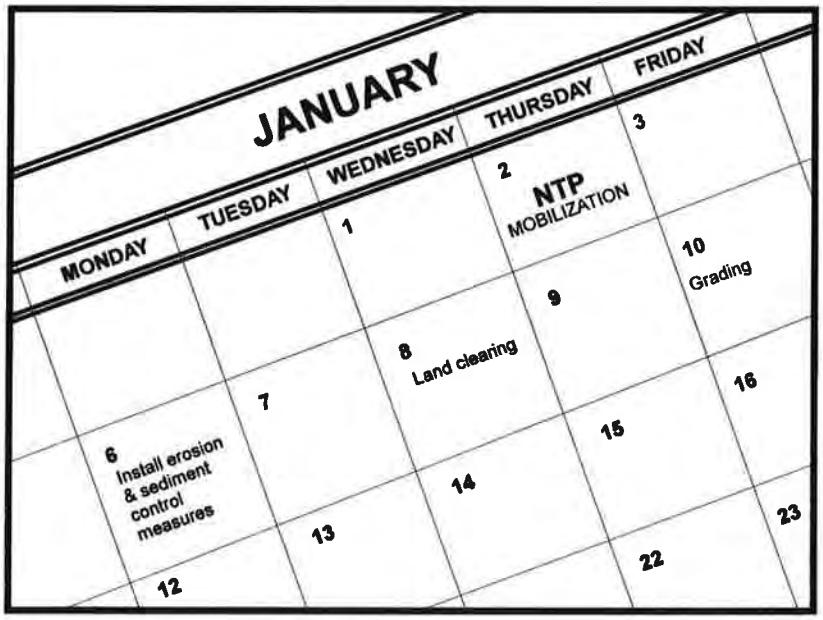
ATTACHMENT CC

WATER POLLUTION CONTROL BEST MANAGEMENT PRACTICES LIST

Item Code	Item Description	Unit	Estimated Quantity
130100	Job Site Management	LS	1
130300	Storm Water Pollution Prevention Plan	LS	1
130310	Rain Event Action Plan	EA	1
130200	Prepare Water Pollution Control Program	LS	1
130620	Temporary Drainage Inlet Protection	EA	41
210350	Fiber Roll	LF	21,450
130680	Temporary Silt Fence	LF	3,500
130710	Temporary Construction Entrance	EA	2
130730	Street Sweeping	LS	1
130900	Temporary Concrete Washout	LS	1
130520	Temporary Hydraulic Mulch	SY	76,000
130610	Temporary Check Dam	LF	350
210600	Compost	CY	920
210420	Straw	SF	309,000
210630	Incorporate Materials	SF	309,000
210270	Rolled Erosion Control Product (Netting)	SF	340,000
210430	Hydroseed	SF	340,000
202006	Soil Amendment	CY	1,750
066596	Additional Water pollution Control	LS	1
066595	Water Pollution Control Maintenance Sharing	LS	1

Scheduling EC-1



Categories

EC	Erosion Control	☑
SE	Sediment Control	☒
TC	Tracking Control	☒
WE	Wind Erosion Control	☒
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:
☑ **Primary Objective**
☒ **Secondary Objective**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

None

Description and Purpose

Scheduling is the development of a written plan that includes sequencing of construction activities and the implementation of BMPs such as erosion control and sediment control while taking local climate (rainfall, wind, etc.) into consideration. The purpose is to reduce the amount and duration of soil exposed to erosion by wind, rain, runoff, and vehicle tracking, and to perform the construction activities and control practices in accordance with the planned schedule.

Suitable Applications

Proper sequencing of construction activities to reduce erosion potential should be incorporated into the schedule of every construction project especially during rainy season. Use of other, more costly yet less effective, erosion and sediment control BMPs may often be reduced through proper construction sequencing.

Limitations

- Environmental constraints such as nesting season prohibitions reduce the full capabilities of this BMP.

Implementation

- Avoid rainy periods. Schedule major grading operations during dry months when practical. Allow enough time before rainfall begins to stabilize the soil with vegetation or physical means or to install sediment trapping devices.
- Plan the project and develop a schedule showing each phase

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of construction. Clearly show how the rainy season relates to soil disturbing and re-stabilization activities. Incorporate the construction schedule into the SWPPP.

- Include on the schedule, details on the rainy season implementation and deployment of:
  - Erosion control BMPs
  - Sediment control BMPs
  - Tracking control BMPs
  - Wind erosion control BMPs
  - Non-stormwater BMPs
  - Waste management and materials pollution control BMPs
- Include dates for activities that may require non-stormwater discharges such as dewatering, sawcutting, grinding, drilling, boring, crushing, blasting, painting, hydro-demolition, mortar mixing, pavement cleaning, etc.
- Work out the sequencing and timetable for the start and completion of each item such as site clearing and grubbing, grading, excavation, paving, foundation pouring utilities installation, etc., to minimize the active construction area during the rainy season.
  - Sequence trenching activities so that most open portions are closed before new trenching begins.
  - Incorporate staged seeding and re-vegetation of graded slopes as work progresses.
  - Schedule establishment of permanent vegetation during appropriate planting time for specified vegetation.
- Non-active areas should be stabilized as soon as practical after the cessation of soil disturbing activities or one day prior to the onset of precipitation.
- Monitor the weather forecast for rainfall.
- When rainfall is predicted, adjust the construction schedule to allow the implementation of soil stabilization and sediment treatment controls on all disturbed areas prior to the onset of rain.
- Be prepared year round to deploy erosion control and sediment control BMPs. Erosion may be caused during dry seasons by un-seasonal rainfall, wind, and vehicle tracking. Keep the site stabilized year round, and retain and maintain rainy season sediment trapping devices in operational condition.
- Apply permanent erosion control to areas deemed substantially complete during the project's defined seeding window.

Costs

Construction scheduling to reduce erosion may increase other construction costs due to reduced economies of scale in performing site grading. The cost effectiveness of scheduling techniques should be compared with the other less effective erosion and sedimentation controls to achieve a cost effective balance.

Inspection and Maintenance

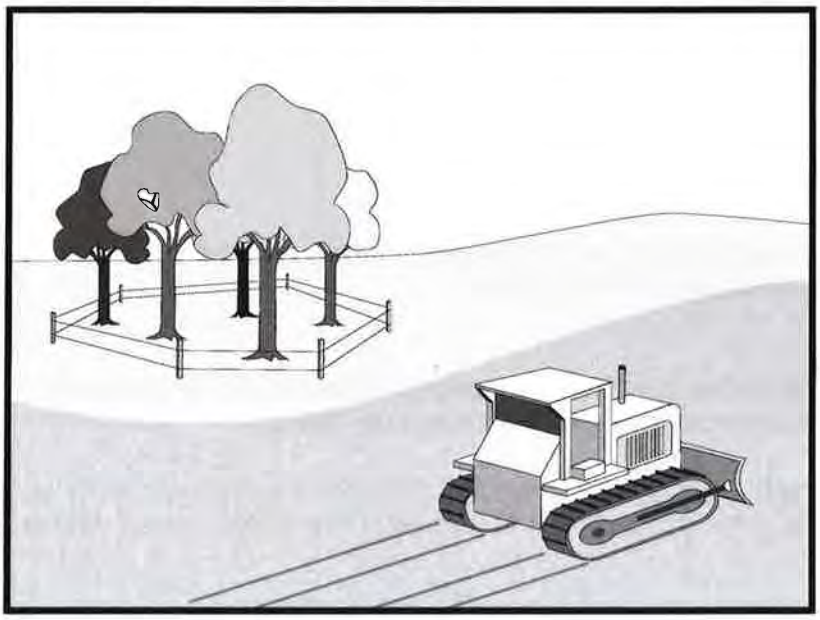
- Verify that work is progressing in accordance with the schedule. If progress deviates, take corrective actions.
- Amend the schedule when changes are warranted.
- Amend the schedule prior to the rainy season to show updated information on the deployment and implementation of construction site BMPs.

References

Stormwater Quality Handbooks Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Stormwater Management for Construction Activities Developing Pollution Prevention Plans and Best Management Practices (EPA 832-R-92-005), U.S. Environmental Protection Agency, Office of Water, September 1992.

Preservation Of Existing Vegetation EC-2



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SE	Sediment Control	
TC	Tracking Control	
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Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

None

Description and Purpose

Carefully planned preservation of existing vegetation minimizes the potential of removing or injuring existing trees, vines, shrubs, and grasses that protect soil from erosion.

Suitable Applications

Preservation of existing vegetation is suitable for use on most projects. Large project sites often provide the greatest opportunity for use of this BMP. Suitable applications include the following:

- Areas within the site where no construction activity occurs, or occurs at a later date. This BMP is especially suitable to multi year projects where grading can be phased.
- Areas where natural vegetation exists and is designated for preservation. Such areas often include steep slopes, watercourse, and building sites in wooded areas.
- Areas where local, state, and federal government require preservation, such as vernal pools, wetlands, marshes, certain oak trees, etc. These areas are usually designated on the plans, or in the specifications, permits, or environmental documents.
- Where vegetation designated for ultimate removal can be temporarily preserved and be utilized for erosion control and sediment control.

Limitations

- Requires forward planning by the owner/developer,

contractor, and design staff.

- Limited opportunities for use when project plans do not incorporate existing vegetation into the site design.
- For sites with diverse topography, it is often difficult and expensive to save existing trees while grading the site satisfactory for the planned development.

Implementation

The best way to prevent erosion is to not disturb the land. In order to reduce the impacts of new development and redevelopment, projects may be designed to avoid disturbing land in sensitive areas of the site (e.g., natural watercourses, steep slopes), and to incorporate unique or desirable existing vegetation into the site's landscaping plan. Clearly marking and leaving a buffer area around these unique areas during construction will help to preserve these areas as well as take advantage of natural erosion prevention and sediment trapping.

Existing vegetation to be preserved on the site must be protected from mechanical and other injury while the land is being developed. The purpose of protecting existing vegetation is to ensure the survival of desirable vegetation for shade, beautification, and erosion control. Mature vegetation has extensive root systems that help to hold soil in place, thus reducing erosion. In addition, vegetation helps keep soil from drying rapidly and becoming susceptible to erosion. To effectively save existing vegetation, no disturbances of any kind should be allowed within a defined area around the vegetation. For trees, no construction activity should occur within the drip line of the tree.

Timing

- Provide for preservation of existing vegetation prior to the commencement of clearing and grubbing operations or other soil disturbing activities in areas where no construction activity is planned or will occur at a later date.

Design and Layout

- Mark areas to be preserved with temporary fencing. Include sufficient setback to protect roots.
  - Orange colored plastic mesh fencing works well.
  - **Use appropriate fence posts and adequate post spacing and depth to completely support the fence in an upright position.**
- Locate temporary roadways, stockpiles, and layout areas to avoid stands of trees, shrubs, and grass.
- Consider the impact of grade changes to existing vegetation and the root zone.
- Maintain existing irrigation systems where feasible. Temporary irrigation may be required.
- Instruct employees and subcontractors to honor protective devices. Prohibit heavy equipment, vehicular traffic, or storage of construction materials within the protected area.

Costs

There is little cost associated with preserving existing vegetation if properly planned during the project design, and these costs may be offset by aesthetic benefits that enhance property values. During construction, the cost for preserving existing vegetation will likely be less than the cost of applying erosion and sediment controls to the disturbed area. Replacing vegetation inadvertently destroyed during construction can be extremely expensive, sometimes in excess of $10,000 per tree.

Inspection and Maintenance

During construction, the limits of disturbance should remain clearly marked at all times. Irrigation or maintenance of existing vegetation should be described in the landscaping plan. If damage to protected trees still occurs, maintenance guidelines described below should be followed:

- Verify that protective measures remain in place. Restore damaged protection measures immediately.
- Serious tree injuries shall be attended to by an arborist.
- Damage to the crown, trunk, or root system of a retained tree shall be repaired immediately.
- Trench as far from tree trunks as possible, usually outside of the tree drip line or canopy. Curve trenches around trees to avoid large roots or root concentrations. If roots are encountered, consider tunneling under them. When trenching or tunneling near or under trees to be retained, place tunnels at least 18 in. below the ground surface, and not below the tree center to minimize impact on the roots.
- Do not leave tree roots exposed to air. Cover exposed roots with soil as soon as possible. If soil covering is not practical, protect exposed roots with wet burlap or peat moss until the tunnel or trench is ready for backfill.
- Cleanly remove the ends of damaged roots with a smooth cut.
- Fill trenches and tunnels as soon as possible. Careful filling and tamping will eliminate air spaces in the soil, which can damage roots.
- If bark damage occurs, cut back all loosened bark into the undamaged area, with the cut tapered at the top and bottom and drainage provided at the base of the wood. Limit cutting the undamaged area as much as possible.
- Aerate soil that has been compacted over a trees root zone by punching holes 12 in. deep with an iron bar, and moving the bar back and forth until the soil is loosened. Place holes 18 in. apart throughout the area of compacted soil under the tree crown.
- Fertilization
  - Fertilize stressed or damaged broadleaf trees to aid recovery.
  - Fertilize trees in the late fall or early spring.

- Apply fertilizer to the soil over the feeder roots and in accordance with label instructions, but never closer than 3 ft to the trunk. Increase the fertilized area by one-fourth of the crown area for conifers that have extended root systems.

- Retain protective measures until all other construction activity is complete to avoid damage during site cleanup and stabilization.

References

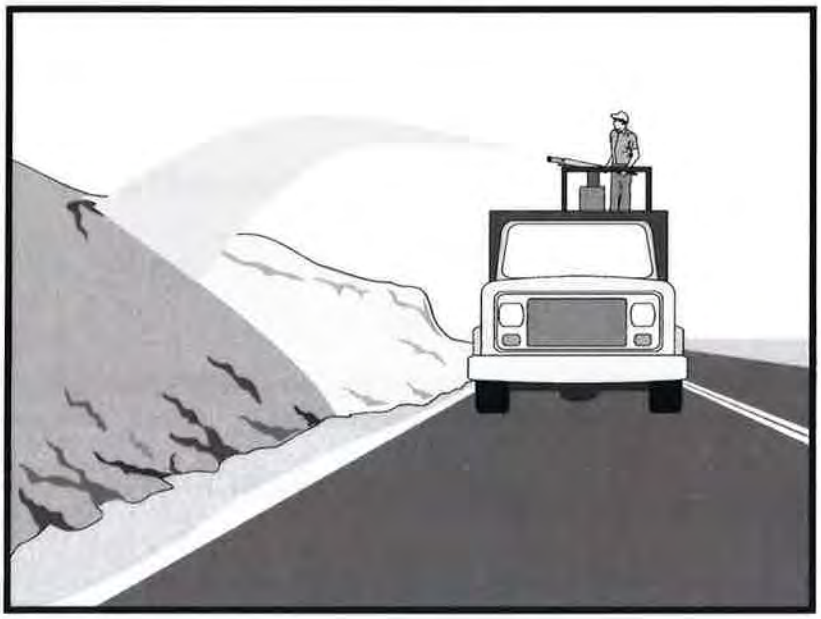
County of Sacramento Tree Preservation Ordinance, September 1981.

Stormwater Quality Handbooks Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Stormwater Management of the Puget Sound Basin, Technical Manual, Publication #91-75, Washington State Department of Ecology, February 1992.

Water Quality Management Plan for The Lake Tahoe Region, Volume II, Handbook of Management Practices, Tahoe Regional Planning Agency, November 1988.

Hydraulic Mulch EC-3



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TC	Tracking Control	
WE	Wind Erosion Control	☒
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Category**

☒ **Secondary Category**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

EC-4 Hydroseeding

EC-5 Soil Binders

EC-6 Straw Mulch

EC-7 Geotextiles and Mats

EC-8 Wood Mulching

EC-14 Compost Blanket

EC-16 Non-Vegetative Stabilization

Description and Purpose

Hydraulic Mulch consists of various types of fibrous materials mixed with water and sprayed onto the soil surface in slurry form to provide a layer of temporary protection from wind and water erosion.

Suitable Applications

Hydraulic mulch as a temporary, stand alone, erosion control BMP is suitable for disturbed areas that require temporary protection from wind and water erosion until permanent soil stabilization activities commence. Examples include:

- Rough-graded areas that will remain inactive for longer than permit-required thresholds (e.g., 14 days) or otherwise require stabilization to minimize erosion or prevent sediment discharges.
- Soil stockpiles.
- Slopes with exposed soil between existing vegetation such as trees or shrubs.
- Slopes planted with live, container-grown vegetation or plugs.
- Slopes burned by wildfire.

Hydraulic mulch can also be applied to augment other erosion control BMPs such as:

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- In conjunction with straw mulch (see EC-6 Straw Mulch) where the rate of hydraulic mulch is reduced to 100-500 lbs per acre and the slurry is applied over the straw as a tackifying agent to hold the straw in place.
- Supplemental application of soil amendments, such as fertilizer, lime, gypsum, soil bio-stimulants or compost.

Limitations

In general, hydraulic mulch is not limited by slope length, gradient or soil type. However, the following limitations typically apply:

- Most hydraulic mulch applications, particularly bonded fiber matrices (BFMs), require at least 24 hours to dry before rainfall occurs.
- Temporary applications (i.e., without a vegetative component) may require a second application in order to remain effective for an entire rainy season.
- Treatment areas must be accessible to hydraulic mulching equipment.
- Availability of water sources in remote areas for mixing and application.
- As a stand-alone temporary BMP, hydraulic mulches may need to be re-applied to maintain their erosion control effectiveness, typically after 6-12 months depending on the type of mulch used.
- Availability of hydraulic mulching equipment may be limited just prior to the rainy season and prior to storms due to high demand.
- Cellulose fiber mulches alone may not perform well on steep slopes or in course soils.

Implementation

- Where feasible, it is preferable to prepare soil surfaces prior to application by roughening embankments and fill areas with a crimping or punching type roller or by track walking.
- The majority of hydraulic mulch applications do not necessarily require surface/soil preparation (See EC-15 Soil Preparation) although in almost every case where re-vegetation is included as part of the practice, soil preparation can be beneficial. One of the advantages of hydraulic mulch over other erosion control methods is that it can be applied in areas where soil preparation is precluded by site conditions, such as steep slopes, rocky soils, or inaccessibility.
- Avoid mulch over spray onto roads, sidewalks, drainage channels, existing vegetation, etc.
- Hydraulic mulching is generally performed utilizing specialized machines that have a large water-holding/mixing tank and some form of mechanical agitation or other recirculation method to keep water, mulch and soil amendments in suspension. The mixed hydraulic slurry can be applied from a tower sprayer on top of the machine or by extending a hose to areas remote from the machine.

- Where possible apply hydraulic mulch from multiple directions to adequately cover the soil. Application from a single direction can result in shadowing, uneven coverage and failure of the BMP.
- Hydraulic mulch can also include a vegetative component, such as seed, rhizomes, or stolons (see EC-4 Hydraulic Seed).
- Typical hydraulic mulch application rates range from 2,000 pounds per acre for standard mulches (SMs) to 3,500 pounds per acre for BFMs. However, the required amount of hydraulic mulch to provide adequate coverage of exposed topsoil may appear to exceed the standard rates when the roughness of the soil surface is changed due to soil preparation methods (see EC-15 Soil Preparation) or by slope gradient.
- Other factors such as existing soil moisture and soil texture can have a profound effect on the amount of hydraulic mulch required (i.e. application rate) applied to achieve an erosion-resistant covering.
- Avoid use of mulch without a tackifier component, especially on slopes.
- Mulches used in the hydraulic mulch slurry can include:
  - Cellulose fiber
  - Thermally-processed wood fibers
  - Cotton
  - Synthetics
  - Compost (see EC-14, Compost Blanket)
- Additional guidance on the comparison and selection of temporary slope stabilization methods is provided in Appendix F of the Handbook.

Categories of Hydraulic Mulches

Standard Hydraulic Mulch (SM)

Standard hydraulic mulches are generally applied at a rate of 2,000 pounds per acre and are manufactured containing around 5% tackifier (i.e. soil binder), usually a plant-derived guar or psyllium type. Most standard mulches are green in color derived from food-color based dyes.

Hydraulic Matrices (HM) and Stabilized Fiber Matrices (SFM)

Hydraulic matrices and stabilized fiber matrices are slurries which contain increased levels of tackifiers/soil binders; usually 10% or more by weight. HMs and SFMs have improved performance compared to a standard hydraulic mulch (SM) because of the additional percentage of tackifier and because of their higher application rates, typically 2,500 – 4,000 pounds per acre. Hydraulic matrices can include a mixture of fibers, for example, a 50/50 blend of paper and wood fiber. In the case of an SFM, the tackifier/soil binder is specified as a polyacrylamide (PAM).

Bonded Fiber Matrix (BFM)

Bonded fiber matrices (BFMs) are hydraulically-applied systems of fibers, adhesives (typically guar based) and chemical cross-links. Upon drying, the slurry forms an erosion-resistant blanket that prevents soil erosion and promotes vegetation establishment. The cross-linked adhesive in the BFM should be biodegradable and should not dissolve or disperse upon re-wetting. BFMs are typically applied at rates from 3,000 to 4,000 lbs/acre based on the manufacturer's recommendation. BFMs should not be applied immediately before, during or immediately after rainfall or if the soil is saturated. Depending on the product, BFMs typically require 12 to 24 hours to dry and become effective.

Mechanically-Bonded Fiber Matrices (MBFM)

Mechanically-bonded fiber matrices (MBFMs) are hydraulically applied systems similar to BFM that use crimped synthetic fibers and PAM and are typically applied to a slope at a higher application rate than a standard BFM.

Hydraulic Compost Matrix (HCM)

Hydraulic compost matrix (HCM) is a field-derived practice whereby finely graded or sifted compost is introduced into the hydraulic mulch slurry. A guar-type tackifier can be added for steeper slope applications as well as any specified seed mixtures. A HCM can help to accelerate seed germination and growth. HCMs are particularly useful as an in-fill for three-dimensional re-vegetation geocomposites, such as turf reinforcement mats (TRM) (see EC-7 Geotextiles and Mats).

Costs

Average installed costs for hydraulic mulch categories are is provided in Table 1, below.

Table 1
HYDRAULIC MULCH BMPs
INSTALLED COSTS

BMP	Installed Cost/Acre
Standard Hydraulic Mulching (SM)	$1,700 - $3,600 per acre
Hydraulic Matrices (HM) and Stabilized Fiber Matrices	
Guar-based	$2,000 - $4,000 per acre
PAM-based	$2,500 - $5,610 per acre
Bonded Fiber Matrix (BFM)	$3,900 - $6,900 per acre
Mechanically Bonded Fiber Matrix (MBFM)	$4,500 - $6,000 per acre
Hydraulic Compost Matrix (HCM)	$3,000 - $3,500 per acre

Source: Caltrans Soil Stabilization BMP Research for Erosion and Sediment Controls, July 2007

Inspection and Maintenance

- Maintain an unbroken, temporary mulched ground cover throughout the period of construction when the soils are not being reworked.
- BMPs must be inspected in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected

weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.

- Areas where erosion is evident should be repaired and BMPs re-applied as soon as possible. Care should be exercised to minimize the damage to protected areas while making repairs, as any area damaged will require re-application of BMPs.
- Compare the number of bags or weight of applied mulch to the area treated to determine actual application rates and compliance with specifications.

References

Soil Stabilization BMP Research for Erosion and Sediment Controls: Cost Survey Technical Memorandum, State of California Department of Transportation (Caltrans), July 2007.

Controlling Erosion of Construction Sites, Agricultural Information #347, U.S. Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) (formerly Soil Conservation Service – SCS).

Guides for Erosion and Sediment Control in California, USDA Soils Conservation Service, January 1991.

Manual of Standards of Erosion and Sediment Control Measures, Association of Bay Area Governments, May 1995.

Sedimentation and Erosion Control, An Inventory of Current Practices Draft, US EPA, April 1990.

Soil Erosion by Water, Agriculture Information Bulletin #513, U.S. Department of Agriculture, Soil Conservation Service.

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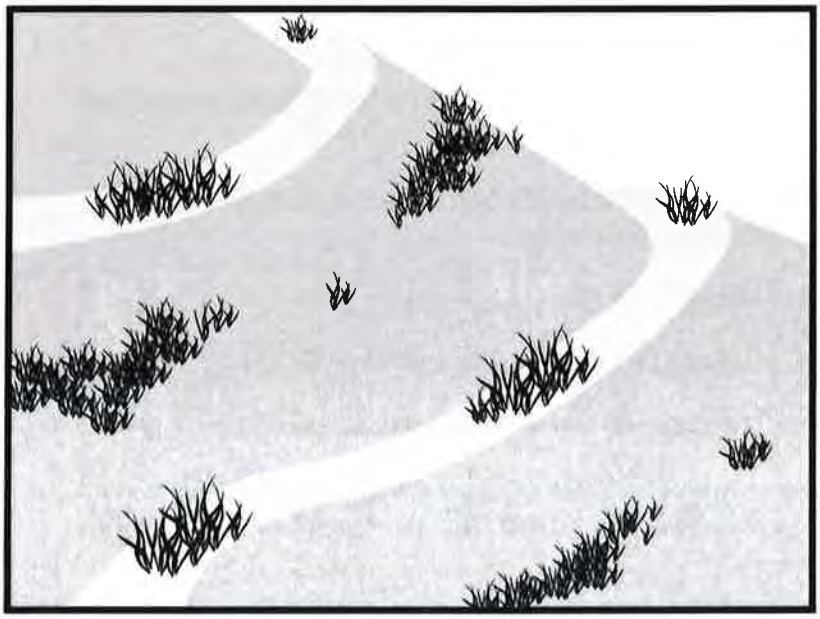
Guidance Document: Soil Stabilization for Temporary Slopes, State of California Department of Transportation (Caltrans), November 1999

Stormwater Management of the Puget Sound Basin, Technical Manual, Publication #91-75, Washington State Department of Ecology, February 1992.

Water Quality Management Plan for the Lake Tahoe Region, Volume II, Handbook of Management Practices, Tahoe Regional Planning Agency, November 1988.

Hydroseeding EC-4



Categories

EC	Erosion Control	☑
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	☒
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:
☑ **Primary Category**
☒ **Secondary Category**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

EC-3 Hydraulic Mulch
EC-5 Soil Binders
EC-6 Straw Mulch
EC-7 Geotextiles and Mats
EC-8 Wood Mulching
EC-14 Compost Blanket
EC-16 Non-Vegetative Stabilization

Description and Purpose

Hydroseeding typically consists of applying a mixture of a hydraulic mulch, seed, fertilizer, and stabilizing emulsion with a hydraulic mulcher, to temporarily protect exposed soils from erosion by water and wind. Hydraulic seeding, or hydroseeding, is simply the method by which temporary or permanent seed is applied to the soil surface.

Suitable Applications

Hydroseeding is suitable for disturbed areas requiring temporary protection until permanent stabilization is established, for disturbed areas that will be re-disturbed following an extended period of inactivity, or to apply permanent stabilization measures. Hydroseeding without mulch or other cover (e.g. EC-7, Erosion Control Blanket) is not a stand-alone erosion control BMP and should be combined with additional measures until vegetation establishment.

Typical applications for hydroseeding include:

- Disturbed soil/graded areas where permanent stabilization or continued earthwork is not anticipated prior to seed germination.
- Cleared and graded areas exposed to seasonal rains or temporary irrigation.
- Areas not subject to heavy wear by construction equipment or high traffic.

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Limitations

- Availability of hydroseeding equipment may be limited just prior to the rainy season and prior to storms due to high demand.
- Hydraulic seed should be applied with hydraulic mulch or a stand-alone hydroseed application should be followed by one of the following:
    - Straw mulch (see Straw Mulch EC-6)
    - Rolled erosion control products (see Geotextiles and Mats EC-7)
    - Application of Compost Blanket (see Compost Blanket EC-14)

  Hydraulic seed may be used alone only on small flat surfaces when there is sufficient time in the season to ensure adequate vegetation establishment and coverage to provide adequate erosion control.
- Hydraulic seed without mulch does not provide immediate erosion control.
- Temporary seeding may not be appropriate for steep slopes (i.e., slopes readily prone to rill erosion or without sufficient topsoil).
- Temporary seeding may not be appropriate in dry periods without supplemental irrigation.
- Temporary vegetation may have to be removed before permanent vegetation is applied.
- Temporary vegetation may not be appropriate for short term inactivity (i.e. less than 3-6 months).

Implementation

In order to select appropriate hydraulic seed mixtures, an evaluation of site conditions should be performed with respect to:

- Soil conditions
- Site topography and exposure (sun/wind)
- Season and climate
- Vegetation types
- Maintenance requirements
- Sensitive adjacent areas
- Water availability
- Plans for permanent vegetation

The local office of the U.S.D.A. Natural Resources Conservation Service (NRCS) is an excellent source of information on appropriate seed mixes.

The following steps should be followed for implementation:

- Where appropriate or feasible, soil should be prepared to receive the seed by disking or otherwise scarifying (See EC-15, Soil Preparation) the surface to eliminate crust, improve air and water infiltration and create a more favorable environment for germination and growth.

- Avoid use of hydraulic seed in areas where the BMP would be incompatible with future earthwork activities.
- Hydraulic seed can be applied using a multiple step or one step process.
  - In a multiple step process, hydraulic seed is applied first, followed by mulch or a Rolled Erosion Control Product (RECP).
  - In the one step process, hydraulic seed is applied with hydraulic mulch in a hydraulic matrix. When the one step process is used to apply the mixture of fiber, seed, etc., the seed rate should be increased to compensate for all seeds not having direct contact with the soil.
- All hydraulically seeded areas should have mulch, or alternate erosion control cover to keep seeds in place and to moderate soil moisture and temperature until the seeds germinate and grow.
- All seeds should be in conformance with the California State Seed Law of the Department of Agriculture. Each seed bag should be delivered to the site sealed and clearly marked as to species, purity, percent germination, dealer's guarantee, and dates of test. The container should be labeled to clearly reflect the amount of Pure Live Seed (PLS) contained. All legume seed should be pellet inoculated. Inoculant sources should be species specific and should be applied at a rate of 2 lb of inoculant per 100 lb seed.
- Commercial fertilizer should conform to the requirements of the California Food and Agricultural Code, which can be found at http://www.leginfo.ca.gov/.html/fac_table_of_contents.html. Fertilizer should be pelleted or granular form.
- Follow up applications should be made as needed to cover areas of poor coverage or germination/vegetation establishment and to maintain adequate soil protection.
- Avoid over spray onto roads, sidewalks, drainage channels, existing vegetation, etc.
- Additional guidance on the comparison and selection of temporary slope stabilization methods is provided in Appendix F of the Handbook.

Costs

Average cost for installation and maintenance may vary from as low as $1,900 per acre for flat slopes and stable soils, to $4,000 per acre for moderate to steep slopes and/or erosive soils. Cost of seed mixtures vary based on types of required vegetation.

BMP	Installed Cost per Acre
Hydraulic Seed	$1,900-$4,000

Source: Caltrans Soil Stabilization BMP Research for Erosion and Sediment Controls, July 2007

Inspection and Maintenance

- BMPs must be inspected in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- Areas where erosion is evident should be repaired and BMPs re-applied as soon as possible. Care should be exercised to minimize the damage to protected areas while making repairs, as any area damaged will require re-application of BMPs.
- Where seeds fail to germinate, or they germinate and die, the area must be re-seeded, fertilized, and mulched within the planting season, using not less than half the original application rates.
- Irrigation systems, if applicable, should be inspected daily while in use to identify system malfunctions and line breaks. When line breaks are detected, the system must be shut down immediately and breaks repaired before the system is put back into operation.
- Irrigation systems should be inspected for complete coverage and adjusted as needed to maintain complete coverage.

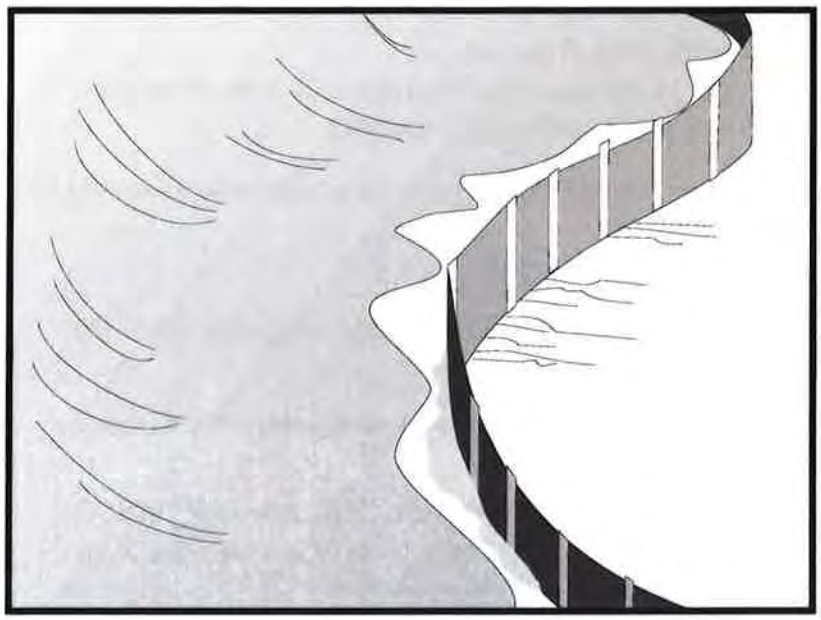
References

Soil Stabilization BMP Research for Erosion and Sediment Controls: Cost Survey Technical Memorandum, State of California Department of Transportation (Caltrans), July 2007.

Stormwater Quality Handbooks Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), March 2003.

Guidance Document: Soil Stabilization for Temporary Slopes, State of California Department of Transportation (Caltrans), November 1999.

Silt Fence SE-1



Categories

EC	Erosion Control	
SE	Sediment Control	☑
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Legend:

☑ **Primary Category**

☒ **Secondary Category**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

SE-5 Fiber Rolls

SE-6 Gravel Bag Berm

SE-8 Sandbag Barrier

SE-10 Storm Drain Inlet Protection

SE-14 Biofilter Bags

Description and Purpose

A silt fence is made of a woven geotextile that has been entrenched, attached to supporting poles, and sometimes backed by a plastic or wire mesh for support. The silt fence detains sediment-laden water, promoting sedimentation behind the fence.

Suitable Applications

Silt fences are suitable for perimeter control, placed below areas where sheet flows discharge from the site. They could also be used as interior controls below disturbed areas where runoff may occur in the form of sheet and rill erosion and around inlets within disturbed areas (SE-10). Silt fences are generally ineffective in locations where the flow is concentrated and are only applicable for sheet or overland flows. Silt fences are most effective when used in combination with erosion controls. Suitable applications include:

- Along the perimeter of a project.
- Below the toe or down slope of exposed and erodible slopes.
- Along streams and channels.
- Around temporary spoil areas and stockpiles.
- Around inlets.
- Below other small cleared areas.

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Limitations

- Do not use in streams, channels, drain inlets, or anywhere flow is concentrated.
- Do not use in locations where ponded water may cause a flooding hazard. Runoff typically ponds temporarily on the upstream side of silt fence.
- Do not use silt fence to divert water flows or place across any contour line. Fences not constructed on a level contour, or fences used to divert flow will concentrate flows resulting in additional erosion and possibly overtopping or failure of the silt fence.
- Improperly installed fences are subject to failure from undercutting, overtopping, or collapsing.
- Not effective unless trenched and keyed in.
- Not intended for use as mid-slope protection on slopes greater than 4:1 (H:V).
- Do not use on slopes subject to creeping, slumping, or landslides.

Implementation

General

A silt fence is a temporary sediment barrier consisting of woven geotextile stretched across and attached to supporting posts, trenched-in, and, depending upon the strength of fabric used, supported with plastic or wire mesh fence. Silt fences trap sediment by intercepting and detaining small amounts of sediment-laden runoff from disturbed areas in order to promote sedimentation behind the fence.

The following layout and installation guidance can improve performance and should be followed:

- Use principally in areas where sheet flow occurs.
- Install along a level contour, so water does not pond more than 1.5 ft at any point along the silt fence.
- The maximum length of slope draining to any point along the silt fence should be 200 ft or less.
- The maximum slope perpendicular to the fence line should be 1:1.
- Provide sufficient room for runoff to pond behind the fence and to allow sediment removal equipment to pass between the silt fence and toes of slopes or other obstructions. About 1200 ft^2 of ponding area should be provided for every acre draining to the fence.
- Turn the ends of the filter fence uphill to prevent stormwater from flowing around the fence.
- Leave an undisturbed or stabilized area immediately down slope from the fence where feasible.

- Silt fences should remain in place until the disturbed area is permanently stabilized, after which, the silt fence should be removed and properly disposed.
- Silt fence should be used in combination with erosion source controls up slope in order to provide the most effective sediment control.
- Be aware of local regulations regarding the type and installation requirements of silt fence, which may differ from those presented in this fact sheet.

Design and Layout

The fence should be supported by a plastic or wire mesh if the fabric selected does not have sufficient strength and bursting strength characteristics for the planned application (as recommended by the fabric manufacturer). Woven geotextile material should contain ultraviolet inhibitors and stabilizers to provide a minimum of six months of expected usable construction life at a temperature range of 0 °F to 120 °F.

- Layout in accordance with attached figures.
- For slopes steeper than 2:1 (H:V) and that contain a high number of rocks or large dirt clods that tend to dislodge, it may be necessary to install additional protection immediately adjacent to the bottom of the slope, prior to installing silt fence. Additional protection may be a chain link fence or a cable fence.
- For slopes adjacent to sensitive receiving waters or Environmentally Sensitive Areas (ESAs), silt fence should be used in conjunction with erosion control BMPs.

Standard vs. Heavy Duty Silt Fence

Standard Silt Fence

- Generally applicable in cases where the slope of area draining to the silt fence is 4:1 (H:V) or less.
- Used for shorter durations, typically 5 months or less
- Area draining to fence produces moderate sediment loads.

Heavy Duty Silt Fence

- Use is generally limited to 8 months or less.
- Area draining to fence produces moderate sediment loads.
- Heavy duty silt fence usually has 1 or more of the following characteristics, not possessed by standard silt fence.
  - Fence fabric has higher tensile strength.
  - Fabric is reinforced with wire backing or additional support.
  - Posts are spaced closer than pre-manufactured, standard silt fence products.
  - Posts are metal (steel or aluminum)

Materials

Standard Silt Fence

- Silt fence material should be woven geotextile with a minimum width of 36 in. and a minimum tensile strength of 100 lb force. The fabric should conform to the requirements in ASTM designation D4632 and should have an integral reinforcement layer. The

reinforcement layer should be a polypropylene, or equivalent, net provided by the manufacturer. The permittivity of the fabric should be between 0.1 sec^{-1} and 0.15 sec^{-1} in conformance with the requirements in ASTM designation D4491.

- Wood stakes should be commercial quality lumber of the size and shape shown on the plans. Each stake should be free from decay, splits or cracks longer than the thickness of the stake or other defects that would weaken the stakes and cause the stakes to be structurally unsuitable.

- Staples used to fasten the fence fabric to the stakes should be not less than 1.75 in. long and should be fabricated from 15 gauge or heavier wire. The wire used to fasten the tops of the stakes together when joining two sections of fence should be 9 gauge or heavier wire. Galvanizing of the fastening wire will not be required.

Heavy-Duty Silt Fence

- Some silt fence has a wire backing to provide additional support, and there are products that may use prefabricated plastic holders for the silt fence and use metal posts or bar reinforcement instead of wood stakes. If bar reinforcement is used in lieu of wood stakes, use number four or greater bar. Provide end protection for any exposed bar reinforcement for health and safety purposes.

Installation Guidelines – Traditional Method

Silt fences are to be constructed on a level contour. Sufficient area should exist behind the fence for ponding to occur without flooding or overtopping the fence.

- A trench should be excavated approximately 6 in. wide and 6 in. deep along the line of the proposed silt fence (trenches should not be excavated wider or deeper than necessary for proper silt fence installation).

- Bottom of the silt fence should be keyed-in a minimum of 12 in.

- Posts should be spaced a maximum of 6 ft apart and driven securely into the ground a minimum of 18 in. or 12 in. below the bottom of the trench.

- When standard strength geotextile is used, a plastic or wire mesh support fence should be fastened securely to the upslope side of posts using heavy–duty wire staples at least 1 in. long. The mesh should extend into the trench.

- When extra-strength geotextile and closer post spacing are used, the mesh support fence may be eliminated.

- Woven geotextile should be purchased in a long roll, then cut to the length of the barrier. When joints are necessary, geotextile should be spliced together only at a support post, with a minimum 6 in. overlap and both ends securely fastened to the post.

- The trench should be backfilled with native material and compacted.

- Construct silt fences with a setback of at least 3 ft from the toe of a slope. Where, due to specific site conditions, a 3 ft setback is not available, the silt fence may be constructed at the

toe of the slope, but should be constructed as far from the toe of the slope as practicable. Silt fences close to the toe of the slope will be less effective and more difficult to maintain.

- Construct the length of each reach so that the change in base elevation along the reach does not exceed 1/3 the height of the barrier; in no case should the reach exceed 500 ft.
- Cross barriers should be a minimum of $^1/_3$ and a maximum of ½ the height of the linear barrier.
- See typical installation details at the end of this fact sheet.

Installation Guidelines - Static Slicing Method

- Static Slicing is defined as insertion of a narrow blade pulled behind a tractor, similar to a plow blade, at least 10 inches into the soil while at the same time pulling silt geotextile fabric into the ground through the opening created by the blade to the depth of the blade. Once the gerotextile is installed, the soil is compacted using tractor tires.
- This method will not work with pre-fabricated, wire backed silt fence.
- Benefits:
    - Ease of installation (most often done with a 2 person crew). In addition, installation using static slicing has been found to be more efficient on slopes, in rocky soils, and in saturated soils.
    - Minimal soil disturbance.
    - Greater level of compaction along fence, leading to higher performance (i.e. greater sediment retention).
    - Uniform installation.
    - Less susceptible to undercutting/undermining.

Costs

- It should be noted that costs vary greatly across regions due to available supplies and labor costs.
- **Average annual cost for installation using the traditional silt fence installation method (assumes 6 month useful life) is $7 per linear foot based on vendor research. Range of cost is $3.50 - $9.10 per linear foot.**
- In tests, the slicing method required 0.33 man hours per 100 linear feet, while the trenched based systems required as much as 1.01 man hours per linear foot.

Inspection and Maintenance

- BMPs must be inspected in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- Repair undercut silt fences.

- Repair or replace split, torn, slumping, or weathered fabric. The lifespan of silt fence fabric is generally 5 to 8 months.
- Silt fences that are damaged and become unsuitable for the intended purpose should be removed from the site of work, disposed, and replaced with new silt fence barriers.
- Sediment that accumulates in the BMP should be periodically removed in order to maintain BMP effectiveness. Sediment should be removed when the sediment accumulation reaches one-third of the barrier height.
- Silt fences should be left in place until the upstream area is permanently stabilized. Until then, the silt fence should be inspected and maintained regularly.
- Remove silt fence when upgradient areas are stabilized. Fill and compact post holes and anchor trench, remove sediment accumulation, grade fence alignment to blend with adjacent ground, and stabilize disturbed area.

References

Manual of Standards of Erosion and Sediment Control Measures, Association of Bay Area Governments, May 1995.

National Management Measures to Control Nonpoint Source Pollution from Urban Areas, United States Environmental Protection Agency, 2002.

Proposed Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters, Work Group-Working Paper, USEPA, April 1992.

Sedimentation and Erosion Control Practices, and Inventory of Current Practices (Draft), UESPA, 1990.

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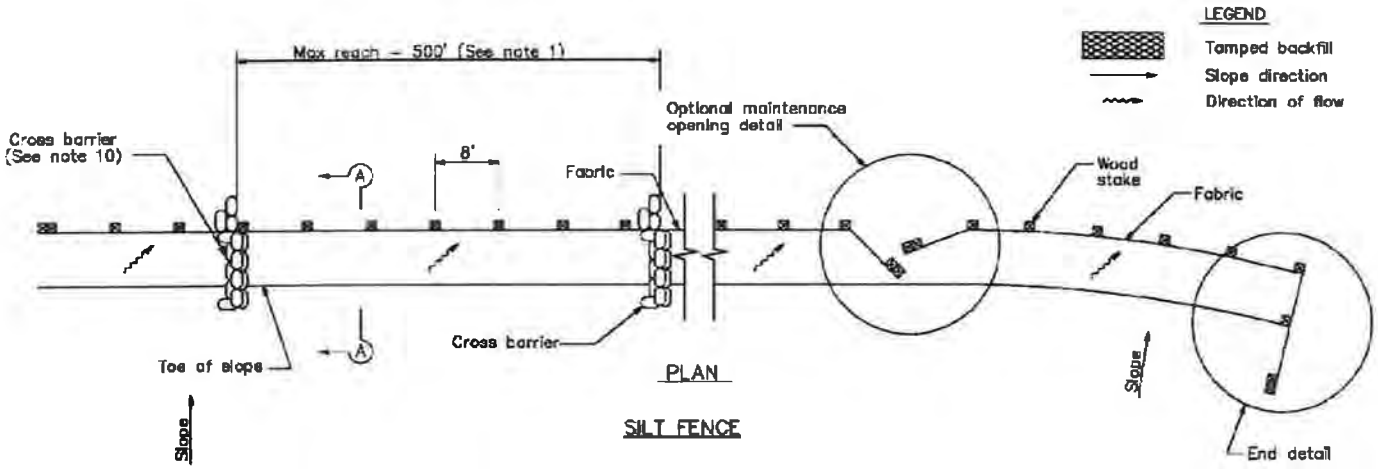
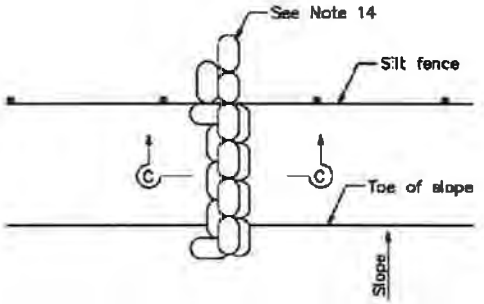


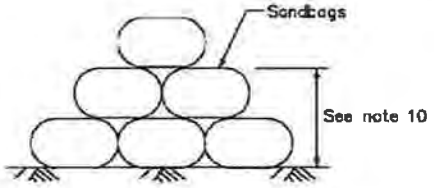
SILT FENCE

NOTES

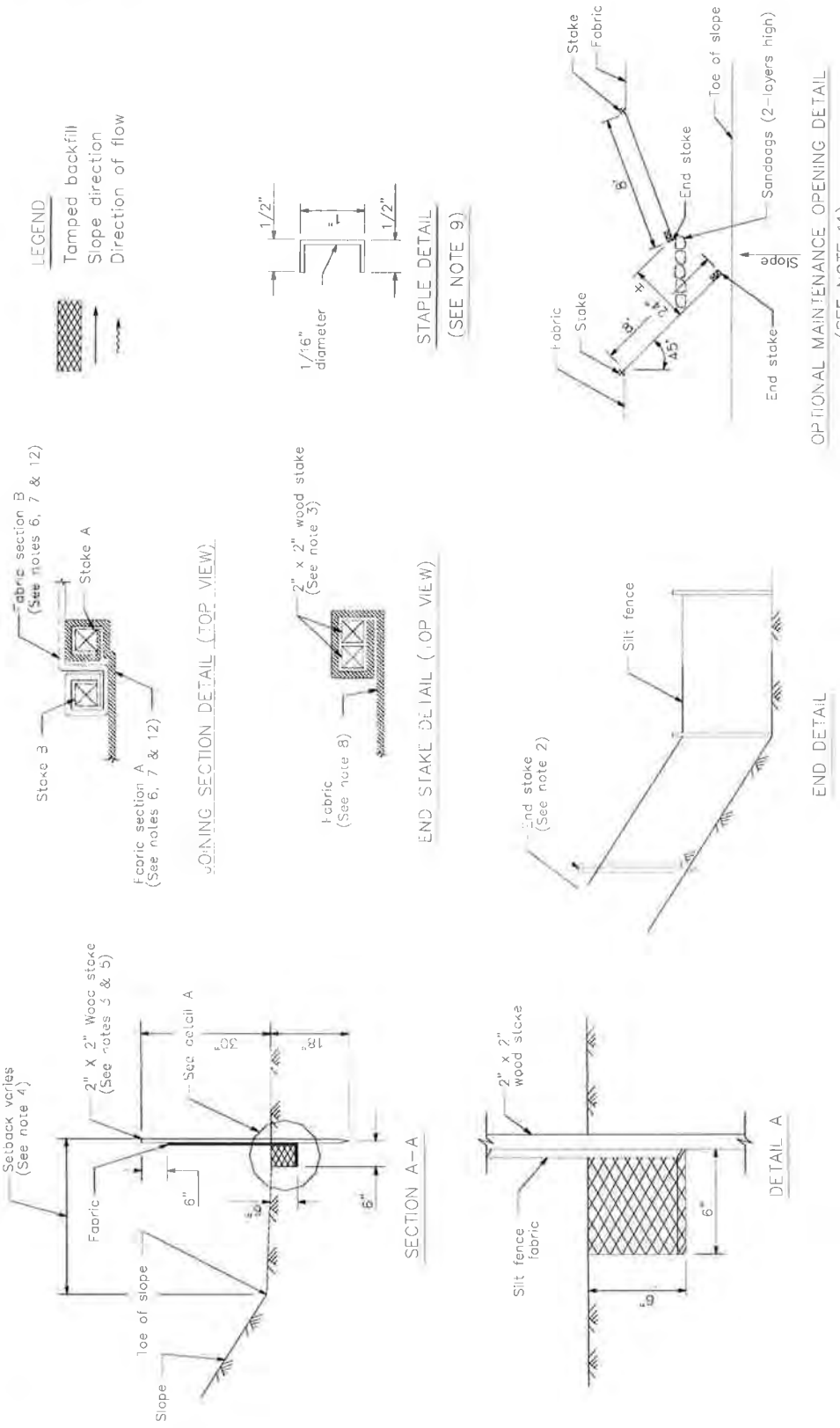
1. Construct the length of each reach so that the change in base elevation along the reach does not exceed 1/3 the height of the linear barrier, in no case shall the reach length exceed 500'.
2. The last 8'–0" of fence shall be turned up slope.
3. Stake dimensions are nominal.
4. Dimension may vary to fit field condition.
5. Stakes shall be spaced at 8'–0" maximum and shall be positioned on downstream side of fence.
6. Stakes to overlap and fence fabric to fold around each stake one full turn. Secure fabric to stake with 4 staples.
7. Stakes shall be driven tightly together to prevent potential flow–through of sediment at joint. The tops of the stakes shall be secured with wire.
8. For end stake, fence fabric shall be folded around two stakes one full turn and secured with 4 staples.
9. Minimum 4 staples per stake. Dimensions shown are typical.
10. Cross barriers shall be a minimum of 1/3 and a maximum of 1/2 the height of the linear barrier.
11. Maintenance openings shall be constructed in a manner to ensure sediment remains behind silt fence.
12. Joining sections shall not be placed at sump locations.
13. Sandbag rows and layers shall be offset to eliminate gaps.
14. Add 3–4 bags to cross barrier on downgradient side of silt fence as needed to prevent bypass or undermining and as allowable based on site limits of disturbance.



CROSS BARRIER DETAIL

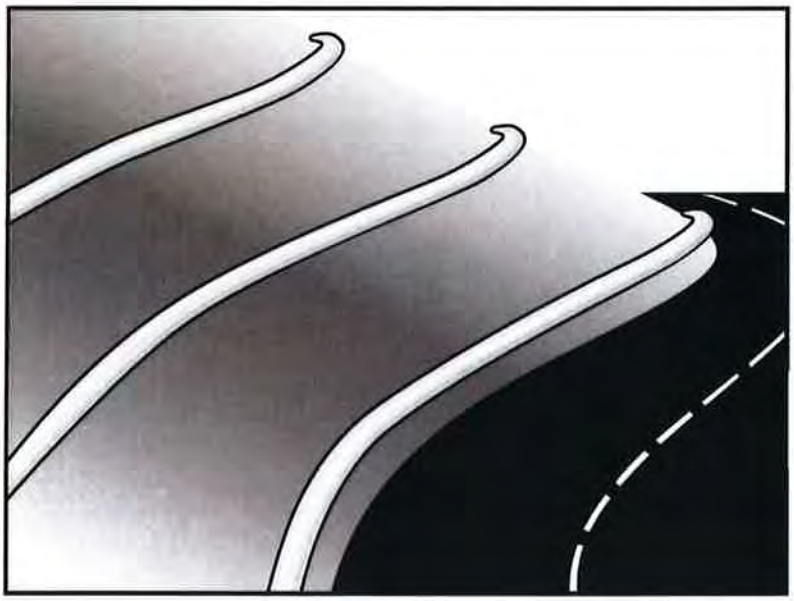


SECTION C–C


LEGEND
Tamped backfill
Slope direction
Direction of flow
1/2"
1/16" diameter
1/2"
STAPLE DETAIL
(SEE NOTE 9)
Stake
Fabric
8'
End stake
Toe of slope
Sandbags (2-layers high)
Slope
Fabric
Stake
8"
24"
45°
End stake
OPTIONAL MAINTENANCE OPENING DETAIL
(SEE NOTE 11)
Fabric section B
(See notes 6, 7 & 12)
Stake A
Stake B
Fabric section A
(See notes 6, 7 & 12)
JOINING SECTION DETAIL (TOP VIEW)
2" x 2" wood stake
(See note 3)
Fabric
(See note 8)
END STAKE DETAIL (TOP VIEW)
Silt fence
End stake
(See note 2)
END DETAIL
Setback varies
(See note 4)
2" X 2" Wood stake
(See notes 3 & 5)
See detail A
Fabric
6"
6"
6"
Toe of slope
Slope
SECTION A-A
2" x 2"
wood stake
Silt fence
fabric
6"
6"
DETAIL A

Fiber Rolls

SE-5



Categories

EC	Erosion Control	☒
SE	Sediment Control	☑
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Category**

☒ **Secondary Category**

Description and Purpose

A fiber roll consists of straw, coir, or other biodegradable materials bound into a tight tubular roll wrapped by netting, which can be photodegradable or natural. Additionally, gravel core fiber rolls are available, which contain an imbedded ballast material such as gravel or sand for additional weight when staking the rolls are not feasible (such as use as inlet protection). When fiber rolls are placed at the toe and on the face of slopes along the contours, they intercept runoff, reduce its flow velocity, release the runoff as sheet flow, and provide removal of sediment from the runoff (through sedimentation). By interrupting the length of a slope, fiber rolls can also reduce sheet and rill erosion until vegetation is established.

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

SE-1 Silt Fence

SE-6 Gravel Bag Berm

SE-8 Sandbag Barrier

SE-14 Biofilter Bags

Suitable Applications

Fiber rolls may be suitable:

- Along the toe, top, face, and at grade breaks of exposed and erodible slopes to shorten slope length and spread runoff as sheet flow.
- At the end of a downward slope where it transitions to a steeper slope.
- Along the perimeter of a project.
- As check dams in unlined ditches with minimal grade.
- Down-slope of exposed soil areas.
- At operational storm drains as a form of inlet protection.

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- Around temporary stockpiles.

Limitations

- Fiber rolls are not effective unless trenched in and staked.
- Not intended for use in high flow situations.
- Difficult to move once saturated.
- If not properly staked and trenched in, fiber rolls could be transported by high flows.
- Fiber rolls have a very limited sediment capture zone.
- Fiber rolls should not be used on slopes subject to creep, slumping, or landslide.
- Rolls typically function for 12-24 months depending upon local conditions.

Implementation

Fiber Roll Materials

- Fiber rolls should be prefabricated.
- Fiber rolls may come manufactured containing polyacrylamide (PAM), a flocculating agent within the roll. Fiber rolls impregnated with PAM provide additional sediment removal capabilities and should be used in areas with fine, clayey or silty soils to provide additional sediment removal capabilities. Monitoring may be required for these installations.
- Fiber rolls are made from weed free rice straw, flax, or a similar agricultural material bound into a tight tubular roll by netting.
- Typical fiber rolls vary in diameter from 9 in. to 20 in. Larger diameter rolls are available as well.

Installation

- Locate fiber rolls on level contours spaced as follows:
  - Slope inclination of 4:1 (H:V) or flatter: Fiber rolls should be placed at a maximum interval of 20 ft.
  - Slope inclination between 4:1 and 2:1 (H:V): Fiber Rolls should be placed at a maximum interval of 15 ft. (a closer spacing is more effective).
  - Slope inclination 2:1 (H:V) or greater: Fiber Rolls should be placed at a maximum interval of 10 ft. (a closer spacing is more effective).
- Prepare the slope before beginning installation.
- Dig small trenches across the slope on the contour. The trench depth should be ¼ to 1/3 of the thickness of the roll, and the width should equal the roll diameter, in order to provide area to backfill the trench.

- It is critical that rolls are installed perpendicular to water movement, and parallel to the slope contour.
- Start building trenches and installing rolls from the bottom of the slope and work up.
- It is recommended that pilot holes be driven through the fiber roll. Use a straight bar to drive holes through the roll and into the soil for the wooden stakes.
- Turn the ends of the fiber roll up slope to prevent runoff from going around the roll.
- Stake fiber rolls into the trench.
  - Drive stakes at the end of each fiber roll and spaced 4 ft maximum on center.
  - Use wood stakes with a nominal classification of 0.75 by 0.75 in. and minimum length of 24 in.
- If more than one fiber roll is placed in a row, the rolls should be overlapped, not abutted.
- See typical fiber roll installation details at the end of this fact sheet.

Removal

- Fiber rolls can be left in place or removed depending on the type of fiber roll and application (temporary vs. permanent installation). Typically, fiber rolls encased with plastic netting are used for a temporary application because the netting does not biodegrade. Fiber rolls used in a permanent application are typically encased with a biodegradeable material and are left in place. Removal of a fiber roll used in a permanent application can result in greater disturbance.
- Temporary installations should only be removed when up gradient areas are stabilized per General Permit requirements, and/or pollutant sources no longer present a hazard. But, they should also be removed before vegetation becomes too mature so that the removal process does not disturb more soil and vegetation than is necessary.

Costs

Material costs for regular fiber rolls range from $20 - $30 per 25 ft roll.

Material costs for PAM impregnated fiber rolls range between 7.00-$9.00 per linear foot, based upon vendor research.

Inspection and Maintenance

- BMPs must be inspected in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- Repair or replace split, torn, unraveling, or slumping fiber rolls.
- If the fiber roll is used as a sediment capture device, or as an erosion control device to maintain sheet flows, sediment that accumulates in the BMP should be periodically removed

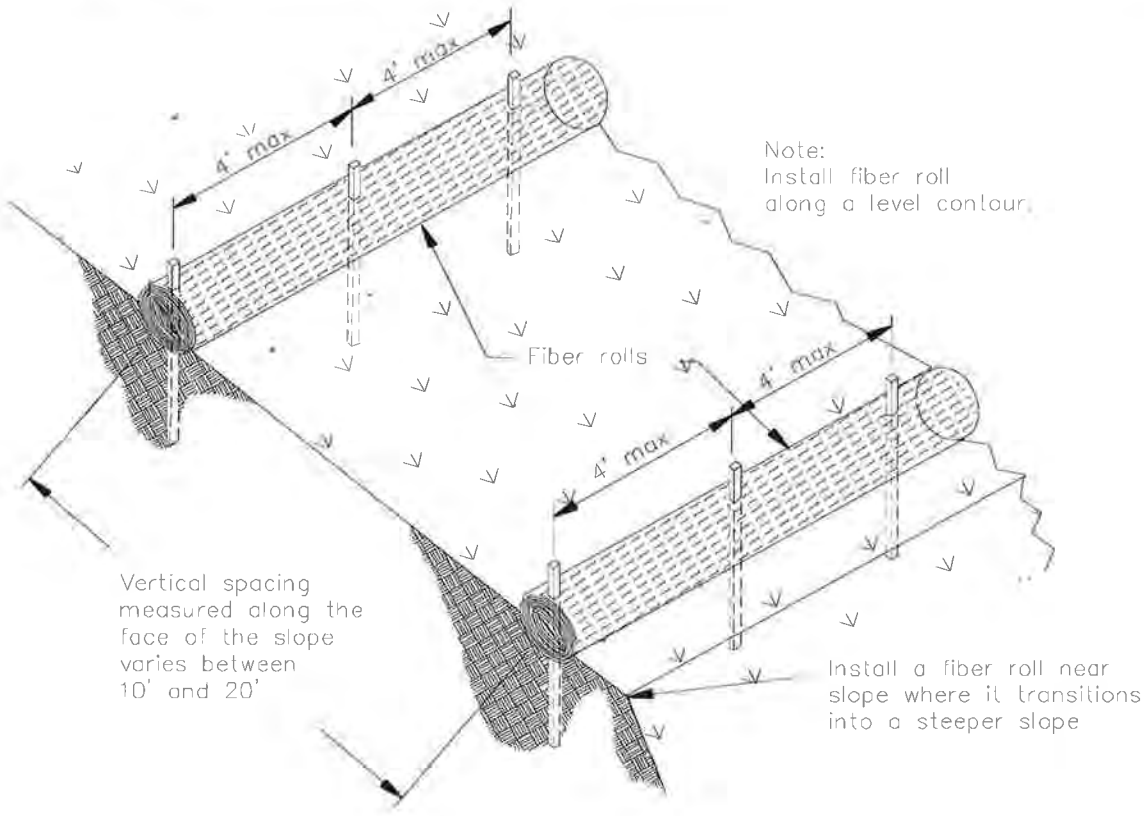
in order to maintain BMP effectiveness. Sediment should be removed when sediment accumulation reaches one-third the designated sediment storage depth.

- If fiber rolls are used for erosion control, such as in a check dam, sediment removal should not be required as long as the system continues to control the grade. Sediment control BMPs will likely be required in conjunction with this type of application.
- Repair any rills or gullies promptly.

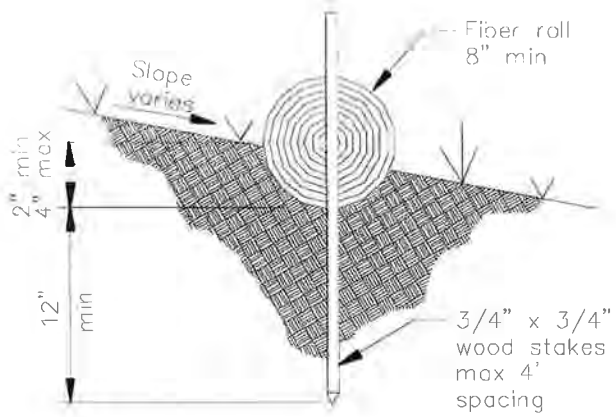
References

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), March 2003.

Erosion and Sediment Control Manual, Oregon Department of Environmental Quality, February 2005.

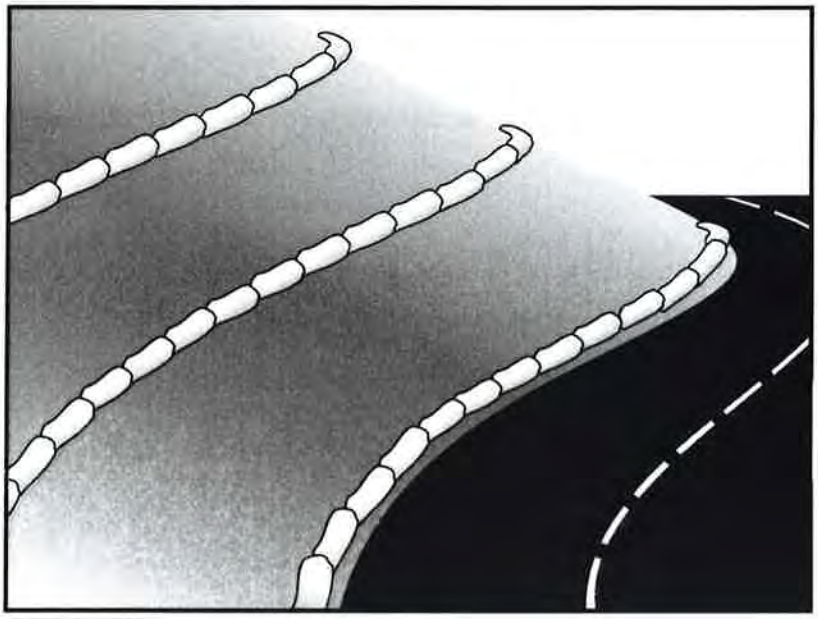


TYPICAL FIBER ROLL INSTALLATION
N.T.S.



ENTRENCHMENT DETAIL
N.T.S.

Gravel Bag Berm SE-6



Description and Purpose

A gravel bag berm is a series of gravel-filled bags placed on a level contour to intercept sheet flows. Gravel bags pond sheet flow runoff, allowing sediment to settle out, and release runoff slowly as sheet flow, preventing erosion.

Suitable Applications

Gravel bag berms may be suitable:

- As a linear sediment control measure:
  - Below the toe of slopes and erodible slopes
  - As sediment traps at culvert/pipe outlets
  - Below other small cleared areas
  - Along the perimeter of a site
  - Down slope of exposed soil areas
  - Around temporary stockpiles and spoil areas
  - Parallel to a roadway to keep sediment off paved areas
  - Along streams and channels
- As a linear erosion control measure:
  - Along the face and at grade breaks of exposed and erodible slopes to shorten slope length and spread runoff as sheet flow.

Categories

EC	Erosion Control	☒
SE	Sediment Control	☑
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Category**

☒ **Secondary Category**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

SE-1 Silt Fence

SE-5 Fiber Roll

SE-8 Sandbag Barrier

SE-14 Biofilter Bags

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- At the top of slopes to divert runoff away from disturbed slopes.
- As chevrons (small check dams) across mildly sloped construction roads. For use check dam use in channels, see SE-4, Check Dams.

Limitations

- Gravel berms may be difficult to remove.
- Removal problems limit their usefulness in landscaped areas.
- Gravel bag berm may not be appropriate for drainage areas greater than 5 acres.
- Runoff will pond upstream of the berm, possibly causing flooding if sufficient space does not exist.
- Degraded gravel bags may rupture when removed, spilling contents.
- Installation can be labor intensive.
- Durability of gravel bags is somewhat limited and bags may need to be replaced when installation is required for longer than 6 months.
- Easily damaged by construction equipment.
- When used to detain concentrated flows, maintenance requirements increase.

Implementation

General

A gravel bag berm consists of a row of open graded gravel-filled bags placed on a level contour. When appropriately placed, a gravel bag berm intercepts and slows sheet flow runoff, causing temporary ponding. The temporary ponding allows sediment to settle. The open graded gravel in the bags is porous, which allows the ponded runoff to flow slowly through the bags, releasing the runoff as sheet flows. Gravel bag berms also interrupt the slope length and thereby reduce erosion by reducing the tendency of sheet flows to concentrate into rivulets, which erode rills, and ultimately gullies, into disturbed, sloped soils. Gravel bag berms are similar to sand bag barriers, but are more porous. Generally, gravel bag berms should be used in conjunction with temporary soil stabilization controls up slope to provide effective erosion and sediment control.

Design and Layout

- Locate gravel bag berms on level contours.
- When used for slope interruption, the following slope/sheet flow length combinations apply:
  - Slope inclination of 4:1 (H:V) or flatter: Gravel bags should be placed at a maximum interval of 20 ft, with the first row near the slope toe.
  - Slope inclination between 4:1 and 2:1 (H:V): Gravel bags should be placed at a maximum interval of 15 ft. (a closer spacing is more effective), with the first row near the slope toe.

Slope inclination 2:1 (H:V) or greater: Gravel bags should be placed at a maximum interval of 10 ft. (a closer spacing is more effective), with the first row near the slope toe.

- Turn the ends of the gravel bag barriers up slope to prevent runoff from going around the berm.
- Allow sufficient space up slope from the gravel bag berm to allow ponding, and to provide room for sediment storage.
- For installation near the toe of the slope, gravel bag barriers should be set back from the slope toe to facilitate cleaning. Where specific site conditions do not allow for a set-back, the gravel bag barrier may be constructed on the toe of the slope. To prevent flows behind the barrier, bags can be placed perpendicular to a berm to serve as cross barriers.
- Drainage area should not exceed 5 acres.
- In Non-Traffic Areas:
  - Height = 18 in. maximum
  - Top width = 24 in. minimum for three or more layer construction
  - Top width = 12 in. minimum for one or two layer construction
  - Side slopes = 2:1 (H:V) or flatter
- In Construction Traffic Areas:
  - Height = 12 in. maximum
  - Top width = 24 in. minimum for three or more layer construction.
  - Top width = 12 in. minimum for one or two layer construction.
  - Side slopes = 2:1 (H:V) or flatter.
- Butt ends of bags tightly.
- On multiple row, or multiple layer construction, overlap butt joints of adjacent row and row beneath.
- Use a pyramid approach when stacking bags.

Materials

- ***Bag Material:*** Bags should be woven polypropylene, polyethylene or polyamide fabric or burlap, minimum unit weight of 4 ounces/yd^2, Mullen burst strength exceeding 300 lb/in^2 in conformance with the requirements in ASTM designation D3786, and ultraviolet stability exceeding 70% in conformance with the requirements in ASTM designation D4355.

- ***Bag Size:*** Each gravel-filled bag should have a length of 18 in., width of 12 in., thickness of 3 in., and mass of approximately 33 lbs. Bag dimensions are nominal, and may vary based on locally available materials.

- ***Fill Material:*** Fill material should be 0.5 to 1 in. crushed rock, clean and free from clay, organic matter, and other deleterious material, or other suitable open graded, non-cohesive, porous gravel.

Costs

Material costs for gravel bags are average and are dependent upon material availability. $2.50-3.00 per filled gravel bag is standard based upon vendor research.

Inspection and Maintenance

- BMPs must be inspected in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.

- Gravel bags exposed to sunlight will need to be replaced every two to three months due to degrading of the bags.

- Reshape or replace gravel bags as needed.

- Repair washouts or other damage as needed.

- Sediment that accumulates in the BMP should be periodically removed in order to maintain BMP effectiveness. Sediment should be removed when the sediment accumulation reaches one-third of the barrier height.

- Remove gravel bag berms when no longer needed and recycle gravel fill whenever possible and properly dispose of bag material. Remove sediment accumulation and clean, re-grade, and stabilize the area.

References

Handbook of Steel Drainage and Highway Construction, American Iron and Steel Institute, 1983.

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), March 2003.

Stormwater Pollution Plan Handbook, First Edition, State of California, Department of Transportation Division of New Technology, Materials and Research, October 1992.

Erosion and Sediment Control Manual, Oregon Department of Environmental Quality, February 2005.

Street Sweeping and Vacuuming SE-7

Categories		
EC	Erosion Control	
SE	Sediment Control	☒
TC	Tracking Control	☑
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:
☑ **Primary Objective**
☒ **Secondary Objective**

Targeted Constituents	
Sediment	☑
Nutrients	
Trash	☑
Metals	
Bacteria	
Oil and Grease	☑
Organics	

Potential Alternatives

None

Description and Purpose

Street sweeping and vacuuming includes use of self-propelled and walk-behind equipment to remove sediment from streets and roadways, and to clean paved surfaces in preparation for final paving. Sweeping and vacuuming prevents sediment from the project site from entering storm drains or receiving waters.

Suitable Applications

Sweeping and vacuuming are suitable anywhere sediment is tracked from the project site onto public or private paved streets and roads, typically at points of egress. Sweeping and vacuuming are also applicable during preparation of paved surfaces for final paving.

Limitations

Sweeping and vacuuming may not be effective when sediment is wet or when tracked soil is caked (caked soil may need to be scraped loose).

Implementation

- Controlling the number of points where vehicles can leave the site will allow sweeping and vacuuming efforts to be focused, and perhaps save money.
- Inspect potential sediment tracking locations daily.
- Visible sediment tracking should be swept or vacuumed on a daily basis.
- Do not use kick brooms or sweeper attachments. These tend to spread the dirt rather than remove it.

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- If not mixed with debris or trash, consider incorporating the removed sediment back into the project

Costs

Rental rates for self-propelled sweepers vary depending on hopper size and duration of rental. Expect rental rates from $58/hour (3 yd^3 hopper) to $88/hour (9 yd^3 hopper), plus operator costs. Hourly production rates vary with the amount of area to be swept and amount of sediment. Match the hopper size to the area and expect sediment load to minimize time spent dumping.

Inspection and Maintenance

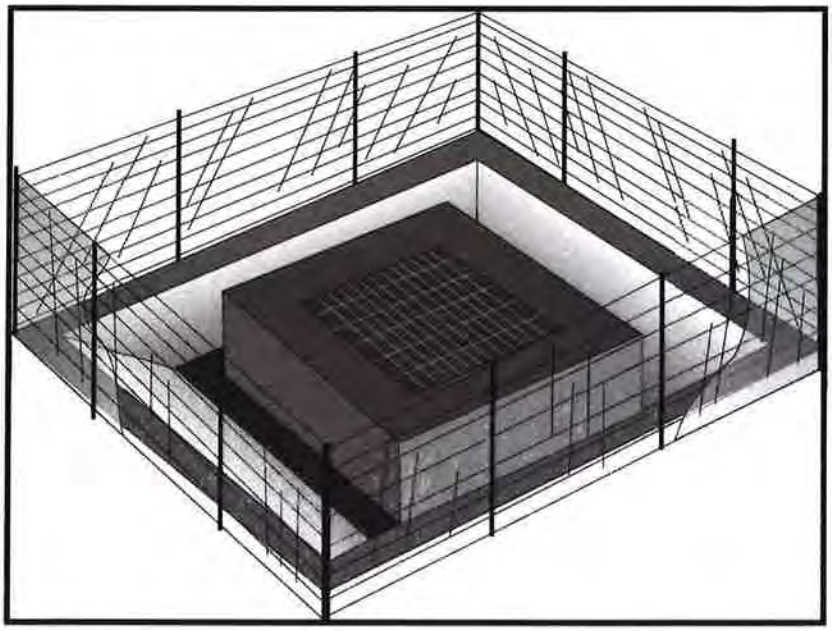
- Inspect BMPs prior to forecast rain, daily during extended rain events, after rain events, weekly during the rainy season, and at two-week intervals during the non-rainy season.
- When actively in use, points of ingress and egress must be inspected daily.
- When tracked or spilled sediment is observed outside the construction limits, it must be removed at least daily. More frequent removal, even continuous removal, may be required in some jurisdictions.
- Be careful not to sweep up any unknown substance or any object that may be potentially hazardous.
- Adjust brooms frequently; maximize efficiency of sweeping operations.
- After sweeping is finished, properly dispose of sweeper wastes at an approved dumpsite.

References

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Labor Surcharge and Equipment Rental Rates, State of California Department of Transportation (Caltrans), April 1, 2002 – March 31, 2003.

Storm Drain Inlet Protection SE-10



Categories

EC	Erosion Control	
SE	Sediment Control	☑
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Category**

☒ **Secondary Category**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	☒
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

SE-1 Silt Fence

SE-5 Fiber Rolls

SE-6 Gravel Bag Berm

SE-8 Sandbag Barrier

SE-14 Biofilter Bags

Description and Purpose

Storm drain inlet protection consists of a sediment filter or an impounding area in, around or upstream of a storm drain, drop inlet, or curb inlet. Storm drain inlet protection measures temporarily pond runoff before it enters the storm drain, allowing sediment to settle. Some filter configurations also remove sediment by filtering, but usually the ponding action results in the greatest sediment reduction. Temporary geotextile storm drain inserts attach underneath storm drain grates to capture and filter storm water.

Suitable Applications

Every storm drain inlet receiving runoff from unstabilized or otherwise active work areas should be protected. Inlet protection should be used in conjunction with other erosion and sediment controls to prevent sediment-laden stormwater and non-stormwater discharges from entering the storm drain system.

Limitations

- Drainage area should not exceed 1 acre.
- In general straw bales should not be used as inlet protection.
- Requires an adequate area for water to pond without encroaching into portions of the roadway subject to traffic.

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- Sediment removal may be inadequate to prevent sediment discharges in high flow conditions or if runoff is heavily sediment laden. If high flow conditions are expected, use other onsite sediment trapping techniques in conjunction with inlet protection.
- Frequent maintenance is required.
- Limit drainage area to 1 acre maximum. For drainage areas larger than 1 acre, runoff should be routed to a sediment-trapping device designed for larger flows. See BMPs SE-2, Sediment Basin, and SE-3, Sediment Traps.
- Excavated drop inlet sediment traps are appropriate where relatively heavy flows are expected, and overflow capability is needed.

Implementation

General

Inlet control measures presented in this handbook should not be used for inlets draining more than one acre. Runoff from larger disturbed areas should be first routed through SE-2, Sediment Basin or SE-3, Sediment Trap and/or used in conjunction with other drainage control, erosion control, and sediment control BMPs to protect the site. Different types of inlet protection are appropriate for different applications depending on site conditions and the type of inlet. Alternative methods are available in addition to the methods described/shown herein such as prefabricated inlet insert devices, or gutter protection devices.

Design and Layout

Identify existing and planned storm drain inlets that have the potential to receive sediment-laden surface runoff. Determine if storm drain inlet protection is needed and which method to use.

- The key to successful and safe use of storm drain inlet protection devices is to know where runoff that is directed toward the inlet to be protected will pond or be diverted as a result of installing the protection device.
  - Determine the acceptable location and extent of ponding in the vicinity of the drain inlet. The acceptable location and extent of ponding will influence the type and design of the storm drain inlet protection device.
  - Determine the extent of potential runoff diversion caused by the storm drain inlet protection device. Runoff ponded by inlet protection devices may flow around the device and towards the next downstream inlet. In some cases, this is acceptable; in other cases, serious erosion or downstream property damage can be caused by these diversions. The possibility of runoff diversions will influence whether or not storm drain inlet protection is suitable; and, if suitable, the type and design of the device.
- The location and extent of ponding, and the extent of diversion, can usually be controlled through appropriate placement of the inlet protection device. In some cases, moving the inlet protection device a short distance upstream of the actual inlet can provide more efficient sediment control, limit ponding to desired areas, and prevent or control diversions.

Storm Drain Inlet Protection SE-10

- Six types of inlet protection are presented below. However, it is recognized that other effective methods and proprietary devices exist and may be selected.
  - Silt Fence: Appropriate for drainage basins with less than a 5% slope, sheet flows, and flows under 0.5 cfs.
  - Excavated Drop Inlet Sediment Trap: An excavated area around the inlet to trap sediment (SE-3).
  - Gravel bag barrier: Used to create a small sediment trap upstream of inlets on sloped, paved streets. Appropriate for sheet flow or when concentrated flow may exceed 0.5 cfs, and where overtopping is required to prevent flooding.
  - Block and Gravel Filter: Appropriate for flows greater than 0.5 cfs.
  - Temporary Geotextile Storm drain Inserts: Different products provide different features. Refer to manufacturer details for targeted pollutants and additional features.
  - Biofilter Bag Barrier: Used to create a small retention area upstream of inlets and can be located on pavement or soil. Biofilter bags slowly filter runoff allowing sediment to settle out. Appropriate for flows under 0.5 cfs.
- Select the appropriate type of inlet protection and design as referred to or as described in this fact sheet.
- Provide area around the inlet for water to pond without flooding structures and property.
- Grates and spaces around all inlets should be sealed to prevent seepage of sediment-laden water.
- Excavate sediment sumps (where needed) 1 to 2 ft with 2:1 side slopes around the inlet.

Installation

- ***DI Protection Type 1 - Silt Fence*** - Similar to constructing a silt fence; see BMP SE-1, Silt Fence. Do not place fabric underneath the inlet grate since the collected sediment may fall into the drain inlet when the fabric is removed or replaced and water flow through the grate will be blocked resulting in flooding. See typical Type 1 installation details at the end of this fact sheet.
  1. Excavate a trench approximately 6 in. wide and 6 in. deep along the line of the silt fence inlet protection device.
  2. Place 2 in. by 2 in. wooden stakes around the perimeter of the inlet a maximum of 3 ft apart and drive them at least 18 in. into the ground or 12 in. below the bottom of the trench. The stakes should be at least 48 in.
  3. Lay fabric along bottom of trench, up side of trench, and then up stakes. See SE-1, Silt Fence, for details. The maximum silt fence height around the inlet is 24 in.
  4. Staple the filter fabric (for materials and specifications, see SE-1, Silt Fence) to wooden stakes. Use heavy-duty wire staples at least 1 in. in length.

5. Backfill the trench with gravel or compacted earth all the way around.

- ***DI Protection Type 2 - Excavated Drop Inlet Sediment Trap*** - Install filter fabric fence in accordance with DI Protection Type 1. Size excavated trap to provide a minimum storage capacity calculated at the rate 67 yd^3/acre of drainage area. See typical Type 2 installation details at the end of this fact sheet.

- ***DI Protection Type 3 - Gravel bag*** - Flow from a severe storm should not overtop the curb. In areas of high clay and silts, use filter fabric and gravel as additional filter media. Construct gravel bags in accordance with SE-6, Gravel Bag Berm. Gravel bags should be used due to their high permeability. See typical Type 3 installation details at the end of this fact sheet.

  1. Construct on gently sloping street.
  2. Leave room upstream of barrier for water to pond and sediment to settle.
  3. Place several layers of gravel bags – overlapping the bags and packing them tightly together.
  4. Leave gap of one bag on the top row to serve as a spillway. Flow from a severe storm (e.g., 10 year storm) should not overtop the curb.

- ***DI Protection Type 4 – Block and Gravel Filter*** - Block and gravel filters are suitable for curb inlets commonly used in residential, commercial, and industrial construction. See typical Type 4 installation details at the end of this fact sheet.

  1. Place hardware cloth or comparable wire mesh with 0.5 in. openings over the drop inlet so that the wire extends a minimum of 1 ft beyond each side of the inlet structure. If more than one strip is necessary, overlap the strips. Place woven geotextile over the wire mesh.
  2. Place concrete blocks lengthwise on their sides in a single row around the perimeter of the inlet, so that the open ends face outward, not upward. The ends of adjacent blocks should abut. The height of the barrier can be varied, depending on design needs, by stacking combinations of blocks that are 4 in., 8 in., and 12 in. wide. The row of blocks **should be at least 12 in. but no greater than 24 in. high.**
  3. Place wire mesh over the outside vertical face (open end) of the concrete blocks to prevent stone from being washed through the blocks. Use hardware cloth or comparable wire mesh with 0.5 in. opening.
  4. Pile washed stone against the wire mesh to the top of the blocks. Use 0.75 to 3 in.

- ***DI Protection Type 5 – Temporary Geotextile Insert (proprietary)*** – Many types of temporary inserts are available. Most inserts fit underneath the grate of a drop inlet or inside of a curb inlet and are fastened to the outside of the grate or curb. These inserts are removable and many can be cleaned and reused. Installation of these inserts differs between manufacturers. Please refer to manufacturer instruction for installation of proprietary devices.

- ***DI Protection Type 6 - Biofilter bags*** – Biofilter bags may be used as a substitute for gravel bags in low-flow situations. Biofilter bags should conform to specifications detailed in SE-14, Biofilter bags.

  1. Construct in a gently sloping area.
  2. Biofilter bags should be placed around inlets to intercept runoff flows.
  3. All bag joints should overlap by 6 in.
  4. Leave room upstream for water to pond and for sediment to settle out.
  5. Stake bags to the ground as described in the following detail. Stakes may be omitted if bags are placed on a paved surface.

Costs

- Average annual cost for installation and maintenance of DI Type 1-4 and 6 (one year useful life) is $200 per inlet.
- Temporary geotextile inserts are proprietary and cost varies by region. These inserts can often be reused and may have greater than 1 year of use if maintained and kept undamaged. Average cost per insert ranges from $50-75 plus installation, but costs can exceed $100. This cost does not include maintenance.

Inspection and Maintenance

- BMPs must be inspected in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- Silt Fences. If the fabric becomes clogged, torn, or degrades, it should be replaced. Make sure the stakes are securely driven in the ground and are in good shape (i.e., not bent, cracked, or splintered, and are reasonably perpendicular to the ground). Replace damaged stakes. At a minimum, remove the sediment behind the fabric fence when accumulation reaches one-third the height of the fence or barrier height.
- Gravel Filters. If the gravel becomes clogged with sediment, it should be carefully removed from the inlet and either cleaned or replaced. Since cleaning gravel at a construction site may be difficult, consider using the sediment-laden stone as fill material and put fresh stone around the inlet. Inspect bags for holes, gashes, and snags, and replace bags as needed. Check gravel bags for proper arrangement and displacement.
- Sediment that accumulates in the BMP should be periodically removed in order to maintain BMP effectiveness. Sediment should be removed when the sediment accumulation reaches one-third of the barrier height.
- Inspect and maintain temporary geotextile insert devices according to manufacturer's specifications.
- Remove storm drain inlet protection once the drainage area is stabilized.

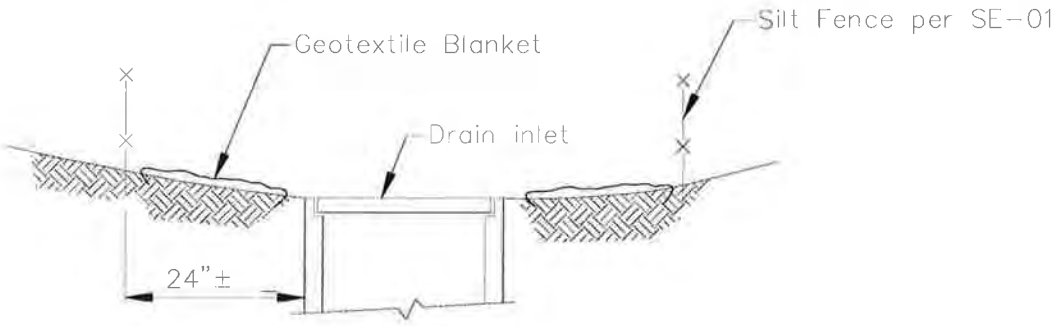
- Clean and regrade area around the inlet and clean the inside of the storm drain inlet, as it should be free of sediment and debris at the time of final inspection.

References

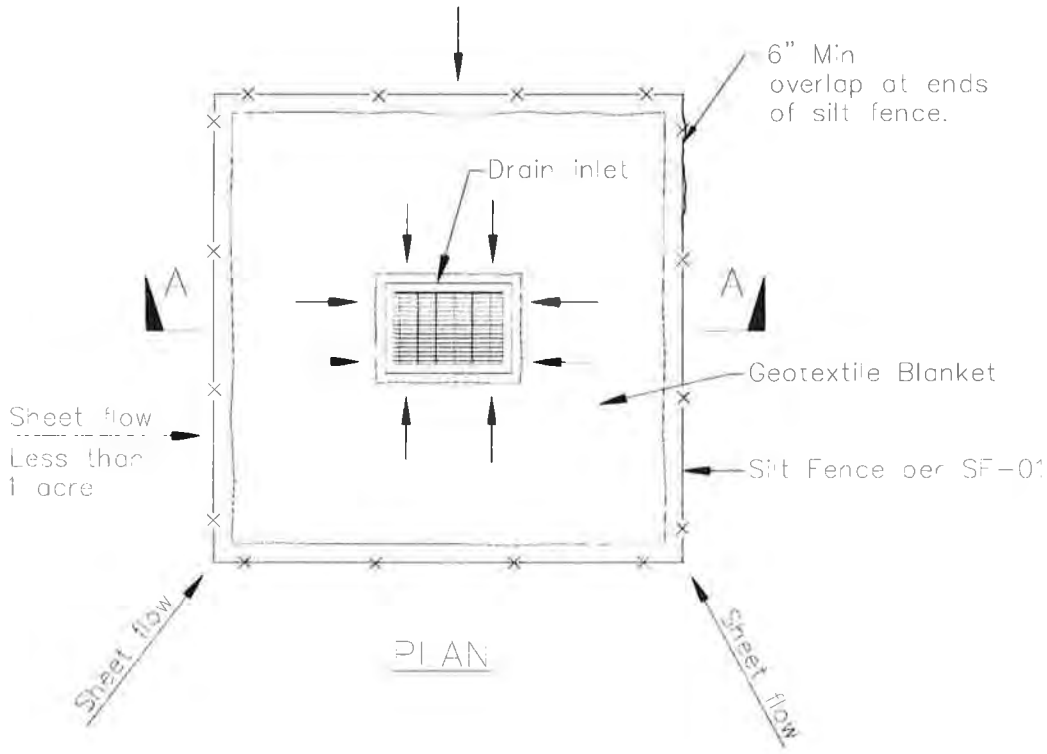
Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), March 2003.

Stormwater Management Manual for The Puget Sound Basin, Washington State Department of Ecology, Public Review Draft, 1991.

Erosion and Sediment Control Manual, Oregon Department of Environmental Quality, February 2005.



SECTION A--A

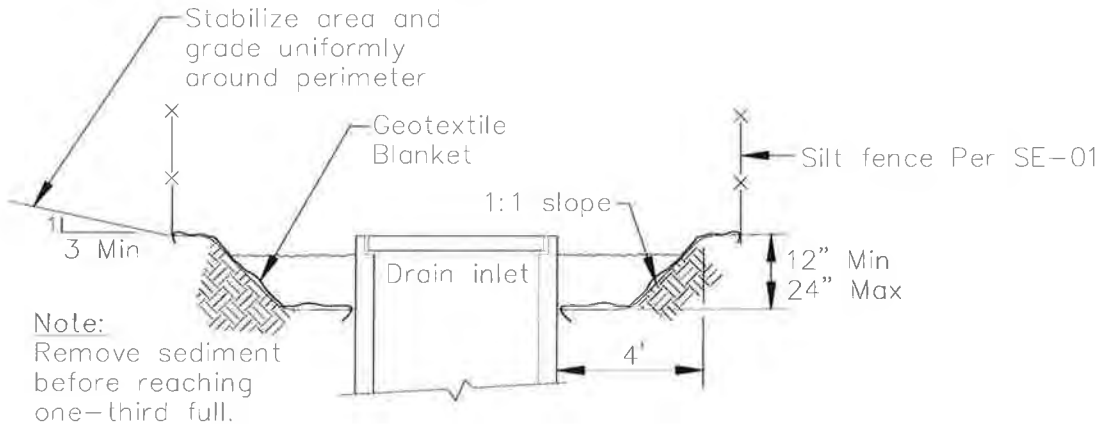


PLAN

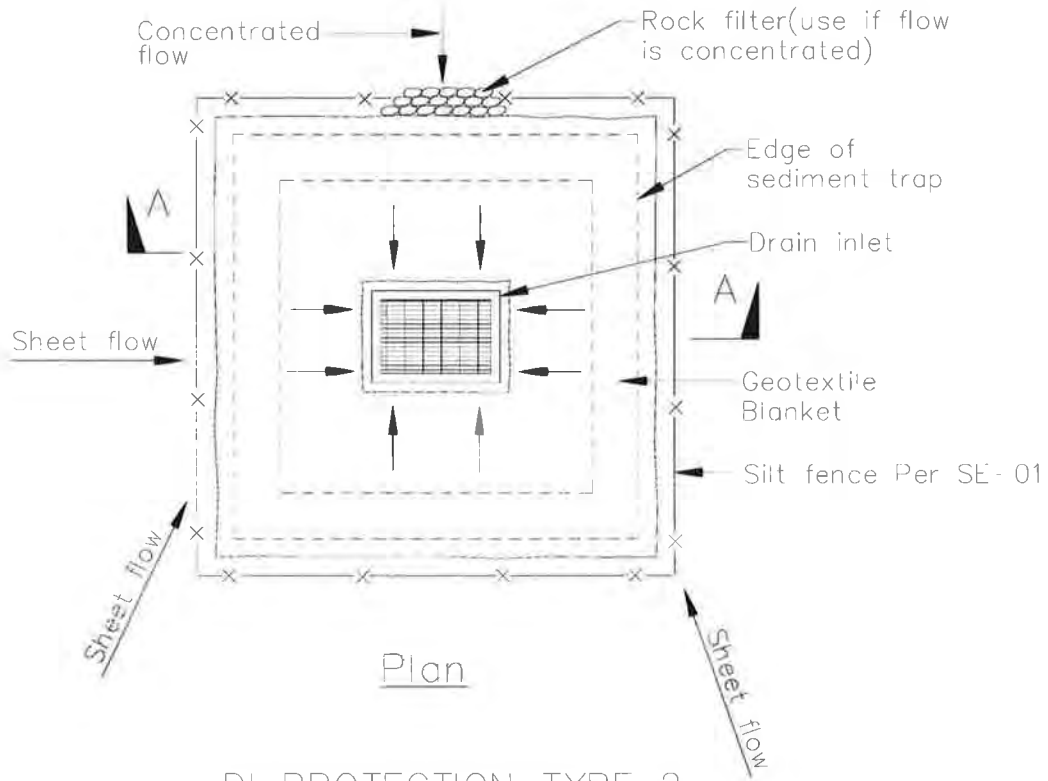
DI PROTECTION TYPE 1
NOT TO SCALE

NOTES:

1. For use in areas where grading has been completed and final soil stabilization and seeding are pending.
2. Not applicable in paved areas.
3 Not applicable with concentrated flows.



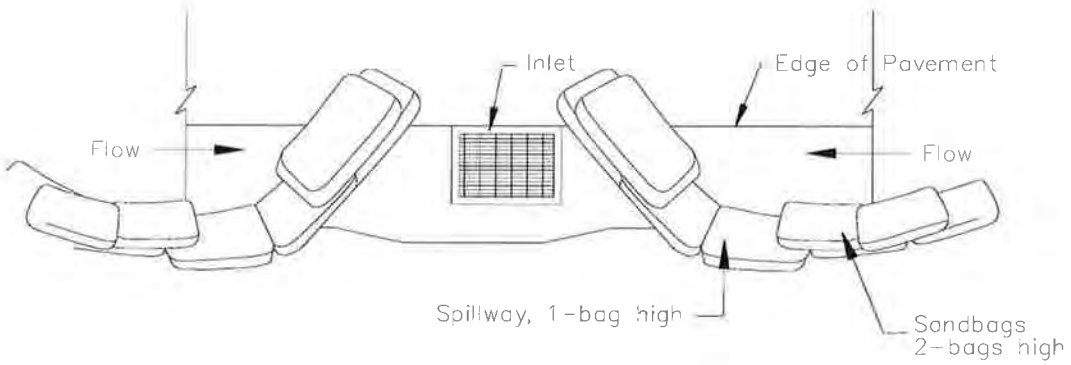
Section A-A



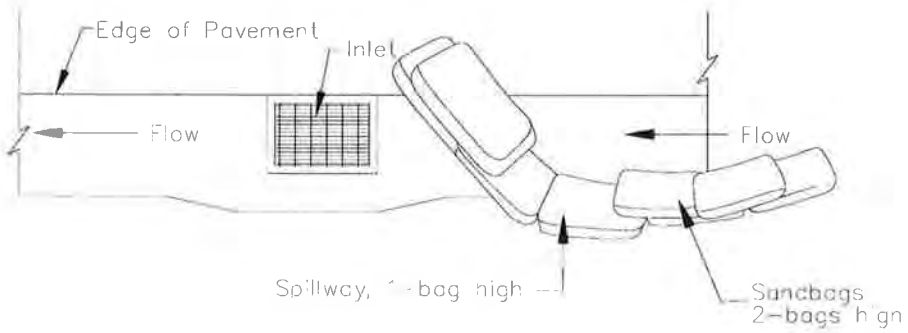
Plan

DI PROTECTION TYPE 2
NOT TO SCALE

Notes
1. For use in cleared and grubbed and in graded areas.
2. Shape basin so that longest inflow area faces longest length of trap
3. For concentrated flows, shape basin in 2:1 ratio with length oriented towards direction of flow.



TYPICAL PROTECTION FOR INLET ON SUMP

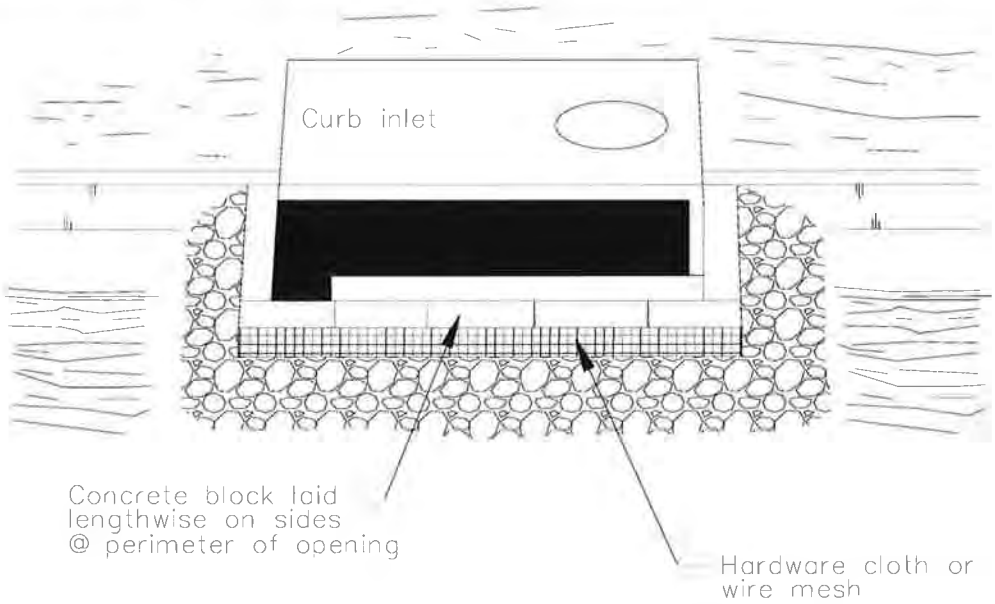


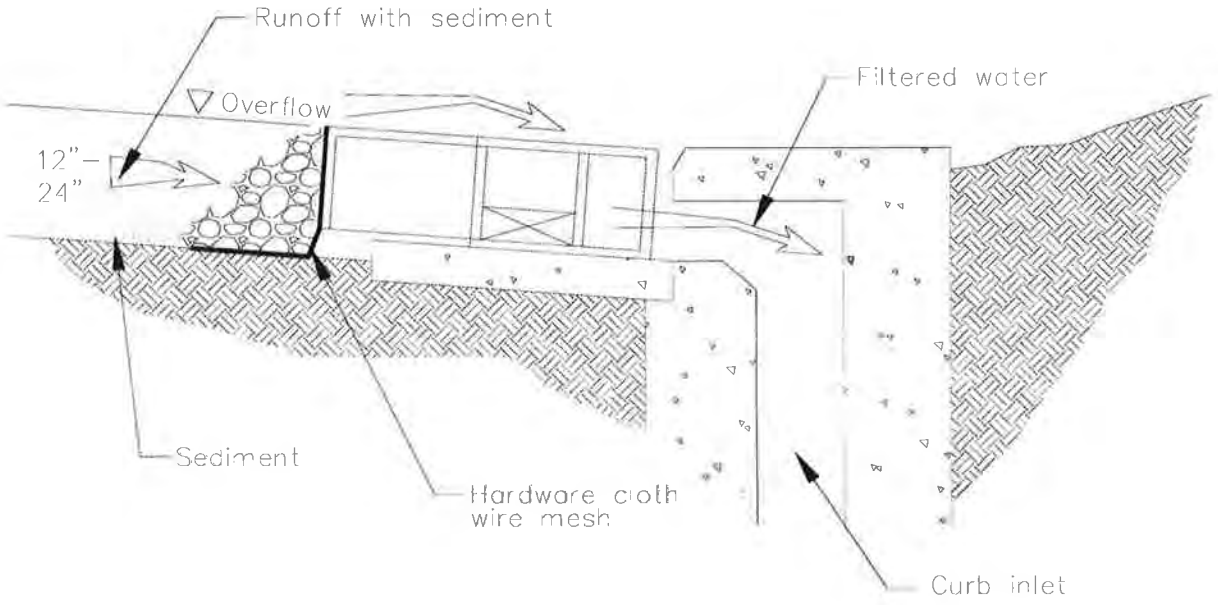
TYPICAL PROTECTION FOR INLET ON GRADE

NOTES:

1. Intended for short-term use.
2. Use to inhibit non-storm water flow.
3. Allow for proper maintenance and cleanup.
4. Bags must be removed after adjacent operation is completed
5. Not applicable in areas with high silts and clays without filter fabric.

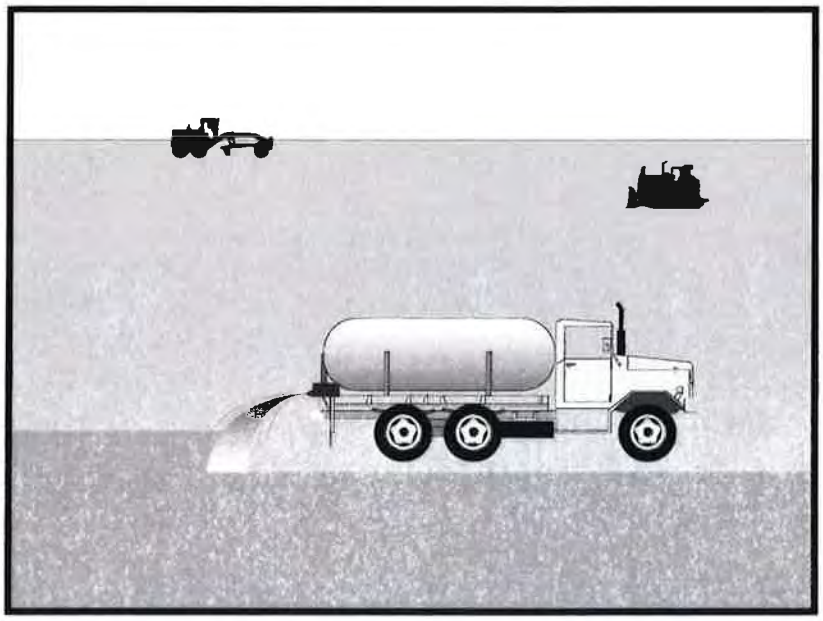
DI PROTECTION TYPE 3
NOT TO SCALE





DI PROTECTION – TYPE 4
NOT TO SCALE

Wind Erosion Control WE-1



Categories		
EC	Erosion Control	
SE	Sediment Control	☒
TC	Tracking Control	
WE	Wind Erosion Control	☑
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:
☑ **Primary Category**
☒ **Secondary Category**

Targeted Constituents	
Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

EC-5 Soil Binders

Description and Purpose

Wind erosion or dust control consists of applying water or other chemical dust suppressants as necessary to prevent or alleviate dust nuisance generated by construction activities. Covering small stockpiles or areas is an alternative to applying water or other dust palliatives.

California's Mediterranean climate, with a short "wet" season and a typically long, hot "dry" season, allows the soils to thoroughly dry out. During the dry season, construction activities are at their peak, and disturbed and exposed areas are increasingly subject to wind erosion, sediment tracking and dust generated by construction equipment. Site conditions and climate can make dust control more of an erosion problem than water based erosion. Additionally, many local agencies, including Air Quality Management Districts, require dust control and/or dust control permits in order to comply with local nuisance laws, opacity laws (visibility impairment) and the requirements of the Clean Air Act. Wind erosion control is required to be implemented at all construction sites greater than 1 acre by the General Permit.

Suitable Applications

Most BMPs that provide protection against water-based erosion will also protect against wind-based erosion and dust control requirements required by other agencies will generally meet wind erosion control requirements for water quality protection. Wind erosion control BMPs are suitable during the following construction activities:

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- Construction vehicle traffic on unpaved roads
- Drilling and blasting activities
- Soils and debris storage piles
- Batch drop from front-end loaders
- Areas with unstabilized soil
- Final grading/site stabilization

Limitations

- Watering prevents dust only for a short period (generally less than a few hours) and should be applied daily (or more often) to be effective.
- Over watering may cause erosion and track-out.
- Oil or oil-treated subgrade should not be used for dust control because the oil may migrate into drainageways and/or seep into the soil.
- Chemical dust suppression agents may have potential environmental impacts. Selected chemical dust control agents should be environmentally benign.
- Effectiveness of controls depends on soil, temperature, humidity, wind velocity and traffic.
- Chemical dust suppression agents should not be used within 100 feet of wetlands or water bodies.
- Chemically treated subgrades may make the soil water repellant, interfering with long-term infiltration and the vegetation/re-vegetation of the site. Some chemical dust suppressants may be subject to freezing and may contain solvents and should be handled properly.
- In compacted areas, watering and other liquid dust control measures may wash sediment or other constituents into the drainage system.
- If the soil surface has minimal natural moisture, the affected area may need to be pre-wetted so that chemical dust control agents can uniformly penetrate the soil surface.

Implementation

Dust Control Practices

Dust control BMPs generally stabilize exposed surfaces and minimize activities that suspend or track dust particles. The following table presents dust control practices that can be applied to varying site conditions that could potentially cause dust. For heavily traveled and disturbed areas, wet suppression (watering), chemical dust suppression, gravel asphalt surfacing, temporary gravel construction entrances, equipment wash-out areas, and haul truck covers can be employed as dust control applications. Permanent or temporary vegetation and mulching can be employed for areas of occasional or no construction traffic. Preventive measures include minimizing surface areas to be disturbed, limiting onsite vehicle traffic to 15 mph or less, and controlling the number and activity of vehicles on a site at any given time.

Chemical dust suppressants include: mulch and fiber based dust palliatives (e.g. paper mulch with gypsum binder), salts and brines (e.g. calcium chloride, magnesium chloride), non-petroleum based organics (e.g. vegetable oil, lignosulfonate), petroleum based organics (e.g. asphalt emulsion, dust oils, petroleum resins), synthetic polymers (e.g. polyvinyl acetate, vinyls, acrylic), clay additives (e.g. bentonite, montimorillonite) and electrochemical products (e.g. enzymes, ionic products).

Site Condition	Dust Control Practices							
	Permanent Vegetation	Mulching	Wet Suppression (Watering)	Chemical Dust Suppression	Gravel or Asphalt	Temporary Gravel Construction Entrances/Equipment Wash Down	Synthetic Covers	Minimize Extent of Disturbed Area
Disturbed Areas not Subject to Traffic	X	X	X	X	X			X
Disturbed Areas Subject to Traffic			X	X	X	X		X
Material Stockpiles		X	X	X			X	X
Demolition			X			X	X	
Clearing/ Excavation			X	X				X
Truck Traffic on Unpaved Roads			X	X	X	X	X	
Tracking					X	X		

Additional preventive measures include:

- Schedule construction activities to minimize exposed area (see EC-1, Scheduling).
- Quickly treat exposed soils using water, mulching, chemical dust suppressants, or stone/gravel layering.
- Identify and stabilize key access points prior to commencement of construction.
- **Minimize the impact of dust by anticipating the direction of prevailing winds.**
- **Restrict construction traffic to stabilized roadways within the project site, as practicable.**
- Water should be applied by means of pressure-type distributors or pipelines equipped with a spray system or hoses and nozzles that will ensure even distribution.
- All distribution equipment should be equipped with a positive means of shutoff.
- Unless water is applied by means of pipelines, at least one mobile unit should be available at all times to apply water or dust palliative to the project.
- If reclaimed waste water is used, the sources and discharge must meet California Department of Health Services water reclamation criteria and the Regional Water Quality

Control Board (RWQCB) requirements. Non-potable water should not be conveyed in tanks or drain pipes that will be used to convey potable water and there should be no connection between potable and non-potable supplies. Non-potable tanks, pipes, and other conveyances should be marked, "NON-POTABLE WATER - DO NOT DRINK."

- Pave or chemically stabilize access points where unpaved traffic surfaces adjoin paved roads.
- Provide covers for haul trucks transporting materials that contribute to dust.
- Provide for rapid clean up of sediments deposited on paved roads. Furnish stabilized construction road entrances and wheel wash areas.
- Stabilize inactive areas of construction sites using temporary vegetation or chemical stabilization methods.

For chemical stabilization, there are many products available for chemically stabilizing gravel roadways and stockpiles. If chemical stabilization is used, the chemicals should not create any adverse effects on stormwater, plant life, or groundwater and should meet all applicable regulatory requirements.

Costs

Installation costs for water and chemical dust suppression vary based on the method used and the length of effectiveness. Annual costs may be high since some of these measures are effective for only a few hours to a few days.

Inspection and Maintenance

- Inspect and verify that activity-based BMPs are in place prior to the commencement of associated activities.
- BMPs must be inspected in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- Check areas protected to ensure coverage.
- Most water-based dust control measures require frequent application, often daily or even multiple times per day. Obtain vendor or independent information on longevity of chemical dust suppressants.

References

Best Management Practices and Erosion Control Manual for Construction Sites, Flood Control District of Maricopa County, Arizona, September 1992.

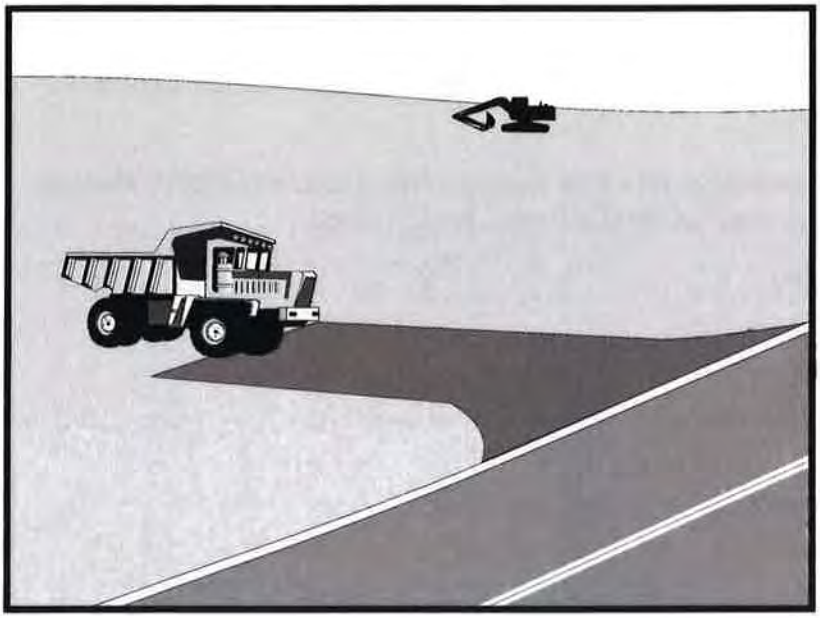
California Air Pollution Control Laws, California Air Resources Board, updated annually.

Construction Manual, Chapter 4, Section 10, "Dust Control"; Section 17, "Watering"; and Section 18, "Dust Palliative", California Department of Transportation (Caltrans), July 2001.

Prospects for Attaining the State Ambient Air Quality Standards for Suspended Particulate Matter (PM10), Visibility Reducing Particles, Sulfates, Lead, and Hydrogen Sulfide, California Air Resources Board, April 1991.

Stormwater Quality Handbooks Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), March 2003.

Stabilized Construction Entrance/Exit TC-1



Categories		
EC	Erosion Control	☒
SE	Sediment Control	☒
TC	Tracking Control	☑
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:
☑ **Primary Objective**
☒ **Secondary Objective**

Targeted Constituents	
Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

None

Description and Purpose

A stabilized construction access is defined by a point of entrance/exit to a construction site that is stabilized to reduce the tracking of mud and dirt onto public roads by construction vehicles.

Suitable Applications

Use at construction sites:

- Where dirt or mud can be tracked onto public roads.
- Adjacent to water bodies.
- Where poor soils are encountered.
- Where dust is a problem during dry weather conditions.

Limitations

- Entrances and exits require periodic top dressing with additional stones.
- This BMP should be used in conjunction with street sweeping on adjacent public right of way.
- Entrances and exits should be constructed on level ground only.
- Stabilized construction entrances are rather expensive to construct and when a wash rack is included, a sediment trap of some kind must also be provided to collect wash water

runoff.

Implementation

General

A stabilized construction entrance is a pad of aggregate underlain with filter cloth located at any point where traffic will be entering or leaving a construction site to or from a public right of way, street, alley, sidewalk, or parking area. The purpose of a stabilized construction entrance is to reduce or eliminate the tracking of sediment onto public rights of way or streets. Reducing tracking of sediments and other pollutants onto paved roads helps prevent deposition of sediments into local storm drains and production of airborne dust.

Where traffic will be entering or leaving the construction site, a stabilized construction entrance should be used. NPDES permits require that appropriate measures be implemented to prevent tracking of sediments onto paved roadways, where a significant source of sediments is derived from mud and dirt carried out from unpaved roads and construction sites.

Stabilized construction entrances are moderately effective in removing sediment from equipment leaving a construction site. The entrance should be built on level ground. Advantages of the Stabilized Construction Entrance/Exit is that it does remove some sediment from equipment and serves to channel construction traffic in and out of the site at specified locations. Efficiency is greatly increased when a washing rack is included as part of a stabilized construction entrance/exit.

Design and Layout

- Construct on level ground where possible.
- Select 3 to 6 in. diameter stones.
- Use minimum depth of stones of 12 in. or as recommended by soils engineer.
- Construct length of 50 ft minimum, and 30 ft minimum width.
- Rumble racks constructed of steel panels with ridges and installed in the stabilized entrance/exit will help remove additional sediment and to keep adjacent streets clean.
- Provide ample turning radii as part of the entrance.
- Limit the points of entrance/exit to the construction site.
- Limit speed of vehicles to control dust.
- Properly grade each construction entrance/exit to prevent runoff from leaving the construction site.
- Route runoff from stabilized entrances/exits through a sediment trapping device before discharge.
- Design stabilized entrance/exit to support heaviest vehicles and equipment that will use it.

- Select construction access stabilization (aggregate, asphaltic concrete, concrete) based on longevity, required performance, and site conditions. Do not use asphalt concrete (AC) grindings for stabilized construction access/roadway.
- If aggregate is selected, place crushed aggregate over geotextile fabric to at least 12 in. depth, or place aggregate to a depth recommended by a geotechnical engineer. A crushed aggregate greater than 3 in. but smaller than 6 in. should be used.
- Designate combination or single purpose entrances and exits to the construction site.
- Require that all employees, subcontractors, and suppliers utilize the stabilized construction access.
- Implement SE-7, Street Sweeping and Vacuuming, as needed.
- All exit locations intended to be used for more than a two-week period should have stabilized construction entrance/exit BMPs.

Inspection and Maintenance

- Inspect and verify that activity–based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMPs are under way, inspect weekly during the rainy season and of two-week intervals in the non-rainy season to verify continued BMP implementation.
- Inspect local roads adjacent to the site daily. Sweep or vacuum to remove visible accumulated sediment.
- Remove aggregate, separate and dispose of sediment if construction entrance/exit is clogged with sediment.
- Keep all temporary roadway ditches clear.
- Check for damage and repair as needed.
- Replace gravel material when surface voids are visible.
- Remove all sediment deposited on paved roadways within 24 hours.
- Remove gravel and filter fabric at completion of construction

Costs

Average annual cost for installation and maintenance may vary from $1,200 to $4,800 each, averaging $2,400 per entrance. Costs will increase with addition of washing rack, and sediment trap. With wash rack, costs range from $1,200 - $6,000 each, averaging $3,600 per entrance.

References

Manual of Standards of Erosion and Sediment Control Measures, Association of Bay Area Governments, May 1995.

National Management Measures to Control Nonpoint Source Pollution from Urban Areas, USEPA Agency, 2002.

Proposed Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters, Work Group Working Paper, USEPA, April 1992.

Stormwater Quality Handbooks Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

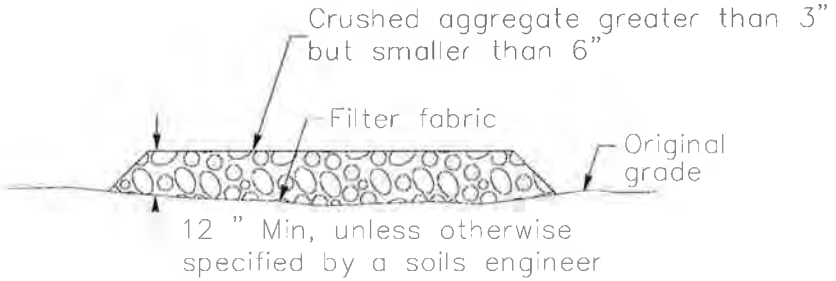
Stormwater Management of the Puget Sound Basin, Technical Manual, Publication #91-75, Washington State Department of Ecology, February 1992.

Virginia Erosion and Sedimentation Control Handbook, Virginia Department of Conservation and Recreation, Division of Soil and Water Conservation, 1991.

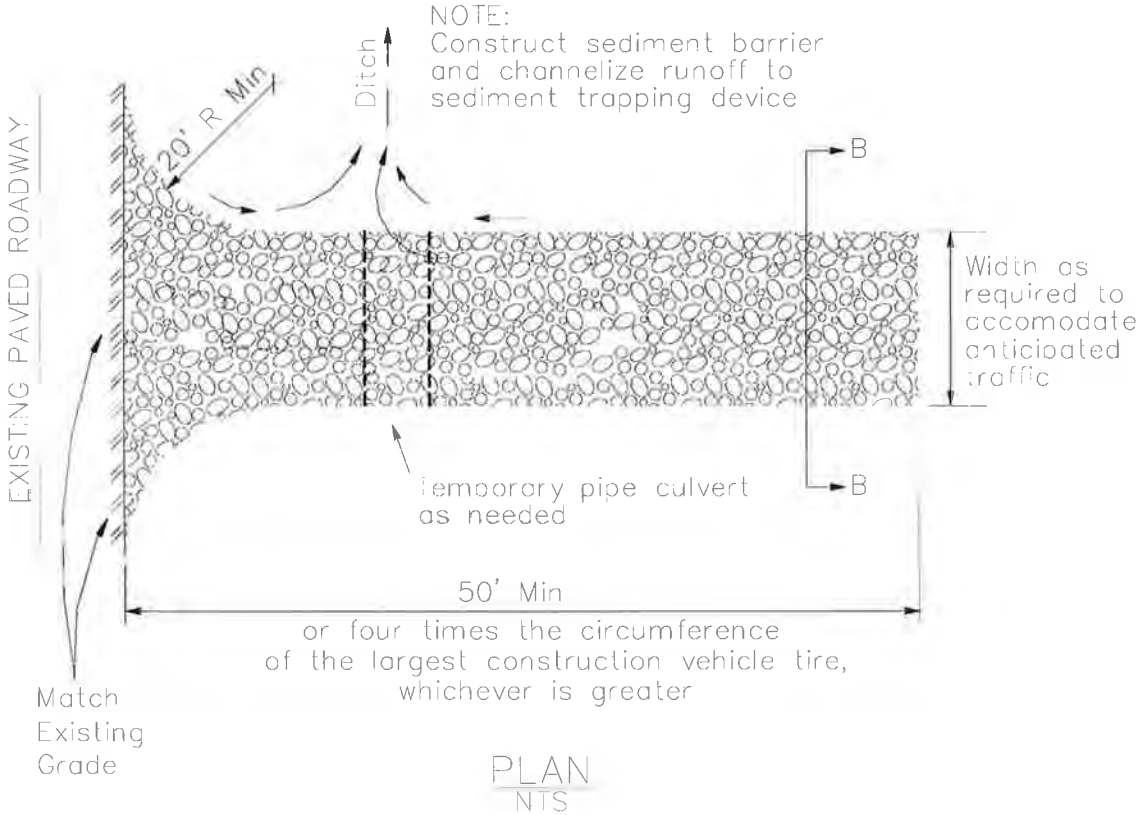
Guidance Specifying Management Measures for Nonpoint Pollution in Coastal Waters, EPA 840-B-9-002, USEPA, Office of Water, Washington, DC, 1993.

Water Quality Management Plan for the Lake Tahoe Region, Volume II, Handbook of Management Practices, Tahoe Regional Planning Agency, November 1988.

Stabilized Construction Entrance/Exit TC-1

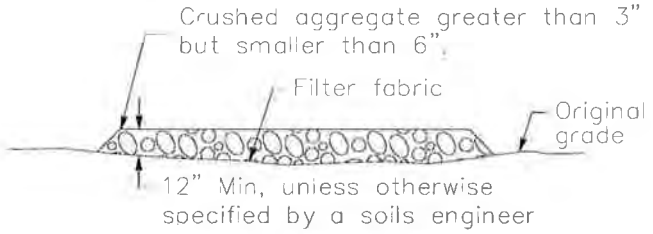


SECTION B–B
NTS



PLAN
NTS

Stabilized Construction Entrance/Exit TC-1



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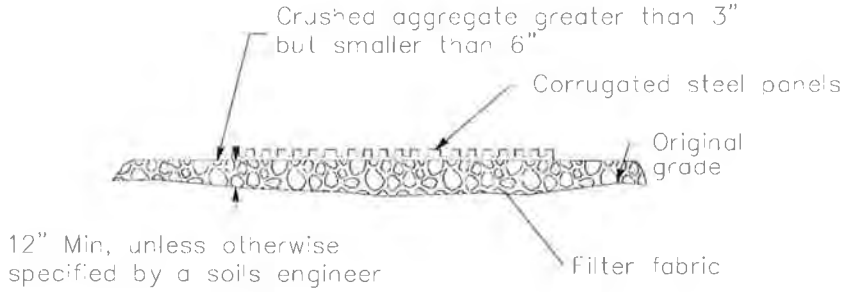
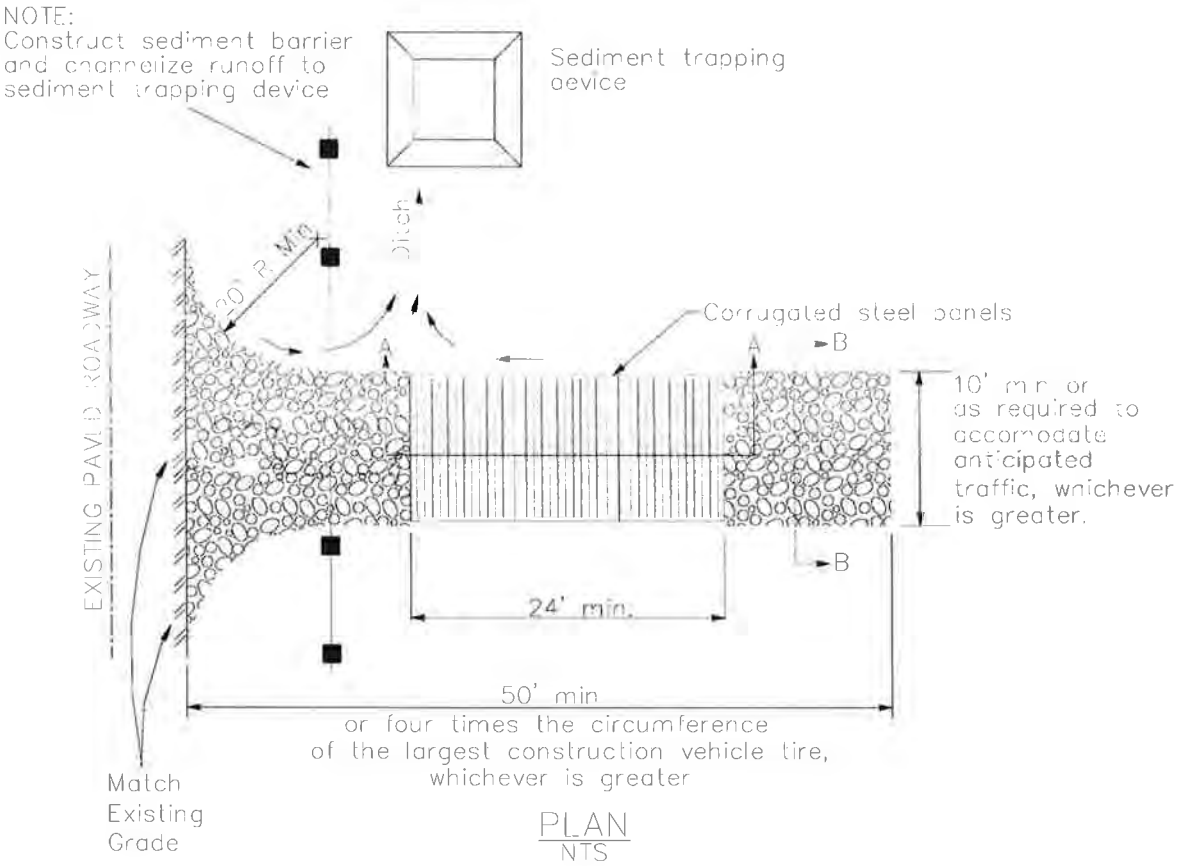


SECTION A-A
NOT TO SCALE



PLAN
NTS

Water Conservation Practices NS-1

Categories		
EC	Erosion Control	☒
SE	Sediment Control	☒
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	☑
WM	Waste Management and Materials Pollution Control	

Legend:
☑ **Primary Objective**
☒ **Secondary Objective**

Targeted Constituents	
Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

None

Description and Purpose

Water conservation practices are activities that use water during the construction of a project in a manner that avoids causing erosion and the transport of pollutants offsite. These practices can reduce or eliminate non-stormwater discharges.

Suitable Applications

Water conservation practices are suitable for all construction sites where water is used, including piped water, metered water, trucked water, and water from a reservoir.

Limitations

- None identified.

Implementation

- Keep water equipment in good working condition.
- Stabilize water truck filling area.
- Repair water leaks promptly.
- Washing of vehicles and equipment on the construction site is discouraged.
- Avoid using water to clean construction areas. If water must be used for cleaning or surface preparation, surface should be swept and vacuumed first to remove dirt. This will minimize amount of water required.
- Direct construction water runoff to areas where it can soak

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into the ground or be collected and reused.

- Authorized non-stormwater discharges to the storm drain system, channels, or receiving waters are acceptable with the implementation of appropriate BMPs.
- Lock water tank valves to prevent unauthorized use.

Costs

The cost is small to none compared to the benefits of conserving water.

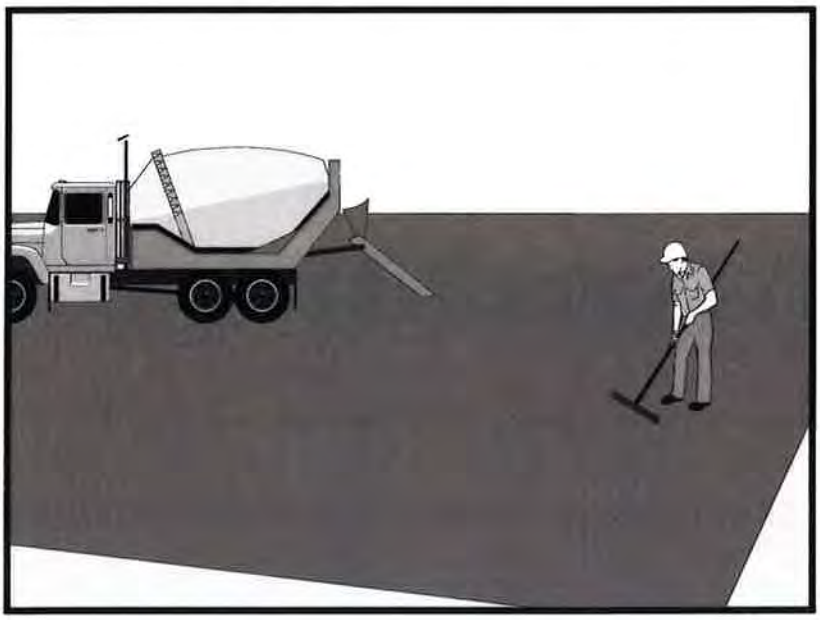
Inspection and Maintenance

- Inspect and verify that activity based BMPs are in place prior to the commencement of authorized non-stormwater discharges.
- Inspect BMPs subject to non-stormwater discharges daily while non-stormwater discharges are occuring.
- Repair water equipment as needed to prevent unintended discharges.
  - Water trucks
  - Water reservoirs (water buffalos)
  - Irrigation systems
  - Hydrant connections

References

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Paving and Grinding Operations NS-3



Categories

EC	Erosion Control	
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	☑
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Legend:

☑ **Primary Category**

☒ **Secondary Category**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	☑
Organics	

Potential Alternatives

None

Description and Purpose

Prevent or reduce the discharge of pollutants from paving operations, using measures to prevent runon and runoff pollution, properly disposing of wastes, and training employees and subcontractors.

The General Permit incorporates Numeric Effluent Limits (NEL) and Numeric Action Levels (NAL) for pH and turbidity (see Section 2 of this handbook to determine your project's risk level and if you are subject to these requirements).

Many types of construction materials associated with paving and grinding operations, including mortar, concrete, and cement and their associated wastes have basic chemical properties that can raise pH levels outside of the permitted range. Additional care should be taken when managing these materials to prevent them from coming into contact with stormwater flows, which could lead to exceedances of the General Permit requirements.

Suitable Applications

These procedures are implemented where paving, surfacing, resurfacing, or sawcutting, may pollute stormwater runoff or discharge to the storm drain system or watercourses.

Limitations

- Paving opportunities may be limited during wet weather.
- Discharges of freshly paved surfaces may raise pH to environmentally harmful levels and trigger permit violations.

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Implementation

General

- Avoid paving during the wet season when feasible.
- Reschedule paving and grinding activities if rain is forecasted.
- Train employees and sub-contractors in pollution prevention and reduction.
- Store materials away from drainage courses to prevent stormwater runon (see WM-1, Material Delivery and Storage).
- Protect drainage courses, particularly in areas with a grade, by employing BMPs to divert runoff or to trap and filter sediment.
- Stockpile material removed from roadways away from drain inlets, drainage ditches, and watercourses. These materials should be stored consistent with WM-3, Stockpile Management.
- Disposal of PCC (Portland cement concrete) and AC (asphalt concrete) waste should be in conformance with WM-8, Concrete Waste Management.

Saw Cutting, Grinding, and Pavement Removal

- Shovel or vacuum saw-cut slurry and remove from site. Cover or barricade storm drains during saw cutting to contain slurry.
- When paving involves AC, the following steps should be implemented to prevent the discharge of grinding residue, uncompacted or loose AC, tack coats, equipment cleaners, or unrelated paving materials:
  - AC grindings, pieces, or chunks used in embankments or shoulder backing should not be allowed to enter any storm drains or watercourses. Install inlet protection and perimeter controls until area is stabilized (i.e. cutting, grinding or other removal activities are complete and loose material has been properly removed and disposed of)or permanent controls are in place. Examples of temporary perimeter controls can be found in EC-9, Earth Dikes and Drainage Swales; SE-1, Silt Fence; SE-5, Fiber Rolls, or SE-13 Compost Socks and Berms
  - Collect and remove all broken asphalt and recycle when practical. Old or spilled asphalt should be recycled or disposed of properly.
- Do not allow saw-cut slurry to enter storm drains or watercourses. Residue from grinding operations should be picked up by a vacuum attachment to the grinding machine, or by sweeping, should not be allowed to flow across the pavement, and should not be left on the surface of the pavement. See also WM-8, Concrete Waste Management, and WM-10, Liquid Waste Management.
- Pavement removal activities should not be conducted in the rain.
- Collect removed pavement material by mechanical or manual methods. This material may be recycled for use as shoulder backing or base material.

- If removed pavement material cannot be recycled, transport the material back to an approved storage site.

Asphaltic Concrete Paving

- If paving involves asphaltic cement concrete, follow these steps:

  - Do not allow sand or gravel placed over new asphalt to wash into storm drains, streets, or creeks. Vacuum or sweep loose sand and gravel and properly dispose of this waste by referring to WM-5, Solid Waste Management.

  - Old asphalt should be disposed of properly. Collect and remove all broken asphalt from the site and recycle whenever possible.

Portland Cement Concrete Paving

- Do not wash sweepings from exposed aggregate concrete into a storm drain system. Collect waste materials by dry methods, such as sweeping or shoveling, and return to aggregate base stockpile or dispose of properly. Allow aggregate rinse to settle. Then, either allow rinse water to dry in a temporary pit as described in WM-8, Concrete Waste Management, or pump the water to the sanitary sewer if authorized by the local wastewater authority.

Sealing Operations

- During chip seal application and sweeping operations, petroleum or petroleum covered aggregate should not be allowed to enter any storm drain or water courses. Apply temporary perimeter controls until structure is stabilized (i.e. all sealing operations are complete and cured and loose materials have been properly removed and disposed).

- Inlet protection (SE-10, Storm Drain Inlet Protection) should be used during application of seal coat, tack coat, slurry seal, and fog seal.

- Seal coat, tack coat, slurry seal, or fog seal should not be applied if rainfall is predicted to occur during the application or curing period.

Paving Equipment

- Leaks and spills from paving equipment can contain toxic levels of heavy metals and oil and grease. Place drip pans or absorbent materials under paving equipment when not in use. **Clean up spills with absorbent materials and dispose of in accordance with the applicable regulations. See NS-10, Vehicle and Equipment Maintenance, WM-4, Spill Prevention and Control, and WM-10, Liquid Waste Management.**

- Substances used to coat asphalt transport trucks and asphalt spreading equipment should not contain soap and should be non-foaming and non-toxic.

- Paving equipment parked onsite should be parked over plastic to prevent soil contamination.

- Clean asphalt coated equipment offsite whenever possible. When cleaning dry, hardened asphalt from equipment, manage hardened asphalt debris as described in WM-5, Solid Waste Management. Any cleaning onsite should follow NS-8, Vehicle and Equipment Cleaning.

Thermoplastic Striping

- Thermoplastic striper and pre-heater equipment shutoff valves should be inspected to ensure that they are working properly to prevent leaking thermoplastic from entering drain inlets, the stormwater drainage system, or watercourses.
- Pre-heaters should be filled carefully to prevent splashing or spilling of hot thermoplastic. Leave six inches of space at the top of the pre-heater container when filling thermoplastic to allow room for material to move.
- Do not pre-heat, transfer, or load thermoplastic near drain inlets or watercourses.
- Clean truck beds daily of loose debris and melted thermoplastic. When possible, recycle thermoplastic material.

Raised/Recessed Pavement Marker Application and Removal

- Do not transfer or load bituminous material near drain inlets, the stormwater drainage system, or watercourses.
- Melting tanks should be loaded with care and not filled to beyond six inches from the top to leave room for splashing.
- When servicing or filling melting tanks, ensure all pressure is released before removing lids to avoid spills.
- On large-scale projects, use mechanical or manual methods to collect excess bituminous material from the roadway after removal of markers.

Costs

- All of the above are low cost measures.

Inspection and Maintenance

- Inspect and verify that activity-based BMPs are in place prior to the commencement of paving and grinding operations.
- BMPs must be inspected in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected **weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.**
- Sample stormwater runoff required by the General Permit.
- Keep ample supplies of drip pans or absorbent materials onsite.
- Inspect and maintain machinery regularly to minimize leaks and drips.

References

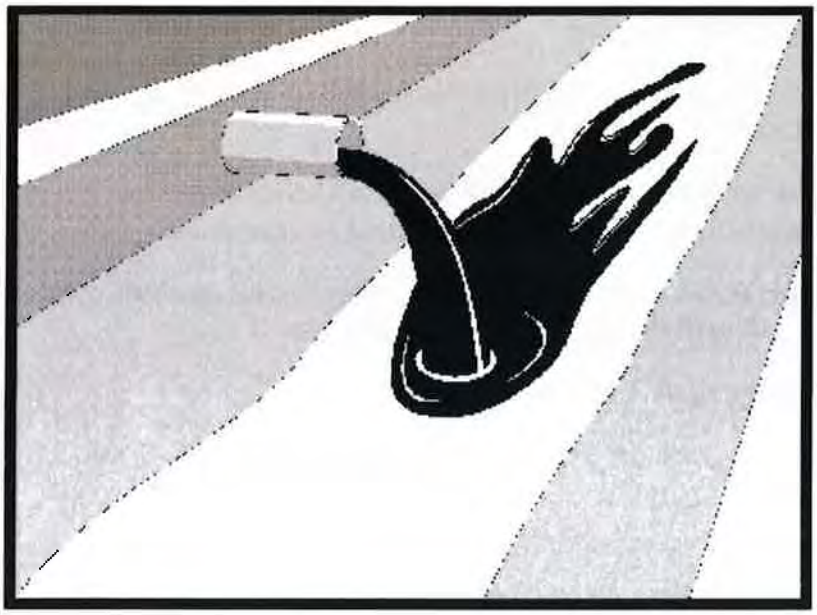
Blueprint for a Clean Bay: Best Management Practices to Prevent Stormwater Pollution from Construction Related Activities; Santa Clara Valley Nonpoint Source Pollution Control Program, 1995.

Hot Mix Asphalt-Paving Handbook AC 150/5370-14, Appendix I, U.S. Army Corps of Engineers, July 1991.

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), March 2003.

Erosion and Sediment Control Manual, Oregon Department of Environmental Quality, February 2005.

Illicit Connection/Discharge NS-6



Categories		
EC	Erosion Control	
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	☑
WM	Waste Management and Materials Pollution Control	

Legend:
☑ **Primary Objective**
☒ **Secondary Objective**

Targeted Constituents	
Sediment	
Nutrients	☑
Trash	☑
Metals	☑
Bacteria	☑
Oil and Grease	☑
Organics	☑

Potential Alternatives

None

Description and Purpose

Procedures and practices designed for construction contractors to recognize illicit connections or illegally dumped or discharged materials on a construction site and report incidents.

Suitable Applications

This best management practice (BMP) applies to all construction projects. Illicit connection/discharge and reporting is applicable anytime an illicit connection or discharge is discovered or illegally dumped material is found on the construction site.

Limitations

Illicit connections and illegal discharges or dumping, for the purposes of this BMP, refer to discharges and dumping caused by parties other than the contractor. If pre-existing hazardous materials or wastes are known to exist onsite, they should be identified in the SWPPP and handled as set forth in the SWPPP.

Implementation

Planning

- Review the SWPPP. Pre-existing areas of contamination should be identified and documented in the SWPPP.
- Inspect site before beginning the job for evidence of illicit connections, illegal dumping or discharges. Document any pre-existing conditions and notify the owner.
- Inspect site regularly during project execution for evidence

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of illicit connections, illegal dumping or discharges.

- Observe site perimeter for evidence for potential of illicitly discharged or illegally dumped material, which may enter the job site.

Identification of Illicit Connections and Illegal Dumping or Discharges

- **General** – unlabeled and unidentifiable material should be treated as hazardous.
- **Solids** - Look for debris, or rubbish piles. Solid waste dumping often occurs on roadways with light traffic loads or in areas not easily visible from the traveled way.
- **Liquids** - signs of illegal liquid dumping or discharge can include:
  - Visible signs of staining or unusual colors to the pavement or surrounding adjacent soils
  - Pungent odors coming from the drainage systems
  - Discoloration or oily substances in the water or stains and residues detained within ditches, channels or drain boxes
  - Abnormal water flow during the dry weather season
- **Urban Areas** - Evidence of illicit connections or illegal discharges is typically detected at storm drain outfall locations or at manholes. Signs of an illicit connection or illegal discharge can include:
  - Abnormal water flow during the dry weather season
  - Unusual flows in sub drain systems used for dewatering
  - Pungent odors coming from the drainage systems
  - Discoloration or oily substances in the water or stains and residues detained within ditches, channels or drain boxes
  - Excessive sediment deposits, particularly adjacent to or near active offsite construction projects
- **Rural Areas** - Illicit connections or illegal discharges involving irrigation drainage ditches are detected by visual inspections. Signs of an illicit discharge can include:
  - **Abnormal water flow during the non-irrigation season**
  - Non-standard junction structures
  - Broken concrete or other disturbances at or near junction structures

Reporting

Notify the owner of any illicit connections and illegal dumping or discharge incidents at the time of discovery. For illicit connections or discharges to the storm drain system, notify the local stormwater management agency. For illegal dumping, notify the local law enforcement agency.

Cleanup and Removal

The responsibility for cleanup and removal of illicit or illegal dumping or discharges will vary by location. Contact the local stormwater management agency for further information.

Costs

Costs to look for and report illicit connections and illegal discharges and dumping are low. The best way to avoid costs associated with illicit connections and illegal discharges and dumping is to keep the project perimeters secure to prevent access to the site, to observe the site for vehicles that should not be there, and to document any waste or hazardous materials that exist onsite before taking possession of the site.

Inspection and Maintenance

- Inspect and verify that activity-based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, inspect weekly during the rainy season and at two-week intervals in the non-rainy season to verify continued BMP implementation.
- Inspect the site regularly to check for any illegal dumping or discharge.
- Prohibit employees and subcontractors from disposing of non-job related debris or materials at the construction site.
- Notify the owner of any illicit connections and illegal dumping or discharge incidents at the time of discovery.

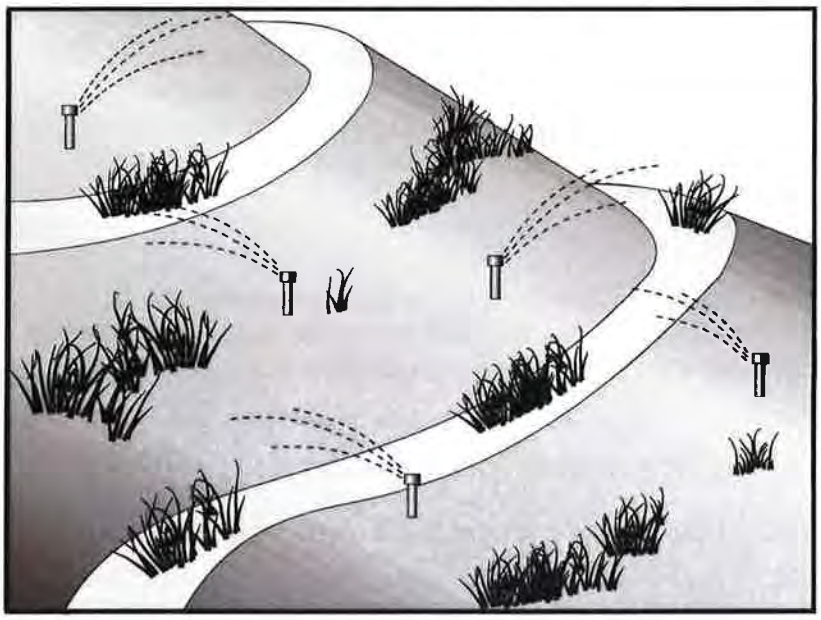
References

Blueprint for a Clean Bay: Best Management Practices to Prevent Stormwater Pollution from Construction Related Activities; Santa Clara Valley Nonpoint Source Pollution Control Program, 1995.

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Stormwater Management for Construction Activities, Developing Pollution Prevention Plans and Best Management Practices, EPA 832-R-92005; USEPA, April 1992.

Potable Water/Irrigation NS-7



Categories

EC	Erosion Control	
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	☑
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	☑
Nutrients	☑
Trash	
Metals	☑
Bacteria	
Oil and Grease	
Organics	☑

Potential Alternatives

None

Description and Purpose

Potable Water/Irrigation consists of practices and procedures to manage the discharge of potential pollutants generated during discharges from irrigation water lines, landscape irrigation, lawn or garden watering, planned and unplanned discharges from potable water sources, water line flushing, and hydrant flushing.

Suitable Applications

Implement this BMP whenever potable water or irrigation water discharges occur at or enter a construction site.

Limitations

None identified.

Implementation

- Direct water from offsite sources around or through a construction site, where feasible, in a way that minimizes contact with the construction site.
- Discharges from water line flushing should be reused for landscaping purposes where feasible.
- Shut off the water source to broken lines, sprinklers, or valves as soon as possible to prevent excess water flow.
- Protect downstream stormwater drainage systems and watercourses from water pumped or bailed from trenches excavated to repair water lines.
- Inspect irrigated areas within the construction limits for

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excess watering. Adjust watering times and schedules to ensure that the appropriate amount of water is being used and to minimize runoff. Consider factors such as soil structure, grade, time of year, and type of plant material in determining the proper amounts of water for a specific area.

Costs

Cost to manage potable water and irrigation are low and generally considered to be a normal part of related activities.

Inspection and Maintenance

- Inspect and verify that activity-based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, inspect weekly during the rainy season and at two-week intervals in the non-rainy season to verify continued BMP implementation.
- Inspect BMPs subject to non-stormwater discharges daily while non-stormwater discharges occur.
- Repair broken water lines as soon as possible.
- Inspect irrigated areas regularly for signs of erosion and/or discharge.

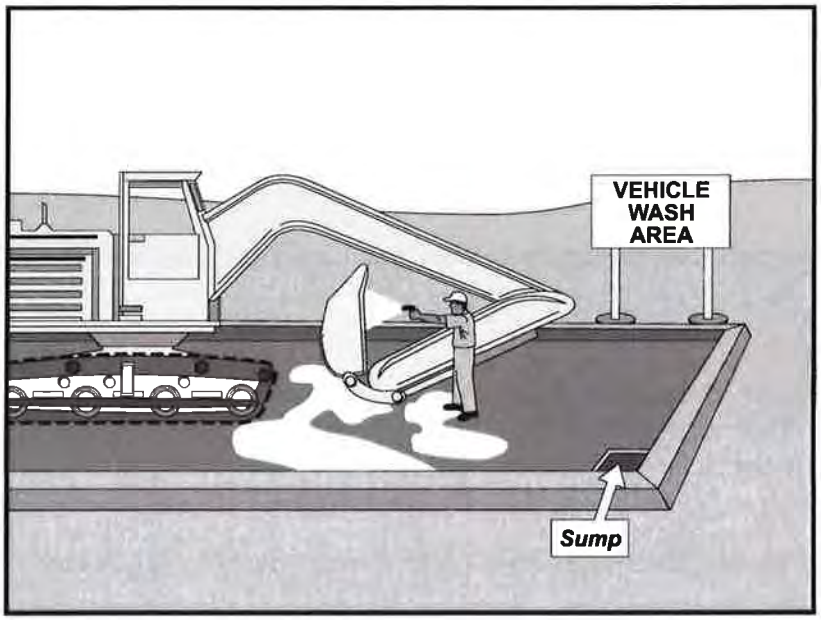
References

Blueprint for a Clean Bay: Best Management Practices to Prevent Stormwater Pollution from Construction Related Activities; Santa Clara Valley Nonpoint Source Pollution Control Program, 1995.

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Stormwater Management for Construction Activities, Developing Pollution Prevention Plans and Best Management Practices, EPA 832-R-92005; USEPA, April 1992.

Vehicle and Equipment Cleaning NS-8



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Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	☑
Nutrients	☑
Trash	
Metals	
Bacteria	
Oil and Grease	☑
Organics	☑

Potential Alternatives

None

Description and Purpose

Vehicle and equipment cleaning procedures and practices eliminate or reduce the discharge of pollutants to stormwater from vehicle and equipment cleaning operations. Procedures and practices include but are not limited to: using offsite facilities; washing in designated, contained areas only; eliminating discharges to the storm drain by infiltrating the wash water; and training employees and subcontractors in proper cleaning procedures.

Suitable Applications

These procedures are suitable on all construction sites where vehicle and equipment cleaning is performed.

Limitations

Even phosphate-free, biodegradable soaps have been shown to be toxic to fish before the soap degrades. Sending vehicles/equipment offsite should be done in conjunction with TC-1, Stabilized Construction Entrance/Exit.

Implementation

Other options to washing equipment onsite include contracting with either an offsite or mobile commercial washing business. These businesses may be better equipped to handle and dispose of the wash waters properly. Performing this work offsite can also be economical by eliminating the need for a separate washing operation onsite.

If washing operations are to take place onsite, then:

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- Use phosphate-free, biodegradable soaps.
- Educate employees and subcontractors on pollution prevention measures.
- Do not permit steam cleaning onsite. Steam cleaning can generate significant pollutant concentrates.
- Cleaning of vehicles and equipment with soap, solvents or steam should not occur on the project site unless resulting wastes are fully contained and disposed of. Resulting wastes should not be discharged or buried, and must be captured and recycled or disposed according to the requirements of WM-10, Liquid Waste Management or WM-6, Hazardous Waste Management, depending on the waste characteristics. Minimize use of solvents. Use of diesel for vehicle and equipment cleaning is prohibited.
- All vehicles and equipment that regularly enter and leave the construction site must be cleaned offsite.
- When vehicle and equipment washing and cleaning must occur onsite, and the operation cannot be located within a structure or building equipped with appropriate disposal facilities, the outside cleaning area should have the following characteristics:
  - Located away from storm drain inlets, drainage facilities, or watercourses
  - Paved with concrete or asphalt and bermed to contain wash waters and to prevent runon and runoff
  - Configured with a sump to allow collection and disposal of wash water
  - No discharge of wash waters to storm drains or watercourses
  - Used only when necessary
- When cleaning vehicles and equipment with water:
  - Use as little water as possible. High-pressure sprayers may use less water than a hose and should be considered
  - Use positive shutoff valve to minimize water usage
  - Facility wash racks should discharge to a sanitary sewer, recycle system or other approved discharge system and must not discharge to the storm drainage system, watercourses, or to groundwater

Costs

Cleaning vehicles and equipment at an offsite facility may reduce overall costs for vehicle and equipment cleaning by eliminating the need to provide similar services onsite. When onsite cleaning is needed, the cost to establish appropriate facilities is relatively low on larger, long-duration projects, and moderate to high on small, short-duration projects.

Inspection and Maintenance

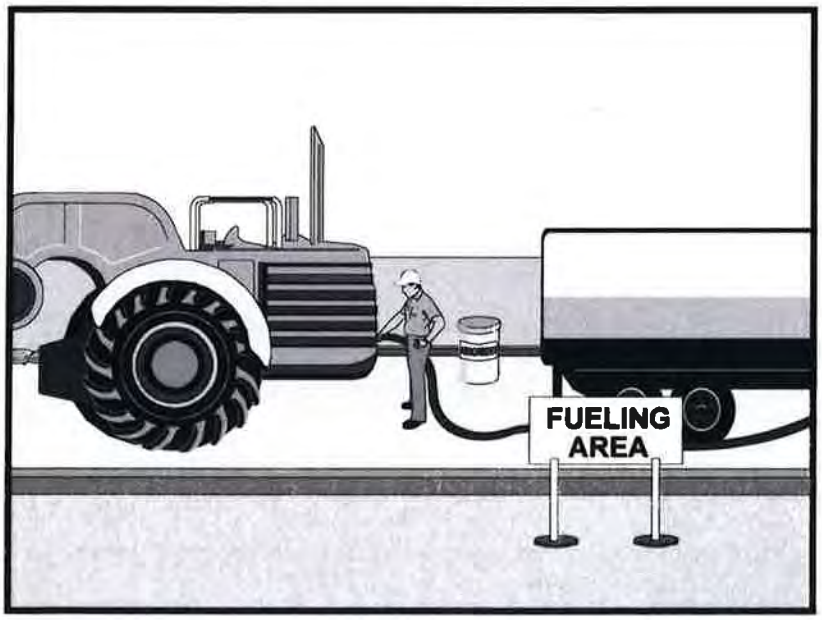
- Inspect and verify that activity-based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, inspect weekly during the rainy season and at two-week intervals in the non-rainy season to verify continued BMP implementation.
- Inspect BMPs subject to non-stormwater discharges daily while non-stormwater discharges occur.
- Inspection and maintenance is minimal, although some berm repair may be necessary.
- Monitor employees and subcontractors throughout the duration of the construction project to ensure appropriate practices are being implemented.
- Inspect sump regularly and remove liquids and sediment as needed.
- Prohibit employees and subcontractors from washing personal vehicles and equipment on the construction site.

References

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Swisher, R.D. Surfactant Biodegradation, Marcel Decker Corporation, 1987.

Vehicle and Equipment Fueling NS-9



Categories

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WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	☑
Organics	

Potential Alternatives

None

Description and Purpose

Vehicle equipment fueling procedures and practices are designed to prevent fuel spills and leaks, and reduce or eliminate contamination of stormwater. This can be accomplished by using offsite facilities, fueling in designated areas only, enclosing or covering stored fuel, implementing spill controls, and training employees and subcontractors in proper fueling procedures.

Suitable Applications

These procedures are suitable on all construction sites where vehicle and equipment fueling takes place.

Limitations

Onsite vehicle and equipment fueling should only be used where it is impractical to send vehicles and equipment offsite for fueling. Sending vehicles and equipment offsite should be done in conjunction with TC-1, Stabilized Construction Entrance/ Exit.

Implementation

- Use offsite fueling stations as much as possible. These businesses are better equipped to handle fuel and spills properly. Performing this work offsite can also be economical by eliminating the need for a separate fueling area at a site.
- Discourage "topping-off" of fuel tanks.
- Absorbent spill cleanup materials and spill kits should be available in fueling areas and on fueling trucks, and should

be disposed of properly after use.

- Drip pans or absorbent pads should be used during vehicle and equipment fueling, unless the fueling is performed over an impermeable surface in a dedicated fueling area.
- Use absorbent materials on small spills. Do not hose down or bury the spill. Remove the adsorbent materials promptly and dispose of properly.
- Avoid mobile fueling of mobile construction equipment around the site; rather, transport the equipment to designated fueling areas. With the exception of tracked equipment such as bulldozers and large excavators, most vehicles should be able to travel to a designated area with little lost time.
- Train employees and subcontractors in proper fueling and cleanup procedures.
- When fueling must take place onsite, designate an area away from drainage courses to be used. Fueling areas should be identified in the SWPPP.
- Dedicated fueling areas should be protected from stormwater runon and runoff, and should be located at least 50 ft away from downstream drainage facilities and watercourses. Fueling must be performed on level-grade areas.
- Protect fueling areas with berms and dikes to prevent runon, runoff, and to contain spills.
- Nozzles used in vehicle and equipment fueling should be equipped with an automatic shutoff to control drips. Fueling operations should not be left unattended.
- Use vapor recovery nozzles to help control drips as well as air pollution where required by Air Quality Management Districts (AQMD).
- Federal, state, and local requirements should be observed for any stationary above ground storage tanks.

Costs

- All of the above measures are low cost except for the capital costs of above ground tanks that meet all local environmental, zoning, and fire codes.

Inspection and Maintenance

- Vehicles and equipment should be inspected each day of use for leaks. Leaks should be repaired immediately or problem vehicles or equipment should be removed from the project site.
- Keep ample supplies of spill cleanup materials onsite.
- Immediately clean up spills and properly dispose of contaminated soil and cleanup materials.

References

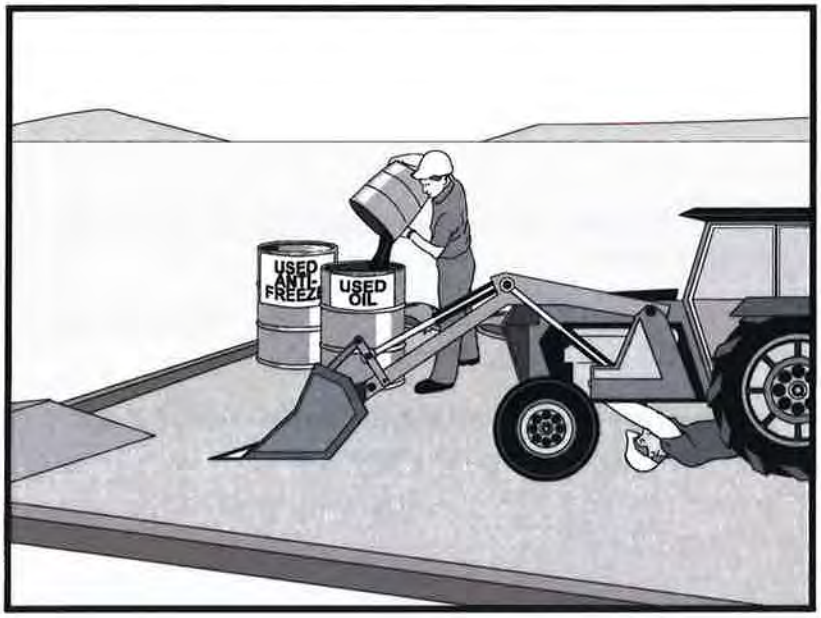
Blueprint for a Clean Bay: Best Management Practices to Prevent Stormwater Pollution from Construction Related Activities; Santa Clara Valley Nonpoint Source Pollution Control Program, 1995.

Coastal Nonpoint Pollution Control Program: Program Development and Approval Guidance, Working Group Working Paper; USEPA, April 1992.

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Stormwater Management for Construction Activities, Developing Pollution Prevention Plans and Best Management Practices, EPA 832-R-92005; USEPA, April 1992.

Vehicle & Equipment Maintenance NS-10



Categories		
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WM	Waste Management and Materials Pollution Control	

Legend:
☑ **Primary Objective**
☒ **Secondary Objective**

Targeted Constituents	
Sediment	
Nutrients	☑
Trash	☑
Metals	
Bacteria	
Oil and Grease	☑
Organics	☑

Potential Alternatives

None

Description and Purpose

Prevent or reduce the contamination of stormwater resulting from vehicle and equipment maintenance by running a "dry and clean site". The best option would be to perform maintenance activities at an offsite facility. If this option is not available then work should be performed in designated areas only, while providing cover for materials stored outside, checking for leaks and spills, and containing and cleaning up spills immediately. Employees and subcontractors must be trained in proper procedures.

Suitable Applications

These procedures are suitable on all construction projects where an onsite yard area is necessary for storage and maintenance of heavy equipment and vehicles.

Limitations

Onsite vehicle and equipment maintenance should only be used where it is impractical to send vehicles and equipment offsite for maintenance and repair. Sending vehicles/equipment offsite should be done in conjunction with TC-1, Stabilized Construction Entrance/Exit.

Outdoor vehicle or equipment maintenance is a potentially significant source of stormwater pollution. Activities that can contaminate stormwater include engine repair and service, changing or replacement of fluids, and outdoor equipment storage and parking (engine fluid leaks). For further information on vehicle or equipment servicing, see NS-8, Vehicle and Equipment Cleaning, and NS-9, Vehicle and

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Equipment Fueling.

Implementation

- Use offsite repair shops as much as possible. These businesses are better equipped to handle vehicle fluids and spills properly. Performing this work offsite can also be economical by eliminating the need for a separate maintenance area.
- If maintenance must occur onsite, use designated areas, located away from drainage courses. Dedicated maintenance areas should be protected from stormwater runon and runoff, and should be located at least 50 ft from downstream drainage facilities and watercourses.
- Drip pans or absorbent pads should be used during vehicle and equipment maintenance work that involves fluids, unless the maintenance work is performed over an impermeable surface in a dedicated maintenance area.
- Place a stockpile of spill cleanup materials where it will be readily accessible.
- All fueling trucks and fueling areas are required to have spill kits and/or use other spill protection devices.
- Use adsorbent materials on small spills. Remove the absorbent materials promptly and dispose of properly.
- Inspect onsite vehicles and equipment daily at startup for leaks, and repair immediately.
- Keep vehicles and equipment clean; do not allow excessive build-up of oil and grease.
- Segregate and recycle wastes, such as greases, used oil or oil filters, antifreeze, cleaning solutions, automotive batteries, hydraulic and transmission fluids. Provide secondary containment and covers for these materials if stored onsite.
- Train employees and subcontractors in proper maintenance and spill cleanup procedures.
- Drip pans or plastic sheeting should be placed under all vehicles and equipment placed on docks, barges, or other structures over water bodies when the vehicle or equipment is planned to be idle for more than 1 hour.
- For long-term projects, consider using portable tents or covers over maintenance areas if maintenance cannot be performed offsite.
- Consider use of new, alternative greases and lubricants, such as adhesive greases, for chassis lubrication and fifth-wheel lubrication.
- Properly dispose of used oils, fluids, lubricants, and spill cleanup materials.
- Do not place used oil in a dumpster or pour into a storm drain or watercourse.
- Properly dispose of or recycle used batteries.
- Do not bury used tires.

- Repair leaks of fluids and oil immediately.

Listed below is further information if you must perform vehicle or equipment maintenance onsite.

Safer Alternative Products

- Consider products that are less toxic or hazardous than regular products. These products are often sold under an "environmentally friendly" label.
- Consider use of grease substitutes for lubrication of truck fifth-wheels. Follow manufacturers label for details on specific uses.
- Consider use of plastic friction plates on truck fifth-wheels in lieu of grease. Follow manufacturers label for details on specific uses.

Waste Reduction

Parts are often cleaned using solvents such as trichloroethylene, trichloroethane, or methylene chloride. Many of these cleaners are listed in California Toxic Rule as priority pollutants. These materials are harmful and must not contaminate stormwater. They must be disposed of as a hazardous waste. Reducing the number of solvents makes recycling easier and reduces hazardous waste management costs. Often, one solvent can perform a job as well as two different solvents. Also, if possible, eliminate or reduce the amount of hazardous materials and waste by substituting non-hazardous or less hazardous materials. For example, replace chlorinated organic solvents with non-chlorinated solvents. Non-chlorinated solvents like kerosene or mineral spirits are less toxic and less expensive to dispose of properly. Check the list of active ingredients to see whether it contains chlorinated solvents. The "chlor" term indicates that the solvent is chlorinated. Also, try substituting a wire brush for solvents to clean parts.

Recycling and Disposal

Separating wastes allows for easier recycling and may reduce disposal costs. Keep hazardous wastes separate, do not mix used oil solvents, and keep chlorinated solvents (like,-trichloroethane) separate from non-chlorinated solvents (like kerosene and mineral spirits). Promptly transfer used fluids to the proper waste or recycling drums. Don't leave full drip pans or other open containers lying around. Provide cover and secondary containment until these materials can be removed from the site.

Oil filters can be recycled. Ask your oil supplier or recycler about recycling oil filters.

Do not dispose of extra paints and coatings by dumping liquid onto the ground or throwing it into dumpsters. Allow coatings to dry or harden before disposal into covered dumpsters.

Store cracked batteries in a non-leaking secondary container. Do this with all cracked batteries, even if you think all the acid has drained out. If you drop a battery, treat it as if it is cracked. Put it into the containment area until you are sure it is not leaking.

Costs

All of the above are low cost measures. Higher costs are incurred to setup and maintain onsite maintenance areas.

Inspection and Maintenance

- Inspect and verify that activity-based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, inspect weekly during the rainy season and at two-week intervals in the non-rainy season to verify continued BMP implementation.
- Inspect BMPs subject to non-stormwater discharges daily while non-stormwater discharges occur.
- Keep ample supplies of spill cleanup materials onsite.
- Maintain waste fluid containers in leak proof condition.
- Vehicles and equipment should be inspected on each day of use. Leaks should be repaired immediately or the problem vehicle(s) or equipment should be removed from the project site.
- Inspect equipment for damaged hoses and leaky gaskets routinely. Repair or replace as needed.

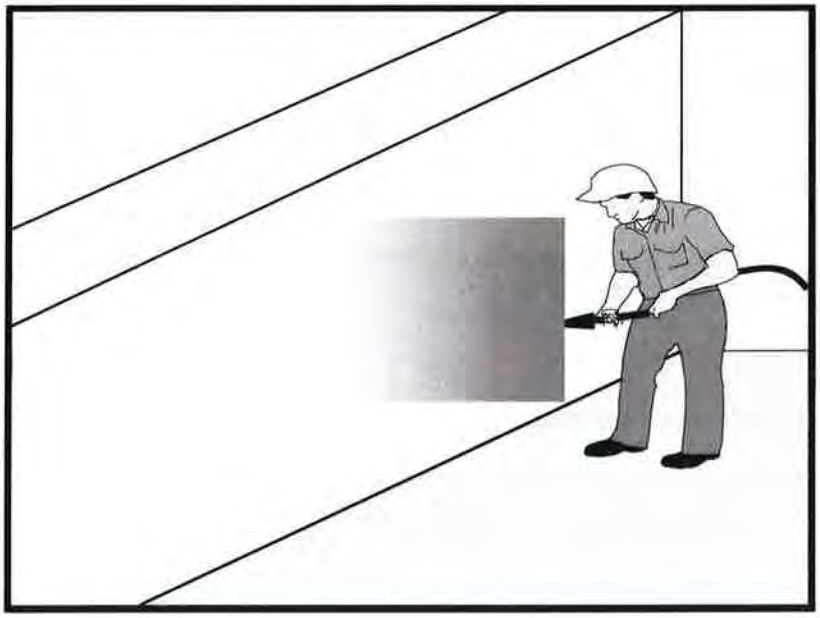
References

Blueprint for a Clean Bay: Best Management Practices to Prevent Stormwater Pollution from Construction Related Activities; Santa Clara Valley Nonpoint Source Pollution Control Program, 1995.

Coastal Nonpoint Pollution Control Program; Program Development and Approval Guidance, Working Group, Working Paper; USEPA, April 1992.

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Concrete Curing NS-12



Categories

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Legend:
☑ **Primary Category**
☒ **Secondary Category**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	☑
Bacteria	
Oil and Grease	☑
Organics	

Potential Alternatives

None

Description and Purpose

Concrete curing is used in the construction of structures such as bridges, retaining walls, pump houses, large slabs, and structured foundations. Concrete curing includes the use of both chemical and water methods.

Concrete and its associated curing materials have basic chemical properties that can raise the pH of water to levels outside of the permitted range. Discharges of stormwater and non-stormwater exposed to concrete during curing may have a high pH and may contain chemicals, metals, and fines. The General Permit incorporates Numeric Effluent Limits (NEL) and Numeric Action Levels (NAL) for pH (see Section 2 of this handbook to determine your project's risk level and if you are subject to these requirements).

Proper procedures and care should be taken when managing concrete curing materials to prevent them from coming into contact with stormwater flows, which could result in a high pH discharge.

Suitable Applications

Suitable applications include all projects where Portland Cement Concrete (PCC) and concrete curing chemicals are placed where they can be exposed to rainfall, runoff from other areas, or where runoff from the PCC will leave the site.

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Limitations

- Runoff contact with concrete waste can raise pH levels in the water to environmentally harmful levels and trigger permit violations.

Implementation

Chemical Curing

- Avoid over spray of curing compounds.
- Minimize the drift by applying the curing compound close to the concrete surface. Apply an amount of compound that covers the surface, but does not allow any runoff of the compound.
- Use proper storage and handling techniques for concrete curing compounds. Refer to WM-1, Material Delivery and Storage.
- Protect drain inlets prior to the application of curing compounds.
- Refer to WM-4, Spill Prevention and Control.

Water Curing for Bridge Decks, Retaining Walls, and other Structures

- Direct cure water away from inlets and watercourses to collection areas for evaporation or other means of removal in accordance with all applicable permits. See WM-8 Concrete Waste Management.
- Collect cure water at the top of slopes and transport to a concrete waste management area in a non-erosive manner. See EC-9 Earth Dikes and Drainage Swales, EC-10, Velocity Dissipation Devices, and EC-11, Slope Drains.
- Utilize wet blankets or a similar method that maintains moisture while minimizing the use and possible discharge of water.

Education

- Educate employees, subcontractors, and suppliers on proper concrete curing techniques to prevent contact with discharge as described herein.
- Arrange for the QSP or the appropriately trained contractor's superintendent or representative to oversee and enforce concrete curing procedures.

Costs

All of the above measures are generally low cost.

Inspection and Maintenance

- Inspect and verify that activity-based BMPs are in place prior to the commencement of associated activities.
- BMPs must be inspected in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.

- Inspect BMPs subject to non-stormwater discharges daily while non-stormwater discharges occur.
- Sample non-stormwater discharges and stormwater runoff that contacts uncured and partially cured concrete as required by the General Permit.
- Ensure that employees and subcontractors implement appropriate measures for storage, handling, and use of curing compounds.
- Inspect cure containers and spraying equipment for leaks.

References

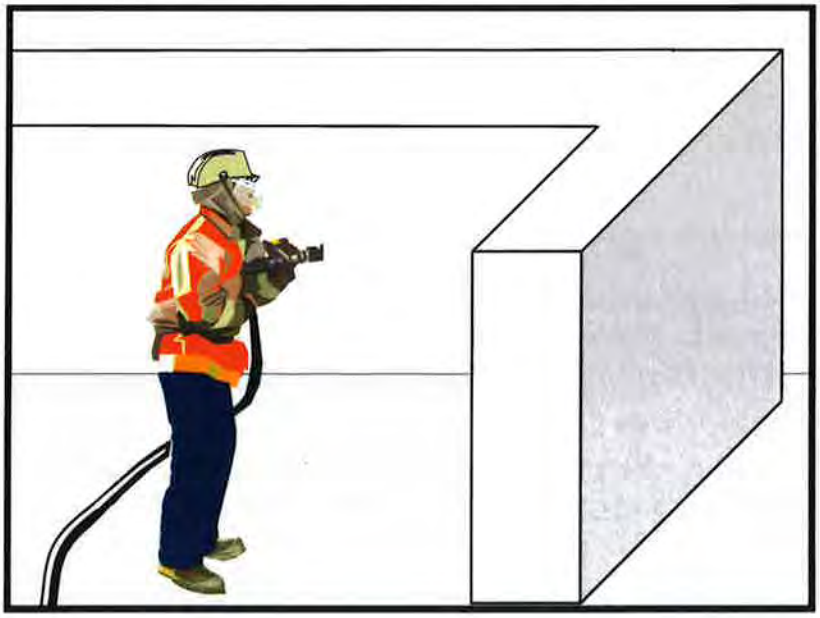
Blue Print for a Clean Bay-Construction-Related Industries: Best Management Practices for Stormwater Pollution Prevention; Santa Clara Valley Non Point Source Pollution Control Program, 1992.

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), March 2003.

Stormwater Management for Construction Activities, Developing Pollution Prevention Plans and Best Management Practices, EPA 832-R-92005; USEPA, April 1992.

Erosion and Sediment Control Manual, Oregon Department of Environmental Quality, February 2005.

Concrete Finishing NS-13



Categories

EC	Erosion Control	
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	☑
WM	Waste Management and Materials Pollution Control	☑

Legend:

☑ **Primary Category**

☒ **Secondary Category**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	☑
Bacteria	
Oil and Grease	
Organics	☑

Potential Alternatives

None

Description and Purpose

Concrete finishing methods are used for bridge deck rehabilitation, paint removal, curing compound removal, and final surface finish appearances. Methods include sand blasting, shot blasting, grinding, or high pressure water blasting. Stormwater and non-stormwater exposed to concrete finishing by-products may have a high pH and may contain chemicals, metals, and fines. Proper procedures and implementation of appropriate BMPs can minimize the impact that concrete-finishing methods may have on stormwater and non-stormwater discharges.

The General Permit incorporates Numeric Effluent Limits (NEL) and Numeric Action Levels (NAL) for pH (see Section 2 of this handbook to determine your project's risk level and if you are subject to these requirements).

Concrete and its associated curing materials have basic chemical properties that can raise pH levels outside of the permitted range. Additional care should be taken when managing these materials to prevent them from coming into contact with stormwater flows, which could lead to exceedances of the General Permit requirements.

Suitable Applications

These procedures apply to all construction locations where concrete finishing operations are performed.

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Limitations

- Runoff contact with concrete waste can raise pH levels in the water to environmentally harmful levels and trigger permit violations.

Implementation

- Collect and properly dispose of water from high-pressure water blasting operations.
- Collect contaminated water from blasting operations at the top of slopes. Transport or dispose of contaminated water while using BMPs such as those for erosion control. Refer to EC-9, Earth Dikes and Drainage Swales, EC-10, Velocity Dissipation Devices, and EC-11, Slope Drains.
- Direct water from blasting operations away from inlets and watercourses to collection areas for infiltration or other means of removal (dewatering). Refer to NS-2 Dewatering Operations.
- Protect inlets during sandblasting operations. Refer to SE-10, Storm Drain Inlet Protection.
- Refer to WM-8, Concrete Waste Management for disposal of concrete debris.
- Minimize the drift of dust and blast material as much as possible by keeping the blasting nozzle close to the surface.
- When blast residue contains a potentially hazardous waste, refer to WM-6, Hazardous Waste Management.

Education

- Educate employees, subcontractors, and suppliers on proper concrete finishing techniques to prevent contact with discharge as described herein.
- Arrange for the QSP or the appropriately trained contractor's superintendent or representative to oversee and enforce concrete finishing procedures.

Costs

These measures are generally of low cost.

Inspection and Maintenance

- Inspect and verify that activity-based BMPs are in place prior to the commencement of associated activities.
- BMPs must be inspected in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- Inspect BMPs subject to non-stormwater discharges daily while non-stormwater discharges occur.
- Sample non-stormwater discharges and stormwater runoff that contacts concrete dust and debris as required by the General Permit.

- Sweep or vacuum up debris from sandblasting at the end of each shift.
- At the end of each work shift, remove and contain liquid and solid waste from containment structures, if any, and from the general work area.
- Inspect containment structures for damage prior to use and prior to onset of forecasted rain.

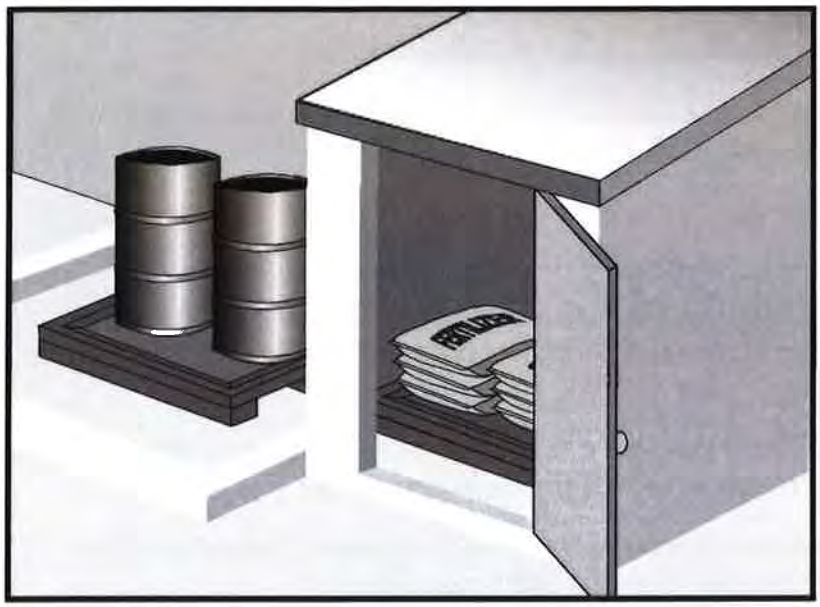
References

Blueprint for a Clean Bay: Best Management Practices to Prevent Stormwater Pollution from Construction Related Activities; Santa Clara Valley Nonpoint Source Pollution Control Program, 1995.

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), March 2003.

Stormwater Management for Construction Activities, Developing Pollution Prevention Plans and Best Management Practices, EPA 832-R-92005; USEPA, April 1992.

Material Delivery and Storage WM-1



Categories

EC	Erosion Control	
SE	Sediment Control	
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WM	Waste Management and Materials Pollution Control	☑

Legend:

☑ **Primary Category**

☒ **Secondary Category**

Targeted Constituents

Sediment	☑
Nutrients	☑
Trash	☑
Metals	☑
Bacteria	
Oil and Grease	☑
Organics	☑

Potential Alternatives

None

Description and Purpose

Prevent, reduce, or eliminate the discharge of pollutants from material delivery and storage to the stormwater system or watercourses by minimizing the storage of hazardous materials onsite, storing materials in watertight containers and/or a completely enclosed designated area, installing secondary containment, conducting regular inspections, and training employees and subcontractors.

This best management practice covers only material delivery and storage. For other information on materials, see WM-2, Material Use, or WM-4, Spill Prevention and Control. For information on wastes, see the waste management BMPs in this section.

Suitable Applications

These procedures are suitable for use at all construction sites with delivery and storage of the following materials:

- Soil stabilizers and binders
- Pesticides and herbicides
- Fertilizers
- Detergents
- Plaster
- Petroleum products such as fuel, oil, and grease

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- Asphalt and concrete components
- Hazardous chemicals such as acids, lime, glues, adhesives, paints, solvents, and curing compounds
- Concrete compounds
- Other materials that may be detrimental if released to the environment

Limitations

- Space limitation may preclude indoor storage.
- Storage sheds often must meet building and fire code requirements.

Implementation

The following steps should be taken to minimize risk:

- Chemicals must be stored in water tight containers with appropriate secondary containment or in a storage shed.
- When a material storage area is located on bare soil, the area should be lined and bermed.
- Use containment pallets or other practical and available solutions, such as storing materials within newly constructed buildings or garages, to meet material storage requirements.
- Stack erodible landscape material on pallets and cover when not in use.
- Contain all fertilizers and other landscape materials when not in use.
- Temporary storage areas should be located away from vehicular traffic.
- Material Safety Data Sheets (MSDS) should be available on-site for all materials stored that have the potential to effect water quality.
- Construction site areas should be designated for material delivery and storage.
- Material delivery and storage areas should be located away from waterways, if possible.
  - Avoid transport near drainage paths or waterways.
  - Surround with earth berms or other appropriate containment BMP. See EC-9, Earth Dikes and Drainage Swales.
  - Place in an area that will be paved.
- Storage of reactive, ignitable, or flammable liquids must comply with the fire codes of your area. Contact the local Fire Marshal to review site materials, quantities, and proposed storage area to determine specific requirements. See the Flammable and Combustible Liquid Code, NFPA30.
- An up to date inventory of materials delivered and stored onsite should be kept.

- Hazardous materials storage onsite should be minimized.
- Hazardous materials should be handled as infrequently as possible.
- Keep ample spill cleanup supplies appropriate for the materials being stored. Ensure that cleanup supplies are in a conspicuous, labeled area.
- Employees and subcontractors should be trained on the proper material delivery and storage practices.
- Employees trained in emergency spill cleanup procedures must be present when dangerous materials or liquid chemicals are unloaded.
- If significant residual materials remain on the ground after construction is complete, properly remove and dispose of materials and any contaminated soil. See WM-7, Contaminated Soil Management. If the area is to be paved, pave as soon as materials are removed to stabilize the soil.

Material Storage Areas and Practices

- Liquids, petroleum products, and substances listed in 40 CFR Parts 110, 117, or 302 should be stored in approved containers and drums and should not be overfilled. Containers and drums should be placed in temporary containment facilities for storage.
- A temporary containment facility should provide for a spill containment volume able to contain precipitation from a 25 year storm event, plus the greater of 10% of the aggregate volume of all containers or 100% of the capacity of the largest container within its boundary, whichever is greater.
- A temporary containment facility should be impervious to the materials stored therein for a minimum contact time of 72 hours.
- A temporary containment facility should be maintained free of accumulated rainwater and spills. In the event of spills or leaks, accumulated rainwater and spills should be collected and placed into drums. These liquids should be handled as a hazardous waste unless testing determines them to be non-hazardous. All collected liquids or non-hazardous liquids should be sent to an approved disposal site.
- Sufficient separation should be provided between stored containers to allow for spill cleanup and emergency response access.
- Incompatible materials, such as chlorine and ammonia, should not be stored in the same temporary containment facility.
- Materials should be covered prior to, and during rain events.
- Materials should be stored in their original containers and the original product labels should be maintained in place in a legible condition. Damaged or otherwise illegible labels should be replaced immediately.

- Bagged and boxed materials should be stored on pallets and should not be allowed to accumulate on the ground. To provide protection from wind and rain throughout the rainy season, bagged and boxed materials should be covered during non-working days and prior to and during rain events.
- Stockpiles should be protected in accordance with WM-3, Stockpile Management.
- Materials should be stored indoors within existing structures or completely enclosed storage sheds when available.
- Proper storage instructions should be posted at all times in an open and conspicuous location.
- An ample supply of appropriate spill clean up material should be kept near storage areas.
- Also see WM-6, Hazardous Waste Management, for storing of hazardous wastes.

Material Delivery Practices

- Keep an accurate, up-to-date inventory of material delivered and stored onsite.
- Arrange for employees trained in emergency spill cleanup procedures to be present when dangerous materials or liquid chemicals are unloaded.

Spill Cleanup

- Contain and clean up any spill immediately.
- Properly remove and dispose of any hazardous materials or contaminated soil if significant residual materials remain on the ground after construction is complete. See WM-7, Contaminated Soil Management.
- See WM-4, Spill Prevention and Control, for spills of chemicals and/or hazardous materials.
- If spills or leaks of materials occur that are not contained and could discharge to surface waters, non-visible sampling of site discharge may be required. Refer to the General Permit or to your project specific Construction Site Monitoring Plan to determine if and where sampling is required.

Cost

- The largest cost of implementation may be in the construction of a materials storage area that is covered and provides secondary containment.

Inspection and Maintenance

- BMPs must be inspected in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- Keep storage areas clean and well organized, including a current list of all materials onsite.
- Inspect labels on containers for legibility and accuracy.

- Repair or replace perimeter controls, containment structures, covers, and liners as needed to maintain proper function.

References

Blueprint for a Clean Bay: Best Management Practices to Prevent Stormwater Pollution from Construction Related Activities; Santa Clara Valley Nonpoint Source Pollution Control Program, 1995.

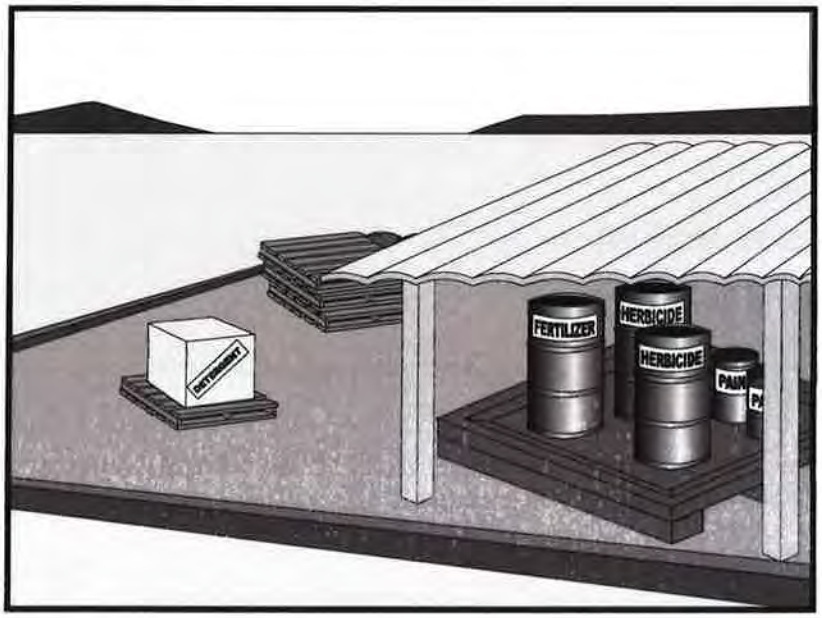
Coastal Nonpoint Pollution Control Program: Program Development and Approval Guidance, Working Group Working Paper; USEPA, April 1992.

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), March 2003.

Stormwater Management for Construction Activities; Developing Pollution Prevention Plans and Best Management Practice, EPA 832-R-92005; USEPA, April 1992.

Material Use

WM-2



Categories

EC	Erosion Control	
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	☑

Legend:

☑ **Primary Category**

☒ **Secondary Category**

Targeted Constituents

Sediment	☑
Nutrients	☑
Trash	☑
Metals	☑
Bacteria	
Oil and Grease	☑
Organics	☑

Potential Alternatives

None

Description and Purpose

Prevent or reduce the discharge of pollutants to the storm drain system or watercourses from material use by using alternative products, minimizing hazardous material use onsite, and training employees and subcontractors.

Suitable Applications

This BMP is suitable for use at all construction projects. These procedures apply when the following materials are used or prepared onsite:

- Pesticides and herbicides
- Fertilizers
- Detergents
- Petroleum products such as fuel, oil, and grease
- Asphalt and other concrete components
- Other hazardous chemicals such as acids, lime, glues, adhesives, paints, solvents, and curing compounds
- Other materials that may be detrimental if released to the environment

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Limitations

Safer alternative building and construction products may not be available or suitable in every instance.

Implementation

The following steps should be taken to minimize risk:

- Minimize use of hazardous materials onsite.
- Follow manufacturer instructions regarding uses, protective equipment, ventilation, flammability, and mixing of chemicals.
- Train personnel who use pesticides. The California Department of Pesticide Regulation and county agricultural commissioners license pesticide dealers, certify pesticide applicators, and conduct onsite inspections.
- The preferred method of termiticide application is soil injection near the existing or proposed structure foundation/slab; however, if not feasible, soil drench application of termiticides should follow EPA label guidelines and the following recommendations (most of which are applicable to most pesticide applications):
  - Do not treat soil that is water-saturated or frozen.
  - Application shall not commence within 24-hours of a predicted precipitation event with a 40% or greater probability. Weather tracking must be performed on a daily basis prior to termiticide application and during the period of termiticide application.
  - Do not allow treatment chemicals to runoff from the target area. Apply proper quantity to prevent excess runoff. Provide containment for and divert stormwater from application areas using berms or diversion ditches during application.
  - Dry season: Do not apply within 10 feet of storm drains. Do not apply within 25 feet of aquatic habitats (such as, but not limited to, lakes; reservoirs; rivers; permanent streams; marshes or ponds; estuaries; and commercial fish farm ponds).
  - Wet season: Do not apply within 50 feet of storm drains or aquatic habitats (such as, but not limited to, lakes; reservoirs; rivers; permanent streams; marshes or ponds; estuaries; and commercial fish farm ponds) unless a vegetative buffer is present (if so, refer to dry season requirements).
  - Do not make on-grade applications when sustained wind speeds are above 10 mph (at application site) at nozzle end height.
  - Cover treatment site prior to a rain event in order to prevent run-off of the pesticide into non-target areas. The treated area should be limited to a size that can be backfilled and/or covered by the end of the work shift. Backfilling or covering of the treated area shall be done by the end of the same work shift in which the application is made.
  - The applicator must either cover the soil him/herself or provide written notification of the above requirement to the contractor on site and to the person commissioning the

application (if different than the contractor). If notice is provided to the contractor or the person commissioning the application, then they are responsible under the Federal Insecticide Fungicide, and Rodenticide Act (FIFRA) to ensure that: 1) if the concrete slab cannot be poured over the treated soil within 24 hours of application, the treated soil is covered with a waterproof covering (such as polyethylene sheeting), and 2) the treated soil is covered if precipitation is predicted to occur before the concrete slab is scheduled to be poured.

- Do not over-apply fertilizers, herbicides, and pesticides. Prepare only the amount needed. Follow the recommended usage instructions. Over-application is expensive and environmentally harmful. Unless on steep slopes, till fertilizers into the soil rather than hydraulic application. Apply surface dressings in several smaller applications, as opposed to one large application, to allow time for infiltration and to avoid excess material being carried offsite by runoff. Do not apply these chemicals before predicted rainfall.
- Train employees and subcontractors in proper material use.
- Supply Material Safety Data Sheets (MSDS) for all materials.
- Dispose of latex paint and paint cans, used brushes, rags, absorbent materials, and drop cloths, when thoroughly dry and are no longer hazardous, with other construction debris.
- Do not remove the original product label; it contains important safety and disposal information. Use the entire product before disposing of the container.
- Mix paint indoors or in a containment area. Never clean paintbrushes or rinse paint containers into a street, gutter, storm drain, or watercourse. Dispose of any paint thinners, residue, and sludge(s) that cannot be recycled, as hazardous waste.
- For water-based paint, clean brushes to the extent practicable, and rinse to a drain leading to a sanitary sewer where permitted, or contain for proper disposal off site. For oil-based paints, clean brushes to the extent practicable, and filter and reuse thinners and solvents.
- Use recycled and less hazardous products when practical. Recycle residual paints, solvents, non-treated lumber, and other materials.
- Use materials only where and when needed to complete the construction activity. Use safer alternative materials as much as possible. Reduce or eliminate use of hazardous materials onsite when practical.
- Document the location, time, chemicals applied, and applicator's name and qualifications.
- Keep an ample supply of spill clean up material near use areas. Train employees in spill clean up procedures.
- Avoid exposing applied materials to rainfall and runoff unless sufficient time has been allowed for them to dry.
- Discontinue use of erodible landscape material within 2 days prior to a forecasted rain event and materials should be covered and/or bermed.

- Provide containment for material use areas such as masons' areas or paint mixing/preparation areas to prevent materials/pollutants from entering stormwater.

Costs

All of the above are low cost measures.

Inspection and Maintenance

- Inspect and verify that activity-based BMPs are in place prior to the commencement of associated activities.
- BMPs must be inspected in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- Ensure employees and subcontractors throughout the job are using appropriate practices.

References

Blueprint for a Clean Bay: Best Management Practices to Prevent Stormwater Pollution from Construction Related Activities; Santa Clara Valley Nonpoint Source Pollution Control Program, 1995.

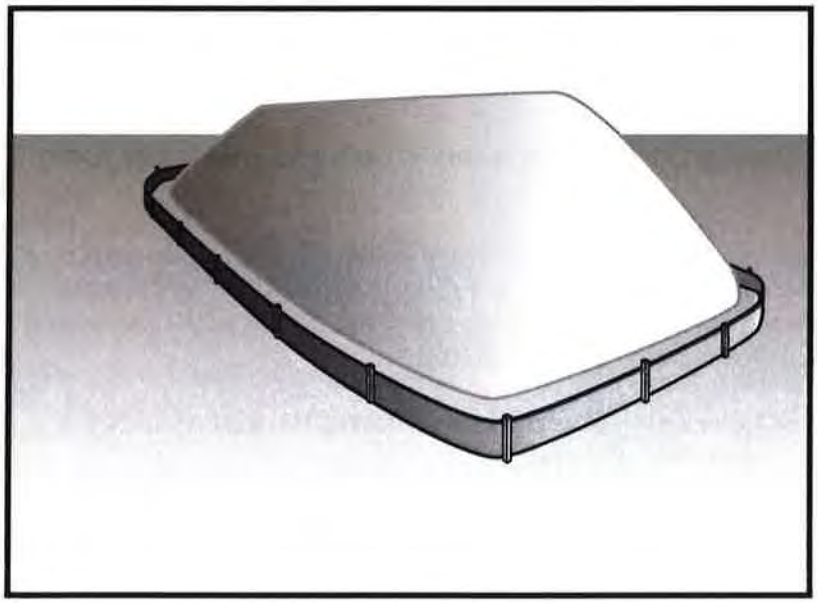
Coastal Nonpoint Pollution Control Program: Program Development and Approval Guidance, Working Group Working Paper; USEPA, April 1992.

Comments on Risk Assessments Risk Reduction Options for Cypermethrin: Docket No. OPP–2005–0293; California Stormwater Quality Association (CASQA) letter to USEPA, 2006.Environmental Hazard and General Labeling for Pyrethroid Non-Agricultural Outdoor Products, EPA-HQ-OPP-2008-0331-0021; USEPA, 2008.

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), March 2003.

Stormwater Management for Construction Activities; Developing Pollution Prevention Plans and Best Management Practice, EPA 832-R-92005; USEPA, April 1992.

Stockpile Management WM-3



Categories		
EC	Erosion Control	
SE	Sediment Control	☒
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	☒
WM	Waste Management and Materials Pollution Control	☑

Legend:
☑ **Primary Category**
☒ **Secondary Category**

Targeted Constituents	
Sediment	☑
Nutrients	☑
Trash	☑
Metals	☑
Bacteria	
Oil and Grease	☑
Organics	☑

Potential Alternatives

None

Description and Purpose

Stockpile management procedures and practices are designed to reduce or eliminate air and stormwater pollution from stockpiles of soil, soil amendments, sand, paving materials such as portland cement concrete (PCC) rubble, asphalt concrete (AC), asphalt concrete rubble, aggregate base, aggregate sub base or pre-mixed aggregate, asphalt minder (so called "cold mix" asphalt), and pressure treated wood.

Suitable Applications

Implement in all projects that stockpile soil and other loose materials.

Limitations

- Plastic sheeting as a stockpile protection is temporary and hard to manage in windy conditions. Where plastic is used, consider use of plastic tarps with nylon reinforcement which may be more durable than standard sheeting.
- Plastic sheeting can increase runoff volume due to lack of infiltration and potentially cause perimeter control failure.
- Plastic sheeting breaks down faster in sunlight.
- The use of Plastic materials and photodegradable plastics should be avoided.

Implementation

Protection of stockpiles is a year-round requirement. To properly manage stockpiles:

- On larger sites, a minimum of 50 ft separation from concentrated flows of stormwater, drainage courses, and inlets is recommended.
- All stockpiles are required to be protected immediately if they are not scheduled to be used within 14 days.
- Protect all stockpiles from stormwater runon using temporary perimeter sediment barriers such as compost berms (SE-13), temporary silt dikes (SE-12), fiber rolls (SE-5), silt fences (SE-1), sandbags (SE-8), gravel bags (SE-6), or biofilter bags (SE-14). Refer to the individual fact sheet for each of these controls for installation information.
- Implement wind erosion control practices as appropriate on all stockpiled material. For specific information, see WE-1, Wind Erosion Control.
- Manage stockpiles of contaminated soil in accordance with WM-7, Contaminated Soil Management.
- Place bagged materials on pallets and under cover.
- Ensure that stockpile coverings are installed securely to protect from wind and rain.
- Some plastic covers withstand weather and sunlight better than others. Select cover materials or methods based on anticipated duration of use.

Protection of Non-Active Stockpiles

Non-active stockpiles of the identified materials should be protected further as follows:

Soil stockpiles

- Soil stockpiles should be covered or protected with soil stabilization measures and a temporary perimeter sediment barrier at all times.
- Temporary vegetation should be considered for topsoil piles that will be stockpiled for extended periods.

Stockpiles of Portland cement concrete rubble, asphalt concrete, asphalt concrete rubble, aggregate base, or aggregate sub base

- **Stockpiles should be covered and protected with a temporary perimeter sediment barrier at all times.**

Stockpiles of "cold mix"

- Cold mix stockpiles should be placed on and covered with plastic sheeting or comparable material at all times and surrounded by a berm.

Stockpiles of fly ash, stucco, hydrated lime

- Stockpiles of materials that may raise the pH of runoff (i.e., basic materials) should be covered with plastic and surrounded by a berm.

Stockpiles/Storage of wood (Pressure treated with chromated copper arsenate or ammoniacal copper zinc arsenate

- Treated wood should be covered with plastic sheeting or comparable material at all times and surrounded by a berm.

Protection of Active Stockpiles

Active stockpiles of the identified materials should be protected as follows:

- All stockpiles should be covered and protected with a temporary linear sediment barrier prior to the onset of precipitation.
- Stockpiles of "cold mix" and treated wood, and basic materials should be placed on and covered with plastic sheeting or comparable material and surrounded by a berm prior to the onset of precipitation.
- The downstream perimeter of an active stockpile should be protected with a linear sediment barrier or berm and runoff should be diverted around or away from the stockpile on the upstream perimeter.

Costs

For cost information associated with stockpile protection refer to the individual erosion or sediment control BMP fact sheet considered for implementation (For example, refer to SE-1 Silt Fence for installation of silt fence around the perimeter of a stockpile.)

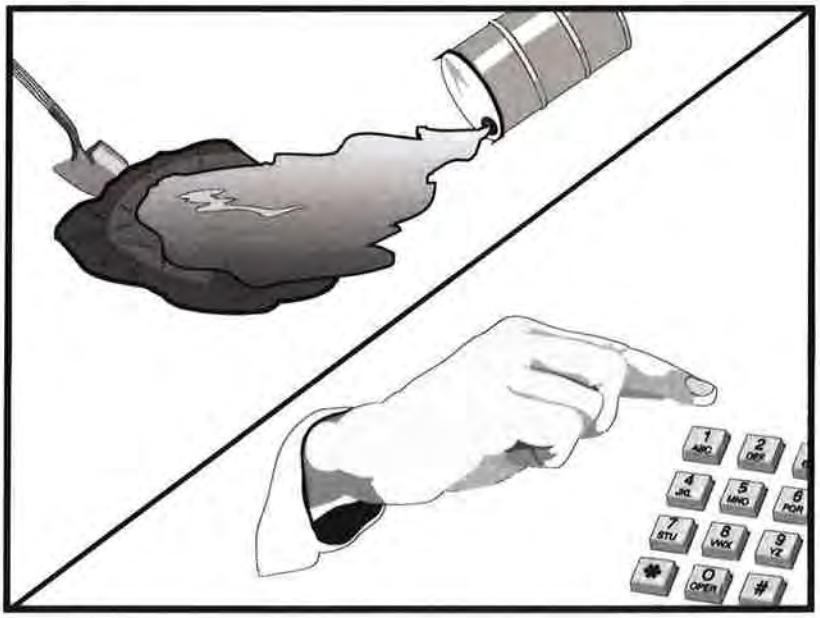
Inspection and Maintenance

- Stockpiles must be inspected in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- It may be necessary to inspect stockpiles covered with plastic sheeting more frequently during certain conditions (for example, high winds or extreme heat).
- Repair and/or replace perimeter controls and covers as needed to keep them functioning properly.
- Sediment shall be removed when it reaches one-third of the barrier height.

References

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), March 2003.

Spill Prevention and Control WM-4



Categories

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Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	☑
Nutrients	☑
Trash	☑
Metals	☑
Bacteria	
Oil and Grease	☑
Organics	☑

Potential Alternatives

None

Description and Purpose

Prevent or reduce the discharge of pollutants to drainage systems or watercourses from leaks and spills by reducing the chance for spills, stopping the source of spills, containing and cleaning up spills, properly disposing of spill materials, and training employees.

This best management practice covers only spill prevention and control. However, WM-1, Materials Delivery and Storage, and WM-2, Material Use, also contain useful information, particularly on spill prevention. For information on wastes, see the waste management BMPs in this section.

Suitable Applications

This BMP is suitable for all construction projects. Spill control procedures are implemented anytime chemicals or hazardous substances are stored on the construction site, including the following materials:

- Soil stabilizers/binders
- Dust palliatives
- Herbicides
- Growth inhibitors
- Fertilizers
- Deicing/anti-icing chemicals

- Fuels
- Lubricants
- Other petroleum distillates

Limitations

- In some cases it may be necessary to use a private spill cleanup company.
- This BMP applies to spills caused by the contractor and subcontractors.
- Procedures and practices presented in this BMP are general. Contractor should identify appropriate practices for the specific materials used or stored onsite

Implementation

The following steps will help reduce the stormwater impacts of leaks and spills:

Education

- Be aware that different materials pollute in different amounts. Make sure that each employee knows what a "significant spill" is for each material they use, and what is the appropriate response for "significant" and "insignificant" spills.
- Educate employees and subcontractors on potential dangers to humans and the environment from spills and leaks.
- Hold regular meetings to discuss and reinforce appropriate disposal procedures (incorporate into regular safety meetings).
- Establish a continuing education program to indoctrinate new employees.
- Have contractor's superintendent or representative oversee and enforce proper spill prevention and control measures.

General Measures

- To the extent that the work can be accomplished safely, spills of oil, petroleum products, substances listed under 40 CFR parts 110,117, and 302, and sanitary and septic wastes should be contained and cleaned up immediately.
- Store hazardous materials and wastes in covered containers and protect from vandalism.
- Place a stockpile of spill cleanup materials where it will be readily accessible.
- Train employees in spill prevention and cleanup.
- Designate responsible individuals to oversee and enforce control measures.
- Spills should be covered and protected from stormwater runon during rainfall to the extent that it doesn't compromise clean up activities.
- Do not bury or wash spills with water.

- Store and dispose of used clean up materials, contaminated materials, and recovered spill material that is no longer suitable for the intended purpose in conformance with the provisions in applicable BMPs.
- Do not allow water used for cleaning and decontamination to enter storm drains or watercourses. Collect and dispose of contaminated water in accordance with WM-10, Liquid Waste Management.
- Contain water overflow or minor water spillage and do not allow it to discharge into drainage facilities or watercourses.
- Place proper storage, cleanup, and spill reporting instructions for hazardous materials stored or used on the project site in an open, conspicuous, and accessible location.
- Keep waste storage areas clean, well organized, and equipped with ample cleanup supplies as appropriate for the materials being stored. Perimeter controls, containment structures, covers, and liners should be repaired or replaced as needed to maintain proper function.

Cleanup

- Clean up leaks and spills immediately.
- Use a rag for small spills on paved surfaces, a damp mop for general cleanup, and absorbent material for larger spills. If the spilled material is hazardous, then the used cleanup materials are also hazardous and must be sent to either a certified laundry (rags) or disposed of as hazardous waste.
- Never hose down or bury dry material spills. Clean up as much of the material as possible and dispose of properly. See the waste management BMPs in this section for specific information.

Minor Spills

- Minor spills typically involve small quantities of oil, gasoline, paint, etc. which can be controlled by the first responder at the discovery of the spill.
- Use absorbent materials on small spills rather than hosing down or burying the spill.
- Absorbent materials should be promptly removed and disposed of properly.
- Follow the practice below for a minor spill:
  - Contain the spread of the spill.
  - Recover spilled materials.
  - Clean the contaminated area and properly dispose of contaminated materials.

Semi-Significant Spills

- Semi-significant spills still can be controlled by the first responder along with the aid of other personnel such as laborers and the foreman, etc. This response may require the cessation of all other activities.

- Spills should be cleaned up immediately:
  - Contain spread of the spill.
  - Notify the project foreman immediately.
  - If the spill occurs on paved or impermeable surfaces, clean up using "dry" methods (absorbent materials, cat litter and/or rags). Contain the spill by encircling with absorbent materials and do not let the spill spread widely.
  - If the spill occurs in dirt areas, immediately contain the spill by constructing an earthen dike. Dig up and properly dispose of contaminated soil.
  - If the spill occurs during rain, cover spill with tarps or other material to prevent contaminating runoff.

Significant/Hazardous Spills

- For significant or hazardous spills that cannot be controlled by personnel in the immediate vicinity, the following steps should be taken:
  - Notify the local emergency response by dialing 911. In addition to 911, the contractor will notify the proper county officials. It is the contractor's responsibility to have all emergency phone numbers at the construction site.
  - Notify the Governor's Office of Emergency Services Warning Center, (916) 845-8911.
  - For spills of federal reportable quantities, in conformance with the requirements in 40 CFR parts 110,119, and 302, the contractor should notify the National Response Center at (800) 424-8802.
  - Notification should first be made by telephone and followed up with a written report.
  - The services of a spills contractor or a Haz-Mat team should be obtained immediately. Construction personnel should not attempt to clean up until the appropriate and qualified staffs have arrived at the job site.
  - Other agencies which may need to be consulted include, but are not limited to, the Fire Department, the Public Works Department, the Coast Guard, the Highway Patrol, the City/County Police Department, Department of Toxic Substances, California Division of Oil and Gas, Cal/OSHA, etc.

Reporting

- Report significant spills to local agencies, such as the Fire Department; they can assist in cleanup.
- Federal regulations require that any significant oil spill into a water body or onto an adjoining shoreline be reported to the National Response Center (NRC) at 800-424-8802 (24 hours).

Use the following measures related to specific activities:

Vehicle and Equipment Maintenance

- If maintenance must occur onsite, use a designated area and a secondary containment, located away from drainage courses, to prevent the runon of stormwater and the runoff of spills.
- Regularly inspect onsite vehicles and equipment for leaks and repair immediately
- Check incoming vehicles and equipment (including delivery trucks, and employee and subcontractor vehicles) for leaking oil and fluids. Do not allow leaking vehicles or equipment onsite.
- Always use secondary containment, such as a drain pan or drop cloth, to catch spills or leaks when removing or changing fluids.
- Place drip pans or absorbent materials under paving equipment when not in use.
- Use absorbent materials on small spills rather than hosing down or burying the spill. Remove the absorbent materials promptly and dispose of properly.
- Promptly transfer used fluids to the proper waste or recycling drums. Don't leave full drip pans or other open containers lying around
- Oil filters disposed of in trashcans or dumpsters can leak oil and pollute stormwater. Place the oil filter in a funnel over a waste oil-recycling drum to drain excess oil before disposal. Oil filters can also be recycled. Ask the oil supplier or recycler about recycling oil filters.
- Store cracked batteries in a non-leaking secondary container. Do this with all cracked batteries even if you think all the acid has drained out. If you drop a battery, treat it as if it is cracked. Put it into the containment area until you are sure it is not leaking.

Vehicle and Equipment Fueling

- If fueling must occur onsite, use designate areas, located away from drainage courses, to prevent the runon of stormwater and the runoff of spills.
- Discourage "topping off" of fuel tanks.
- **Always use secondary containment, such as a drain pan, when fueling to catch spills/ leaks.**

Costs

Prevention of leaks and spills is inexpensive. Treatment and/ or disposal of contaminated soil or water can be quite expensive.

Inspection and Maintenance

- Inspect and verify that activity–based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, inspect weekly during the rainy season and of two-week intervals in the non-rainy season to verify continued BMP implementation.
- Inspect BMPs subject to non-stormwater discharge daily while non-stormwater discharges occur.

- Keep ample supplies of spill control and cleanup materials onsite, near storage, unloading, and maintenance areas.
- Update your spill prevention and control plan and stock cleanup materials as changes occur in the types of chemicals onsite.

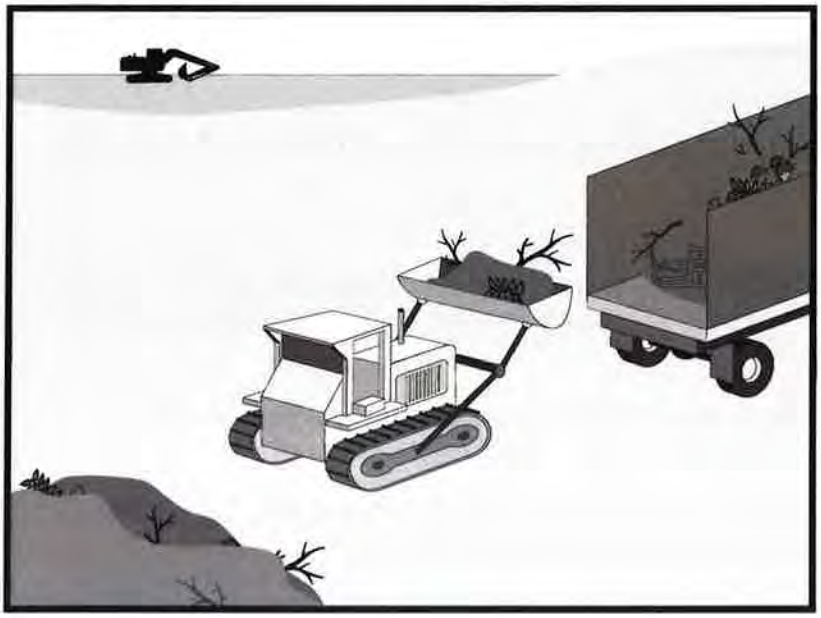
References

Blueprint for a Clean Bay: Best Management Practices to Prevent Stormwater Pollution from Construction Related Activities; Santa Clara Valley Nonpoint Source Pollution Control Program, 1995.

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Stormwater Management for Construction Activities; Developing Pollution Prevention Plans and Best Management Practice, EPA 832-R-92005; USEPA, April 1992.

Solid Waste Management WM-5



Categories

EC	Erosion Control	
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	☑

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	☑
Nutrients	☑
Trash	☑
Metals	☑
Bacteria	
Oil and Grease	☑
Organics	☑

Potential Alternatives

None

Description and Purpose

Solid waste management procedures and practices are designed to prevent or reduce the discharge of pollutants to stormwater from solid or construction waste by providing designated waste collection areas and containers, arranging for regular disposal, and training employees and subcontractors.

Suitable Applications

This BMP is suitable for construction sites where the following wastes are generated or stored:

- Solid waste generated from trees and shrubs removed during land clearing, demolition of existing structures (rubble), and building construction
- Packaging materials including wood, paper, and plastic
- Scrap or surplus building materials including scrap metals, rubber, plastic, glass pieces and masonry products
- Domestic wastes including food containers such as beverage cans, coffee cups, paper bags, plastic wrappers, and cigarettes
- Construction wastes including brick, mortar, timber, steel and metal scraps, pipe and electrical cuttings, non-hazardous equipment parts, styrofoam and other materials used to transport and package construction materials
- Highway planting wastes, including vegetative material,

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plant containers, and packaging materials

Limitations

Temporary stockpiling of certain construction wastes may not necessitate stringent drainage related controls during the non-rainy season or in desert areas with low rainfall.

Implementation

The following steps will help keep a clean site and reduce stormwater pollution:

- Select designated waste collection areas onsite.
- Inform trash-hauling contractors that you will accept only watertight dumpsters for onsite use. Inspect dumpsters for leaks and repair any dumpster that is not watertight.
- Locate containers in a covered area or in a secondary containment.
- Provide an adequate number of containers with lids or covers that can be placed over the container to keep rain out or to prevent loss of wastes when it is windy.
- Plan for additional containers and more frequent pickup during the demolition phase of construction.
- Collect site trash daily, especially during rainy and windy conditions.
- Remove this solid waste promptly since erosion and sediment control devices tend to collect litter.
- Make sure that toxic liquid wastes (used oils, solvents, and paints) and chemicals (acids, pesticides, additives, curing compounds) are not disposed of in dumpsters designated for construction debris.
- Do not hose out dumpsters on the construction site. Leave dumpster cleaning to the trash hauling contractor.
- Arrange for regular waste collection before containers overflow.
- Clean up immediately if a container does spill.
- Make sure that construction waste is collected, removed, and disposed of only at authorized disposal areas.

Education

- Have the contractor's superintendent or representative oversee and enforce proper solid waste management procedures and practices.
- Instruct employees and subcontractors on identification of solid waste and hazardous waste.
- Educate employees and subcontractors on solid waste storage and disposal procedures.
- Hold regular meetings to discuss and reinforce disposal procedures (incorporate into regular safety meetings).

- Require that employees and subcontractors follow solid waste handling and storage procedures.
- Prohibit littering by employees, subcontractors, and visitors.
- Minimize production of solid waste materials wherever possible.

Collection, Storage, and Disposal

- Littering on the project site should be prohibited.
- To prevent clogging of the storm drainage system, litter and debris removal from drainage grates, trash racks, and ditch lines should be a priority.
- Trash receptacles should be provided in the contractor's yard, field trailer areas, and at locations where workers congregate for lunch and break periods.
- Litter from work areas within the construction limits of the project site should be collected and placed in watertight dumpsters at least weekly, regardless of whether the litter was generated by the contractor, the public, or others. Collected litter and debris should not be placed in or next to drain inlets, stormwater drainage systems, or watercourses.
- Dumpsters of sufficient size and number should be provided to contain the solid waste generated by the project.
- Full dumpsters should be removed from the project site and the contents should be disposed of by the trash hauling contractor.
- Construction debris and waste should be removed from the site biweekly or more frequently as needed.
- Construction material visible to the public should be stored or stacked in an orderly manner.
- Stormwater runon should be prevented from contacting stored solid waste through the use of berms, dikes, or other temporary diversion structures or through the use of measures to elevate waste from site surfaces.
- **Solid waste storage areas should be located at least 50 ft from drainage facilities and watercourses and should not be located in areas prone to flooding or ponding.**
- Except during fair weather, construction and highway planting waste not stored in watertight dumpsters should be securely covered from wind and rain by covering the waste with tarps or plastic.
- Segregate potentially hazardous waste from non-hazardous construction site waste.
- Make sure that toxic liquid wastes (used oils, solvents, and paints) and chemicals (acids, pesticides, additives, curing compounds) are not disposed of in dumpsters designated for construction debris.
- For disposal of hazardous waste, see WM-6, Hazardous Waste Management. Have hazardous waste hauled to an appropriate disposal and/or recycling facility.

- Salvage or recycle useful vegetation debris, packaging and surplus building materials when practical. For example, trees and shrubs from land clearing can be used as a brush barrier, or converted into wood chips, then used as mulch on graded areas. Wood pallets, cardboard boxes, and construction scraps can also be recycled.

Costs

All of the above are low cost measures.

Inspection and Maintenance

- Inspect and verify that activity–based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, inspect weekly during the rainy season and of two-week intervals in the non-rainy season to verify continued BMP implementation.
- Inspect BMPs subject to non-stormwater discharge daily while non-stormwater discharges occur
- Inspect construction waste area regularly.
- Arrange for regular waste collection.

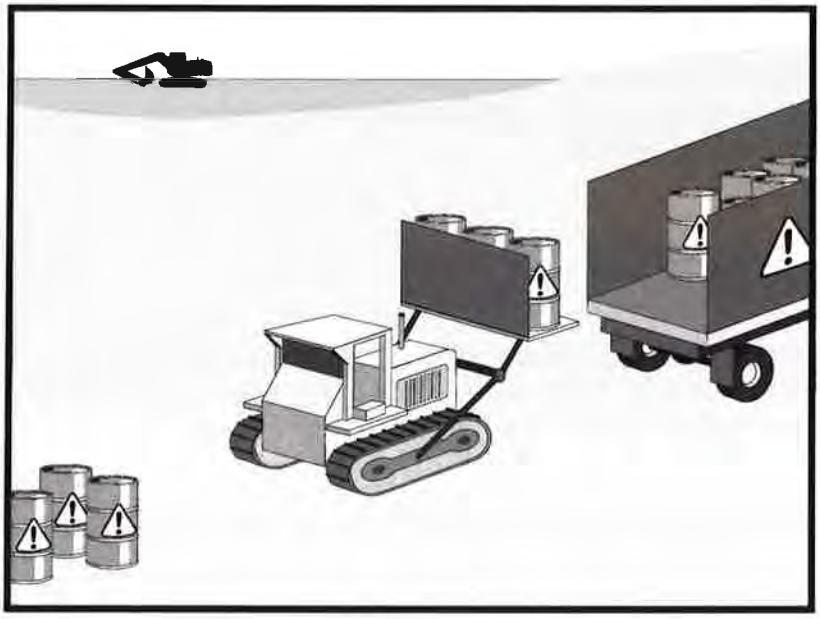
References

Processes, Procedures and Methods to Control Pollution Resulting from All Construction Activity, 430/9-73-007, USEPA, 1973.

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Stormwater Management for Construction Activities; Developing Pollution Prevention Plans and Best Management Practice, EPA 832-R-92005; USEPA, April 1992.

Hazardous Waste Management WM-6



Categories

EC	Erosion Control	
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	☑

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	
Nutrients	☑
Trash	☑
Metals	☑
Bacteria	☑
Oil and Grease	☑
Organics	☑

Potential Alternatives

None

Description and Purpose

Prevent or reduce the discharge of pollutants to stormwater from hazardous waste through proper material use, waste disposal, and training of employees and subcontractors.

Suitable Applications

This best management practice (BMP) applies to all construction projects. Hazardous waste management practices are implemented on construction projects that generate waste from the use of:

- Petroleum Products
- Asphalt Products
- Concrete Curing Compounds
- Pesticides
- Palliatives
- Acids
- Septic Wastes
- Paints
- Stains
- Solvents
- Wood Preservatives
- Roofing Tar
- Any materials deemed a hazardous waste in California, Title 22 Division 4.5, or listed in 40 CFR Parts 110, 117, 261, or 302

In addition, sites with existing structures may contain wastes, which must be disposed of in accordance with federal, state, and local regulations. These wastes include:

- Sandblasting grit mixed with lead-, cadmium-, or chromium-based paints
- Asbestos
- PCBs (particularly in older transformers)

Limitations

- Hazardous waste that cannot be reused or recycled must be disposed of by a licensed hazardous waste hauler.
- Nothing in this BMP relieves the contractor from responsibility for compliance with federal, state, and local laws regarding storage, handling, transportation, and disposal of hazardous wastes.
- This BMP does not cover aerially deposited lead (ADL) soils. For ADL soils refer to WM-7, Contaminated Soil Management.

Implementation

The following steps will help reduce stormwater pollution from hazardous wastes:

Material Use

- Wastes should be stored in sealed containers constructed of a suitable material and should be labeled as required by Title 22 CCR, Division 4.5 and 49 CFR Parts 172, 173, 178, and 179.
- All hazardous waste should be stored, transported, and disposed as required in Title 22 CCR, Division 4.5 and 49 CFR 261-263.
- Waste containers should be stored in temporary containment facilities that should comply with the following requirements:
  - Temporary containment facility should provide for a spill containment volume equal to 1.5 times the volume of all containers able to contain precipitation from a 25 year storm event, plus the greater of 10% of the aggregate volume of all containers or 100% of the capacity of the largest tank within its boundary, whichever is greater.
  - Temporary containment facility should be impervious to the materials stored there for a minimum contact time of 72 hours.
  - Temporary containment facilities should be maintained free of accumulated rainwater and spills. In the event of spills or leaks, accumulated rainwater and spills should be placed into drums after each rainfall. These liquids should be handled as a hazardous waste unless testing determines them to be non-hazardous. Non-hazardous liquids should be sent to an approved disposal site.
  - Sufficient separation should be provided between stored containers to allow for spill cleanup and emergency response access.

- Incompatible materials, such as chlorine and ammonia, should not be stored in the same temporary containment facility.
- Throughout the rainy season, temporary containment facilities should be covered during non-working days, and prior to rain events. Covered facilities may include use of plastic tarps for small facilities or constructed roofs with overhangs.

- Drums should not be overfilled and wastes should not be mixed.
- Unless watertight, containers of dry waste should be stored on pallets.
- Do not over-apply herbicides and pesticides. Prepare only the amount needed. Follow the recommended usage instructions. Over application is expensive and environmentally harmful. Apply surface dressings in several smaller applications, as opposed to one large application. Allow time for infiltration and avoid excess material being carried offsite by runoff. Do not apply these chemicals just before it rains. People applying pesticides must be certified in accordance with federal and state regulations.
- Paint brushes and equipment for water and oil based paints should be cleaned within a contained area and should not be allowed to contaminate site soils, watercourses, or drainage systems. Waste paints, thinners, solvents, residues, and sludges that cannot be recycled or reused should be disposed of as hazardous waste. When thoroughly dry, latex paint and paint cans, used brushes, rags, absorbent materials, and drop cloths should be disposed of as solid waste.
- Do not clean out brushes or rinse paint containers into the dirt, street, gutter, storm drain, or stream. "Paint out" brushes as much as possible. Rinse water-based paints to the sanitary sewer. Filter and reuse thinners and solvents. Dispose of excess oil-based paints and sludge as hazardous waste.
- The following actions should be taken with respect to temporary contaminant:
  - Ensure that adequate hazardous waste storage volume is available.
  - Ensure that hazardous waste collection containers are conveniently located.
  - Designate hazardous waste storage areas onsite away from storm drains or watercourses and away from moving vehicles and equipment to prevent accidental spills.
  - Minimize production or generation of hazardous materials and hazardous waste on the job site.
  - Use containment berms in fueling and maintenance areas and where the potential for spills is high.
  - Segregate potentially hazardous waste from non-hazardous construction site debris.
  - Keep liquid or semi-liquid hazardous waste in appropriate containers (closed drums or similar) and under cover.

- Clearly label all hazardous waste containers with the waste being stored and the date of accumulation.
- Place hazardous waste containers in secondary containment.
- Do not allow potentially hazardous waste materials to accumulate on the ground.
- Do not mix wastes.
- Use all of the product before disposing of the container.
- Do not remove the original product label; it contains important safety and disposal information.

Waste Recycling Disposal

- Select designated hazardous waste collection areas onsite.
- Hazardous materials and wastes should be stored in covered containers and protected from vandalism.
- Place hazardous waste containers in secondary containment.
- Do not mix wastes, this can cause chemical reactions, making recycling impossible and complicating disposal.
- Recycle any useful materials such as used oil or water-based paint.
- Make sure that toxic liquid wastes (used oils, solvents, and paints) and chemicals (acids, pesticides, additives, curing compounds) are not disposed of in dumpsters designated for construction debris.
- Arrange for regular waste collection before containers overflow.
- Make sure that hazardous waste (e.g., excess oil-based paint and sludge) is collected, removed, and disposed of only at authorized disposal areas.

Disposal Procedures

- Waste should be disposed of by a licensed hazardous waste transporter at an authorized and licensed disposal facility or recycling facility utilizing properly completed Uniform Hazardous Waste Manifest forms.
- A Department of Health Services certified laboratory should sample waste to determine the appropriate disposal facility.
- Properly dispose of rainwater in secondary containment that may have mixed with hazardous waste.
- Attention is directed to "Hazardous Material", "Contaminated Material", and "Aerially Deposited Lead" of the contract documents regarding the handling and disposal of hazardous materials.

Education

- Educate employees and subcontractors on hazardous waste storage and disposal procedures.
- Educate employees and subcontractors on potential dangers to humans and the environment from hazardous wastes.
- Instruct employees and subcontractors on safety procedures for common construction site hazardous wastes.
- Instruct employees and subcontractors in identification of hazardous and solid waste.
- Hold regular meetings to discuss and reinforce hazardous waste management procedures (incorporate into regular safety meetings).
- The contractor's superintendent or representative should oversee and enforce proper hazardous waste management procedures and practices.
- Make sure that hazardous waste is collected, removed, and disposed of only at authorized disposal areas.
- Warning signs should be placed in areas recently treated with chemicals.
- Place a stockpile of spill cleanup materials where it will be readily accessible.
- If a container does spill, clean up immediately.

Costs

All of the above are low cost measures.

Inspection and Maintenance

- Inspect and verify that activity–based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, inspect weekly during the rainy season and of two week intervals in the non-rainy season to verify continued BMP implementation.
- Inspect BMPs subject to non-stormwater discharge daily while non-stormwater discharges occur
- Hazardous waste should be regularly collected.
- A foreman or construction supervisor should monitor onsite hazardous waste storage and disposal procedures.
- Waste storage areas should be kept clean, well organized, and equipped with ample cleanup supplies as appropriate for the materials being stored.
- Perimeter controls, containment structures, covers, and liners should be repaired or replaced as needed to maintain proper function.
- Hazardous spills should be cleaned up and reported in conformance with the applicable Material Safety Data Sheet (MSDS) and the instructions posted at the project site.

- The National Response Center, at (800) 424-8802, should be notified of spills of federal reportable quantities in conformance with the requirements in 40 CFR parts 110, 117, and 302. Also notify the Governors Office of Emergency Services Warning Center at (916) 845-8911.
- A copy of the hazardous waste manifests should be provided.

References

Blueprint for a Clean Bay: Best Management Practices to Prevent Stormwater Pollution from Construction Related Activities; Santa Clara Valley Nonpoint Source Pollution Control Program, 1995.

Processes, Procedures and Methods to Control Pollution Resulting from All Construction Activity, 430/9-73-007, USEPA, 1973.

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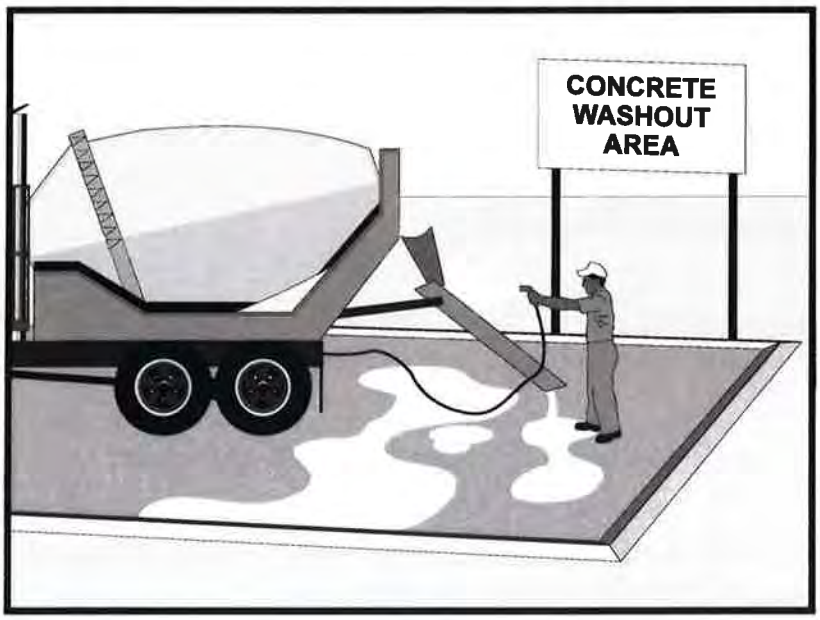
Stormwater Management for Construction Activities; Developing Pollution Prevention Plans and Best Management Practice, EPA 832-R-92005; USEPA, April 1992.

Concrete Waste Management WM-8



Categories

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SE	Sediment Control	
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WE	Wind Erosion Control	
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WM	Waste Management and Materials Pollution Control	☑

Legend:
☑ **Primary Category**
☒ **Secondary Category**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	☑
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

None

Description and Purpose

Prevent the discharge of pollutants to stormwater from concrete waste by conducting washout onsite or offsite in a designated area, and by employee and subcontractor training.

The General Permit incorporates Numeric Effluent Limits (NEL) and Numeric Action Levels (NAL) for pH (see Section 2 of this handbook to determine your project's risk level and if you are subject to these requirements).

Many types of construction materials, including mortar, concrete, stucco, cement and block and their associated wastes have basic chemical properties that can raise pH levels outside of the permitted range. Additional care should be taken when managing these materials to prevent them from coming into contact with stormwater flows and raising pH to levels outside the accepted range.

Suitable Applications

Concrete waste management procedures and practices are implemented on construction projects where:

- Concrete is used as a construction material or where concrete dust and debris result from demolition activities.
- Slurries containing portland cement concrete (PCC) are generated, such as from saw cutting, coring, grinding, grooving, and hydro-concrete demolition.

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- Concrete trucks and other concrete-coated equipment are washed onsite.
- Mortar-mixing stations exist.
- Stucco mixing and spraying .
- See also NS-8, Vehicle and Equipment Cleaning.

Limitations

- Offsite washout of concrete wastes may not always be possible.
- Multiple washouts may be needed to assure adequate capacity and to allow for evaporation.

Implementation

The following steps will help reduce stormwater pollution from concrete wastes:

- Incorporate requirements for concrete waste management into material supplier and subcontractor agreements.
- Store dry and wet materials under cover, away from drainage areas. Refer to WM-1, Material Delivery and Storage for more information.
- Avoid mixing excess amounts of concrete.
- Perform washout of concrete trucks in designated areas only, where washout will not reach stormwater.
- Do not wash out concrete trucks into storm drains, open ditches, streets, streams or onto the ground. Trucks should always be washed out into designated facilities.
- Do not allow excess concrete to be dumped onsite, except in designated areas.
- For onsite washout:
  - On larger sites, it is recommended to locate washout areas at least 50 feet from storm drains, open ditches, or water bodies. Do not allow runoff from this area by constructing a temporary pit or bermed area large enough for liquid and solid waste.
  - **Washout wastes into the temporary washout where the concrete can set, be broken up, and then disposed properly.**
  - Washout should be lined so there is no discharge into the underlying soil.
- Do not wash sweepings from exposed aggregate concrete into the street or storm drain. Collect and return sweepings to aggregate base stockpile or dispose in the trash.
- See typical concrete washout installation details at the end of this fact sheet.

Education

- Educate employees, subcontractors, and suppliers on the concrete waste management techniques described herein.

- Arrange for contractor's superintendent or representative to oversee and enforce concrete waste management procedures.
- Discuss the concrete management techniques described in this BMP (such as handling of concrete waste and washout) with the ready-mix concrete supplier before any deliveries are made.

Concrete Demolition Wastes

- Stockpile concrete demolition waste in accordance with BMP WM-3, Stockpile Management.
- Dispose of or recycle hardened concrete waste in accordance with applicable federal, state or local regulations.

Concrete Slurry Wastes

- PCC and AC waste should not be allowed to enter storm drains or watercourses.
- PCC and AC waste should be collected and disposed of or placed in a temporary concrete washout facility (as described in Onsite Temporary Concrete Washout Facility, Concrete Transit Truck Washout Procedures, below).
- A foreman or construction supervisor should monitor onsite concrete working tasks, such as saw cutting, coring, grinding and grooving to ensure proper methods are implemented.
- Saw-cut concrete slurry should not be allowed to enter storm drains or watercourses. Residue from grinding operations should be picked up by means of a vacuum attachment to the grinding machine or by sweeping. Saw cutting residue should not be allowed to flow across the pavement and should not be left on the surface of the pavement. See also NS-3, Paving and Grinding Operations; and WM-10, Liquid Waste Management.
- Concrete slurry residue should be disposed in a temporary washout facility (as described in Onsite Temporary Concrete Washout Facility, Concrete Transit Truck Washout Procedures, below) and allowed to dry. Dispose of dry slurry residue in accordance with WM-5, Solid Waste Management.

Onsite Temporary Concrete Washout Facility, Transit Truck Washout Procedures

- Temporary concrete washout facilities should be located a minimum of 50 ft from storm drain inlets, open drainage facilities, and watercourses. Each facility should be located away from construction traffic or access areas to prevent disturbance or tracking.
- A sign should be installed adjacent to each washout facility to inform concrete equipment operators to utilize the proper facilities.
- Temporary concrete washout facilities should be constructed above grade or below grade at the option of the contractor. Temporary concrete washout facilities should be constructed and maintained in sufficient quantity and size to contain all liquid and concrete waste generated by washout operations.

- Temporary washout facilities should have a temporary pit or bermed areas of sufficient volume to completely contain all liquid and waste concrete materials generated during washout procedures.
- Temporary washout facilities should be lined to prevent discharge to the underlying ground or surrounding area.
- Washout of concrete trucks should be performed in designated areas only.
- Only concrete from mixer truck chutes should be washed into concrete wash out.
- Concrete washout from concrete pumper bins can be washed into concrete pumper trucks and discharged into designated washout area or properly disposed of or recycled offsite.
- Once concrete wastes are washed into the designated area and allowed to harden, the concrete should be broken up, removed, and disposed of per WM-5, Solid Waste Management. Dispose of or recycle hardened concrete on a regular basis.
- Temporary Concrete Washout Facility (Type Above Grade)
  - Temporary concrete washout facility (type above grade) should be constructed as shown on the details at the end of this BMP, with a recommended minimum length and minimum width of 10 ft; however, smaller sites or jobs may only need a smaller washout facility. With any washout, always maintain a sufficient quantity and volume to contain all liquid and concrete waste generated by washout operations.
  - Materials used to construct the washout area should conform to the provisions detailed in their respective BMPs (e.g., SE-8 Sandbag Barrier).
  - Plastic lining material should be a minimum of 10 mil in polyethylene sheeting and should be free of holes, tears, or other defects that compromise the impermeability of the material.
  - Alternatively, portable removable containers can be used as above grade concrete washouts. Also called a "roll-off"; this concrete washout facility should be properly sealed to prevent leakage, and should be removed from the site and replaced when the container reaches 75% capacity.
- Temporary Concrete Washout Facility (Type Below Grade)
  - Temporary concrete washout facilities (type below grade) should be constructed as shown on the details at the end of this BMP, with a recommended minimum length and minimum width of 10 ft. The quantity and volume should be sufficient to contain all liquid and concrete waste generated by washout operations.
  - Lath and flagging should be commercial type.
  - Plastic lining material should be a minimum of 10 mil polyethylene sheeting and should be free of holes, tears, or other defects that compromise the impermeability of the material.

- The base of a washout facility should be free of rock or debris that may damage a plastic liner.

Removal of Temporary Concrete Washout Facilities

- When temporary concrete washout facilities are no longer required for the work, the hardened concrete should be removed and properly disposed or recycled in accordance with federal, state or local regulations. Materials used to construct temporary concrete washout facilities should be removed from the site of the work and properly disposed or recycled in accordance with federal, state or local regulations..

- Holes, depressions or other ground disturbance caused by the removal of the temporary concrete washout facilities should be backfilled and repaired.

Costs

All of the above are low cost measures. Roll-off concrete washout facilities can be more costly than other measures due to removal and replacement; however, provide a cleaner alternative to traditional washouts. The type of washout facility, size, and availability of materials will determine the cost of the washout.

Inspection and Maintenance

- BMPs must be inspected in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.

- Temporary concrete washout facilities should be maintained to provide adequate holding capacity with a minimum freeboard of 4 in. for above grade facilities and 12 in. for below grade facilities. Maintaining temporary concrete washout facilities should include removing and disposing of hardened concrete and returning the facilities to a functional condition. Hardened concrete materials should be removed and properly disposed or recycled in accordance with federal, state or local regulations.

- Washout facilities must be cleaned, or new facilities must be constructed and ready for use once the washout is 75% full.

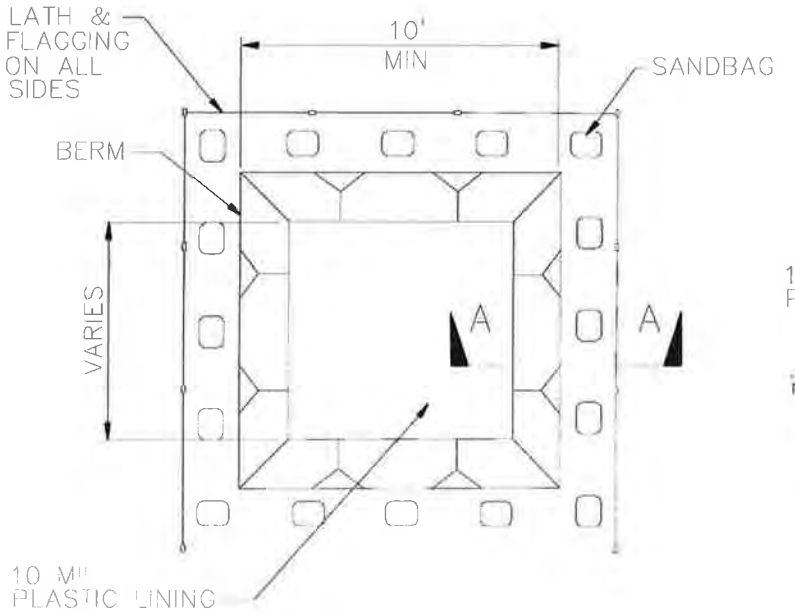
- Inspect washout facilities for damage (e.g. torn liner, evidence of leaks, signage, etc.). Repair all identified damage.

References

Blueprint for a Clean Bay: Best Management Practices to Prevent Stormwater Pollution from Construction Related Activities; Santa Clara Valley Nonpoint Source Pollution Control Program, 1995.

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000, Updated March 2003.

Stormwater Management for Construction Activities; Developing Pollution Prevention Plans and Best Management Practice, EPA 832-R-92005; USEPA, April 1992.



PLAN
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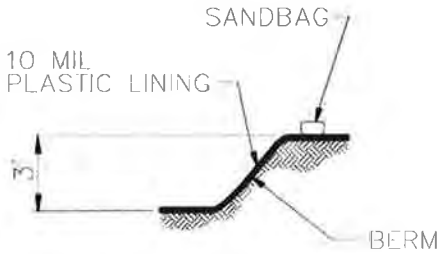
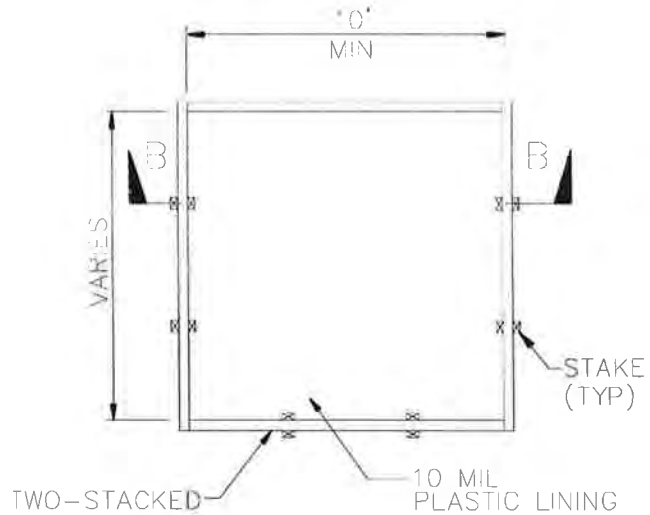
TYPE "BELOW GRADE"



SECTION A–A
NOT TO SCALE



PLAN
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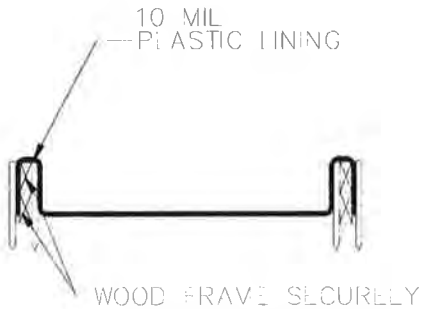
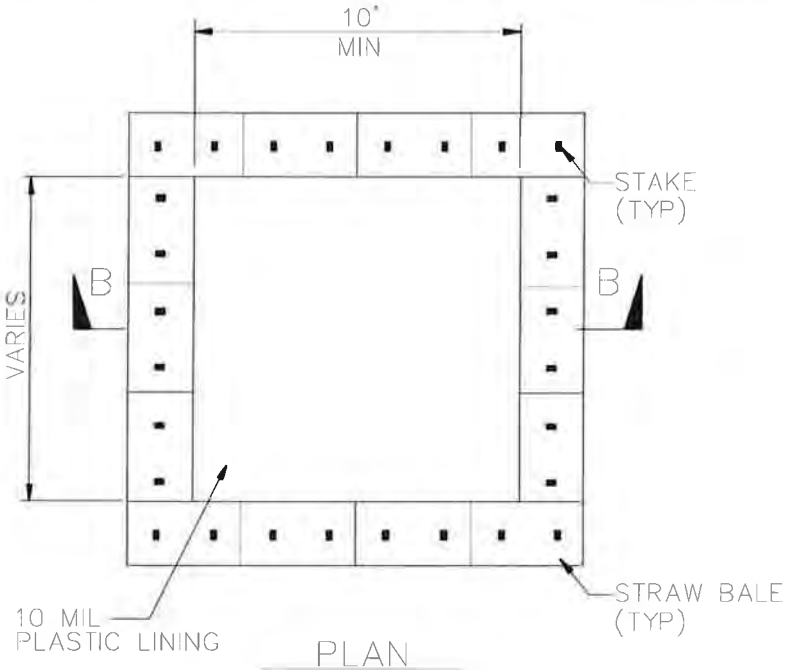
TYPE "ABOVE GRADE"



SECTION B–B
NOT TO SCALE

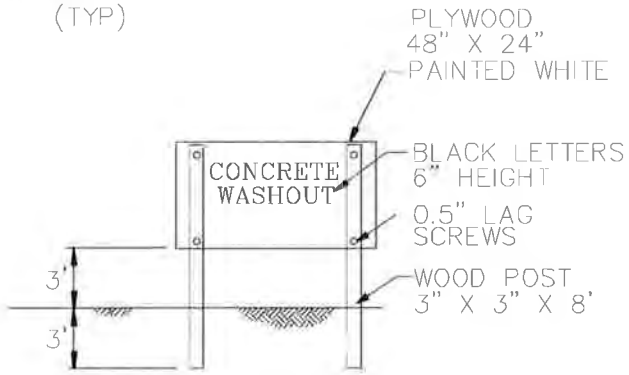
NOTES

1. ACTUAL LAYOUT DETERMINED IN FIELD.
2. THE CONCRETE WASHOUT SIGN SHALL BE INSTALLED WITHIN 30 FT. OF THE TEMPORARY CONCRETE WASHOUT FACILITY.

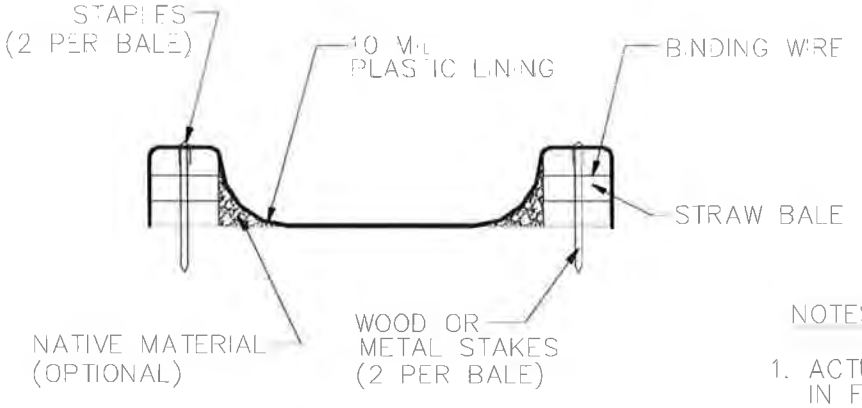


PLAN
NOT TO SCALE
TYPE "ABOVE GRADE"
WITH STRAW BALES

STAPLE DETAIL



CONCRETE WASHOUT
SIGN DETAIL
(OR EQUIVALENT)

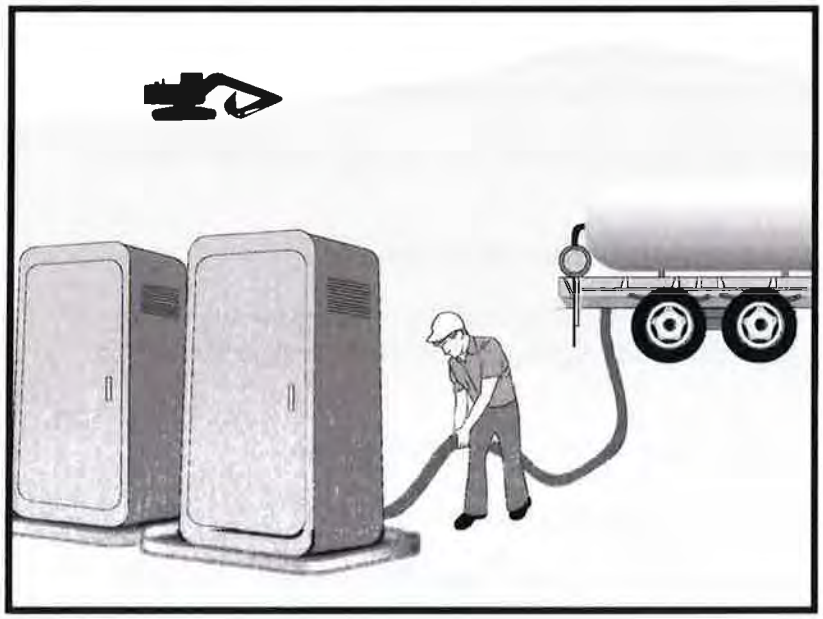


SECTION B–B
NOT TO SCALE

NOTES

1. ACTUAL LAYOUT DETERMINED IN FIELD.
2. THE CONCRETE WASHOUT SIGN SHALL BE INSTALLED WITHIN 30 FT. OF THE TEMPORARY CONCRETE WASHOUT FACILITY.

Sanitary/Septic Waste Management WM-9



Description and Purpose

Proper sanitary and septic waste management prevent the discharge of pollutants to stormwater from sanitary and septic waste by providing convenient, well-maintained facilities, and arranging for regular service and disposal.

Suitable Applications

Sanitary septic waste management practices are suitable for use at all construction sites that use temporary or portable sanitary and septic waste systems.

Limitations

None identified.

Implementation

Sanitary or septic wastes should be treated or disposed of in accordance with state and local requirements. In many cases, one contract with a local facility supplier will be all that it takes to make sure sanitary wastes are properly disposed.

Storage and Disposal Procedures

- Temporary sanitary facilities should be located away from drainage facilities, watercourses, and from traffic circulation. If site conditions allow, place portable facilities a minimum of 50 feet from drainage conveyances and traffic areas. When subjected to high winds or risk of high winds, temporary sanitary facilities should be secured to prevent overturning.

Categories

EC	Erosion Control	
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	☑

Legend:

☑ **Primary Category**

☒ **Secondary Category**

Targeted Constituents

Sediment	
Nutrients	☑
Trash	☑
Metals	
Bacteria	☑
Oil and Grease	
Organics	☑

Potential Alternatives

None

CASQA
CALIFORNIA STORMWATER QUALITY ASSOCIATION

- Temporary sanitary facilities must be equipped with containment to prevent discharge of pollutants to the stormwater drainage system of the receiving water.
- Consider safety as well as environmental implications before placing temporary sanitary facilities.
- Wastewater should not be discharged or buried within the project site.
- Sanitary and septic systems that discharge directly into sanitary sewer systems, where permissible, should comply with the local health agency, city, county, and sewer district requirements.
- Only reputable, licensed sanitary and septic waste haulers should be used.
- Sanitary facilities should be located in a convenient location.
- Temporary septic systems should treat wastes to appropriate levels before discharging.
- If using an onsite disposal system (OSDS), such as a septic system, local health agency requirements must be followed.
- Temporary sanitary facilities that discharge to the sanitary sewer system should be properly connected to avoid illicit discharges.
- Sanitary and septic facilities should be maintained in good working order by a licensed service.
- Regular waste collection by a licensed hauler should be arranged before facilities overflow.
- If a spill does occur from a temporary sanitary facility, follow federal, state and local regulations for containment and clean-up.

Education

- Educate employees, subcontractors, and suppliers on sanitary and septic waste storage and disposal procedures.
- Educate employees, subcontractors, and suppliers of potential dangers to humans and the environment from sanitary and septic wastes.
- Instruct employees, subcontractors, and suppliers in identification of sanitary and septic waste.
- Hold regular meetings to discuss and reinforce the use of sanitary facilities (incorporate into regular safety meetings).
- Establish a continuing education program to indoctrinate new employees.

Costs

All of the above are low cost measures.

Inspection and Maintenance

- BMPs must be inspected in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- Arrange for regular waste collection.
- If high winds are expected, portable sanitary facilities must be secured with spikes or weighed down to prevent over turning.
- If spills or leaks from sanitary or septic facilities occur that are not contained and discharge from the site, non-visible sampling of site discharge may be required. Refer to the General Permit or to your project specific Construction Site Monitoring Plan to determine if and where sampling is required.

References

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), March 2003.

Stormwater Management for Construction Activities; Developing Pollution Prevention Plans and Best Management Practice, EPA 832-R-92005; USEPA, April 1992.

ATTACHMENT DD

WATER POLLUTION CONTROL SCHEDULE

**Will be provided by the Contractor

ATTACHMENT EE

STORMWATER SAMPLING LOCATIONS

NOTES:

1. FOR COMPLETE RIGHT-OF-WAY AND ACCURATE ACCESS DATA, SEE RIGHT-OF-WAY RECORD MAPS AT DISTRICT OFFICE.
2. FOR UTILITIES, SEE LAYOUT SHEETS.
3. STATION & OFFSET TIES TO DRAINAGE STRUCTURES ARE MEASURED PER DETAILS ON SHEET DD-1.
4. LOCATIONS OF EXISTING DRAINAGE FACILITIES ARE APPROXIMATE. VERIFY LOCATION AND ELEVATION OF EXISTING DRAINAGE FACILITIES PRIOR TO MODIFYING.
5. FOR GCP INLET INFO, SEE Std PLAN D75B

LEGEND:

- DRAINAGE INLET (DI)
- EXISTING DI
- FLARED END SECTION (FES)
- GRADE TO DRAIN
- STORM DRAIN MANHOLE (SDMH)
- ROCK SLOPE PROTECTION (RSP)
- GCP INLET
- Conc LINED DITCH

ABBREVIATIONS:

SDMH STORM DRAIN MANHOLE

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
03	ED	50	16.0/16.6		XX

REGISTERED CIVIL ENGINEER DATE

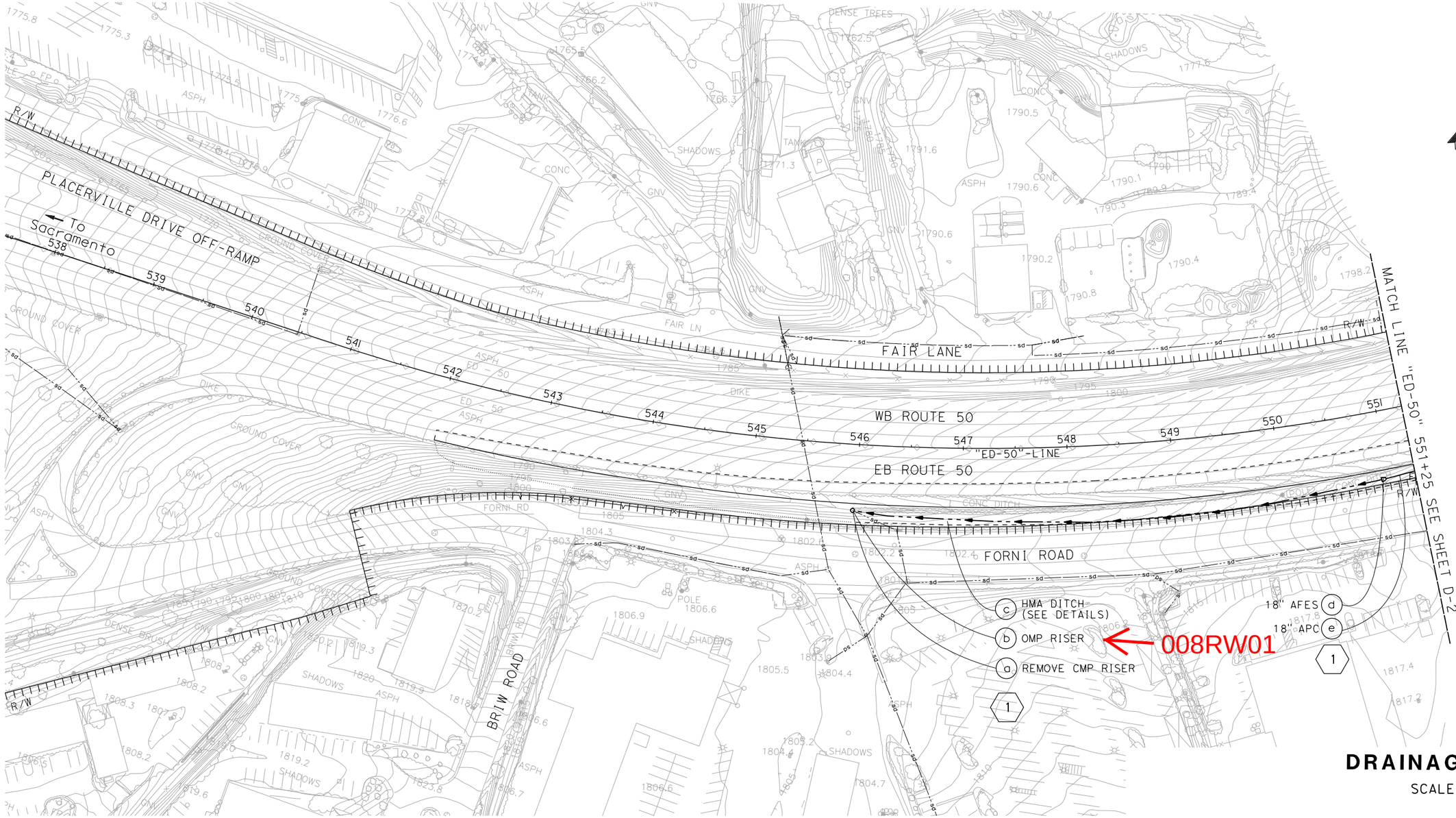
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — No. Exp. — STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

WRECO
1243 ALPINE RD
SUITE 108
WALNUT CREEK, CA 94596

CITY OF PLACERVILLE
DEVELOPMENT SERVICES
DEPARTMENT
3101 CENTER STREET
PLACERVILLE, CA 95667



DRAINAGE PLAN

SCALE 1"=50'

D-1

95% PLANS NOT FOR CONSTRUCTION

LAST REVISION 00-00-00 DATE PLOTTED => 2/15/2017 TIME PLOTTED => 5:18:52 PM

REVISED BY	DATE REVISED
JEREMY MILLER-SCHULZE	CHRISTOPHER SEWELL
CALCULATED-DESIGNED BY	CHECKED BY
CONSULTANT FUNCTIONAL SUPERVISOR	
HAN-BIN LIANG	

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans

BORDER LAST REVISED 4/11/2008

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

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DGN FILE => ...\Dwg\Drainage Plan\DRN_1.dgn

CU 00000

EA 000000

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
03	ED	50	16.0/16.6		XX

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER No. Exp. STATE OF CALIFORNIA

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WRECO
1243 ALPINE RD
SUITE 108
WALNUT CREEK, CA 94596

CITY OF PLACERVILLE
DEVELOPMENT SERVICES
DEPARTMENT
3101 CENTER STREET
PLACERVILLE, CA 95667

NOTES:

1. FOR COMPLETE RIGHT-OF-WAY AND ACCURATE ACCESS DATA, SEE RIGHT-OF-WAY RECORD MAPS AT DISTRICT OFFICE.
2. THIS SHEET IS ACCURATE FOR DRAINAGE ONLY.
3. SEE SHEET D-1 FOR LEGEND & COMPLETE NOTES

006CSDL02 → G2 DI w/ PCC APRON (e), 24" APC (d), G2 DI (c), 24" APC (b), SDMH (SEE DETAILS) (a)

007DL02 →

004CSDL01 → GCP RISER DI (h)

005RO03 ← 18" APC (t)

003RO02 → GDO DI (b)

BIOFILTRATION SWALE (a)

RSP (a), 18" AFES (b), 18" APC (e), G2 DI w/ PCC APRON (f), 18" APC (g)

G2 DI w/ PCC APRON (d), 18" APC (c), G2 DI w/ PCC APRON (b), 18" APC (a)

HMA DITCH (b), RSP (a), DET BASIN (c)

G2 DI w/ PCC APRON (h), 18" APC, 18" APC, G2 DI w/ PCC APRON, 18" APC, 24" APC, G2 DI, 24" APC, 18" APC, G2 DI, 18" APC, GT4 DI, 18" APC, 18" APC, G1 DI w/ PCC APRON, 18" APC, G1 DI, Conc DITCH (SEE DETAILS), G1 DI, 18" APC, 18" APC, G1 DI w/ PCC APRON, 18" APC, G1 DI w/ PCC APRON, Conc DITCH (SEE DETAILS), G1 DI, 18" APC, G1 DI, 18" APC, G1 DI, 18" APC, G1 DI w/ PCC APRON, G1 DI, 18" APC, G1 DI, 18" APC, G1 DI w/ PCC APRON, 18" APC

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
03	ED	50	16.0/16.6		XX

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — No. Exp. — STATE OF CALIFORNIA

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WRECO
1243 ALPINE RD
SUITE 108
WALNUT CREEK, CA 94596

CITY OF PLACERVILLE
DEVELOPMENT SERVICES DEPARTMENT
3101 CENTER STREET
PLACERVILLE, CA 95667

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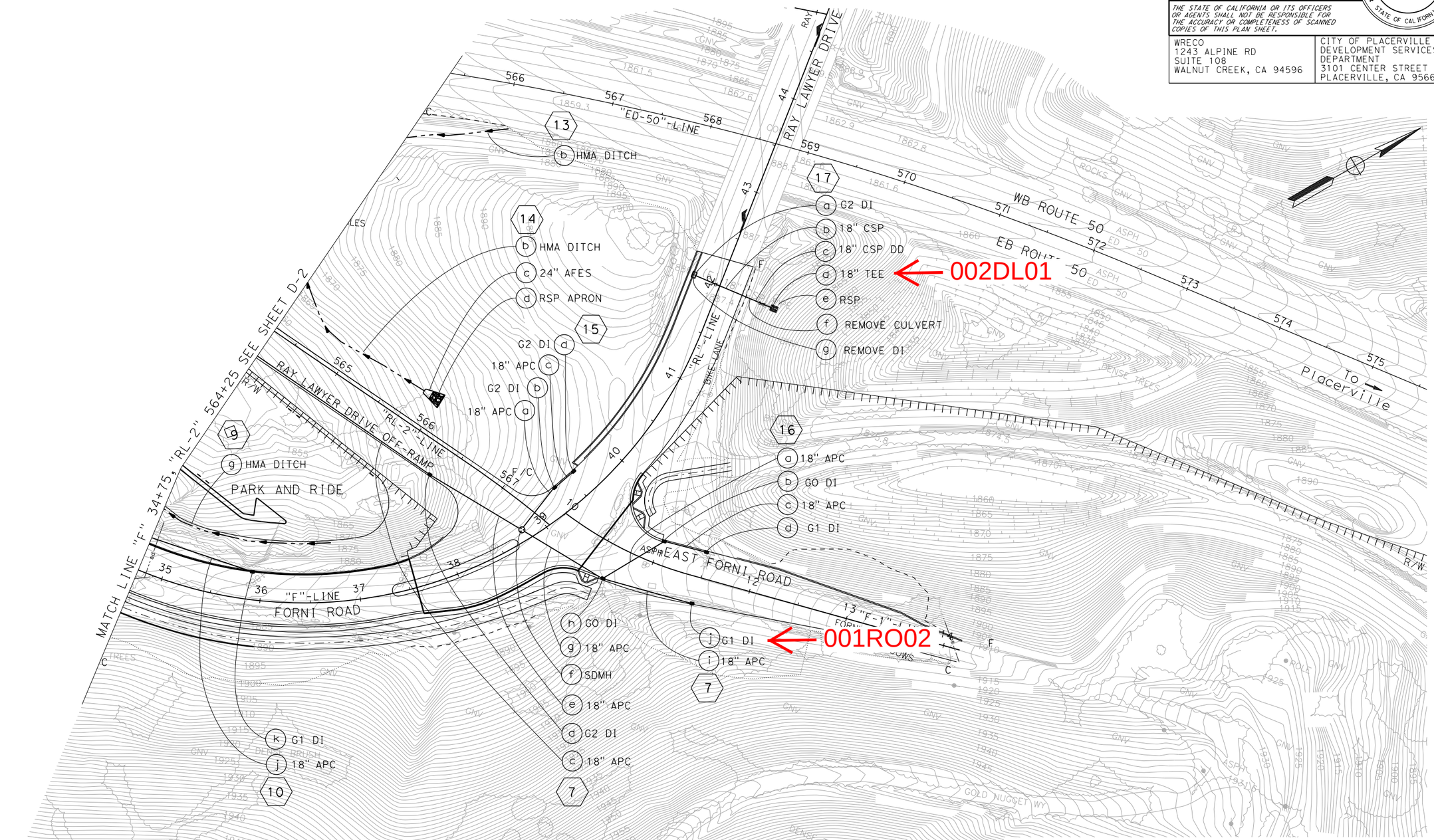
3. SEE SHEET D-1 FOR LEGEND & COMPLETE NOTES



DRAINAGE PLAN

SCALE 1"=50'

D-3

95% PLANS NOT FOR CONSTRUCTION

REVISED BY	DATE REVISED

CALCULATED-DESIGNED BY: JEREMY MILLER-SCHULZE
CHECKED BY: CHRISTOPHER SEWELL

CONSULTANT FUNCTIONAL SUPERVISOR: HAN-BIN LIANG

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans

LAST REVISION 00-00-00
DATE PLOTTED => 2/15/2017
TIME PLOTTED => 5:34:10 PM

BORDER LAST REVISED 4/11/2008

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

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CU 00000

EA 000000

APPENDIX A

CEM-2008 SWPPP/WPCP Amendment Certification and Acceptance Form

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

SWPPP/WPCP AMENDMENT CERTIFICATION AND ACCEPTANCE

CEM-2008 (REV 11/2013)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER
CONTRACTOR NAME AND ADDRESS	PROJECT SITE RISK LEVEL ☐ Risk Level 1 ☐ N/A. WPCP ☐ Risk Level 2 ☐ N/A. Project resides in the Lake Tahoe Hydrologic Unit and is regulated under Order No. R6T-2011-0019, NPDES No. CAG616002. ☐ Risk Level 3

Storm Water Pollution Prevention Plan (SWPPP)/Water Pollution Control Program (WPCP)

Amendment Number _____

CONTRACTOR WATER POLLUTION CONTROL MANAGER SIGNATURE	DATE
CONTRACTOR WATER POLLUTION CONTROL MANAGER NAME	PHONE NUMBER

Contractor Certification of SWPPP or WPCP Amendment

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision according to a system designed to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or persons directly responsible for gathering the information, the information submitted, to the best of my knowledge and belief, is true, accurate, and complete. I am aware that significant penalties exist for submitting false information, including the possibility of fine and imprisonment for knowing violations.

CONTRACTOR SIGNATURE	DATE
CONTRACTOR NAME	PHONE NUMBER
TITLE	

Resident Engineer Acceptance of SWPPP or WPCP Amendment

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those directly responsible for gathering the information, the information submitted, to the best of my knowledge and belief, is true, accurate, and complete. I am aware that significant penalties exist for submitting false information, including the possibility of fine and imprisonment for knowing violations.

RESIDENT ENGINEER SIGNATURE	DATE OF AMENDMENT ACCEPTANCE
RESIDENT ENGINEER NAME	PHONE NUMBER

ADA Notice For individuals with sensory disabilities, this document is available in alternate formats. For information, call (916) 654-6410, TTY 711, or write to Records and Forms Management, 1120 N Street, MS-89, Sacramento, CA 95814.

SWPPP/WPCP AMENDMENT CERTIFICATION AND ACCEPTANCE

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER

Required for Private Entity Administered Projects

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those directly responsible for gathering the information, the information submitted, to the best of my knowledge and belief is true, accurate, and complete. I am aware that significant penalties exist for submitting false information, including the possibility of fine and imprisonment for knowing violations.

LEGALLY RESPONSIBLE PERSON SIGNATURE	DATE
LEGALLY RESPONSIBLE PERSON NAME	PHONE NUMBER
TITLE	

Required for Local Agency/Private Entity Administered Project

Caltrans Oversight Engineer's Concurrence With SWPPP/WPCP Amendment

I and personnel acting under my direction and supervision have reviewed this SWPPP/ WPCP and find that it meets the requirements set forth in the contract Special Provisions, Caltrans *Standard Specifications,* and the Caltrans SWPPP/WPCP Preparation Manual.

OVERSIGHT ENGINEER SIGNATURE	DATE OF AMENDMENT CONCURRENCE
OVERSIGHT ENGINEER NAME	PHONE NUMBER

ADA Notice For individuals with sensory disabilities, this document is available in alternate formats. For information, call (916) 654-6410, TTY 711, or write to Records and Forms Management, 1120 N Street, MS-89, Sacramento, CA 95814.

Instructions

General Information

- The information on CEM-2008 is required for projects with either a Stormwater Pollution Prevention Plan (SWPPP) or a Water Pollution Control Program (WPCP) to document amendment acceptance and certification.
- SWPPP amendments must be certified by the approved signatory as identified in CEM-2006 or 2006T, "Legally Responsible Person Authorization of Approved Signatory," signed by the legally responsible person (LRP).
  1. For Caltrans, the LRP is the district director. The LRP may authorize the project resident engineer to be approved signatory.
  2. For a local agency, the LRP is either a principal executive officer or a ranking elected official. The local agency LRP may authorize the project resident engineer to be approved signatory.
  3. For a private entity performing work in the state right-of-way under an encroachment permit, the LRP must be one of the following:
     a. For a corporation, a responsible corporate officer.
     b. For a partnership or sole proprietorship, a general partner or the proprietor, respectively.

     The private entity LRP may not authorize an approved signatory.
  4. Attach a completed copy of CEM-2008 to each SWPPP or WPCP amendment, and include it in the SWPPP Attachment DD or the WPCP Attachment C.

Form

Contract Number/Co/Rte/PM
For local agency encroachment permit projects, write the encroachment permit number in the Contract Number field.

Project Identifier Number
Caltrans projects starting July 1, 2010, will have a Project Identifier Number. For projects without one, write "N/A" in the field.

WDID Number
For projects that have a Water Pollution Control Program enter "WPCP" in this field.

ADA Notice For individuals with sensory disabilities, this document is available in alternate formats. For information, call (916) 654-6410, TTY 711, or write to Records and Forms Management, 1120 N Street, MS-89, Sacramento, CA 95814.

APPENDIX B

CEM-2009 SWPPP/WPCP Amendments Log Form

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

SWPPP/WPCP AMENDMENTS LOG

CEM-2009 (REV 11/2013)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER
CONTRACTOR NAME AND ADDRESS	PROJECT SITE RISK LEVEL ☐ Risk Level 1 ☐ N/A. WPCP ☐ Risk Level 2 ☐ N/A. Project resides in the Lake Tahoe Hydrologic Unit and is regulated under Order No. R6T-2011-0019, NPDES No. CAG616002. ☐ Risk Level 3

Amendments

Amendment Number	Date Prepared	Brief Description of Amendment	Requested by	Accepted Date

ADA Notice For individuals with sensory disabilities, this document is available in alternate formats. For information, call (916) 445-1233, TTY 711, or write to Records and Forms Management, 1120 N Street, MS-89, Sacramento, CA 95814.

SWPPP/WPCP AMENDMENTS LOG

CEM-2009 (REV 11/2013)

Instructions

General Information

- Projects with either a Stormwater Pollution Prevention Plan (SWPPP) or Water Pollution Control Program (WPCP) require the information on this form to track amendments.

- Attach a completed copy of the form to each accepted SWPPP/WPCP amendment, and include in SWPPP Attachment DD or WPCP Attachment C.

Form

Contract Number/Co/Rte/PM
For local agency encroachment permit projects, write the encroachment permit number in the Contract Number field.

Project Identifier Number
Caltrans projects starting July 1, 2010, will have a project identifier number. For projects without one, write "N/A" in the field.

WDID Number
For projects with WPCP enter "WPCP" in this field.

When the resident engineer has accepted SWPPP or WPCP amendments, enter:

1. The amendment number.
2. The date the Water Pollution Control Manager signed form CEM-2008.
3. A brief description of the amendment.
4. The name and title of person who requested the amendment.
5. The date the resident engineer accepted form CEM-2008.

APPENDIX C

CEM-2070 SWPPP/WPCP Annual Certification of Compliance Form

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

SWPPP/WPCP ANNUAL CERTIFICATION OF COMPLIANCE

CEM-2070 (REV 12/2013)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER
CONTRACTOR NAME AND ADDRESS	SWPPP PROJECT SITE RISK LEVEL ☐ Risk Level 1 ☐ N/A. WPCP ☐ Risk Level 2 ☐ N/A. Project resides in the Lake Tahoe Hydrologic Unit and is regulated under Order No. R6T-2011-0019, NPDES No. CAG616002. ☐ Risk Level 3

Stormwater Pollution Prevention Plan (SWPPP)/Water Pollution Control Program (WPCP)
Annual Certification of Compliance

Water Pollution Control Manager Certification

This certification for the project site is based on an inspection of the project site conducted on (date) _____

I certify based on my inspection of the project site that:

☐ Yes ☐ No Water pollution control measures are being implemented in accordance with the SWPPP or WPCP approved for the project, including approved SWPPP/WPCP amendments.

☐ Yes ☐ No The project site and activities thereon are in compliance with the Caltrans Statewide NPDES Permit No. CAS000003, the NPDES General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities, Order No. 2009-0009-DWQ, NPDES Permit No. CAS000002, or Order No. R6T-2011-0019, NPDES No. CAG-616002, whichever is applicable.

Contractor Water Pollution Control Manager signature	Date
Contractor Water Pollution Control Manager name	Phone number

Contractor Annual Certification of Compliance

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system or those directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that significant penalties exist for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Contractor signature	Date
Contractor name	Phone number
Title	

ADA Notice For individuals with sensory disabilities, this document is available in alternate formats. For information, call (916) 654-6410, TTY 711, or write to Records and Forms Management, 1120 N Street, MS-89, Sacramento, CA 95814.

SWPPP/WPCP ANNUAL CERTIFICATION OF COMPLIANCE

CEM-2070 (REV 12/2013)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER

Required for Private Entity Administered Projects
Private Entity Legally Responsible Person Annual Certification of Compliance

I certify that the project is in compliance with the project site approved Stormwater Pollution Prevention Plan or Water Pollution Control Program including approved amendments. The project site and activities thereon are in compliance with the Caltrans Statewide NPDES Permit No. CAS000003, the NPDES General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities, Order No. 2009-0009-DWQ, NPDES Permit No. CAS000002, or Order No. R6T-2011-0019, NPDES No. CAG-616002, whichever is applicable.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system or those directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that significant penalties exist for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Legally responsible person signature	Date
Legally responsible person name	Phone number
Title	

SWPPP/WPCP ANNUAL CERTIFICATION OF COMPLIANCE

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER

Resident Engineer Approval of Annual Certification of Compliance

An inspection of the project site for annual certification of compliance was conducted on (date) _____	Annual Certification of Compliance project site inspection conducted by

I certify that I, or personnel acting under my direction and supervision, have inspected the project site and find the following:

☐ Yes ☐ No Water pollution control measures are being implemented in accordance with the SWPPP or WPCP approved for the project, including approved SWPPP/WPCP amendments.

☐ Yes ☐ No The project site and activities thereon are in compliance with the Caltrans Statewide NPDES Permit No. CAS000003, the NPDES General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities, Order No. 2009-0009-DWQ, NPDES Permit No. CAS000002, or Order No. R6T-2011-0019, NPDES No. CAG-616002, whichever is applicable.

The box above is checked "no" based on the project site annual certification inspection, and the following corrective actions are necessary for the project to be in compliance with SWPPP/WPCP or NPDES Permits

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system or those directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that significant penalties exist for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Resident engineer signature	Date of approval
Resident engineer name	Phone number

Required for Local Agency or Private Entity-Administered Project

Caltrans Oversight Engineer's Concurrence With Annual Certification of Compliance

I, or personnel acting under my direction and supervision, have reviewed this Annual Certification of Compliance and concur that the project is in compliance with SWPPP or WPCP approved for the project, including approved SWPPP/WPCP amendments and applicable NPDES Permits.

Oversight engineer signature	Date of concurrence
Oversight engineer name	Phone number

Instructions

General Information

- Projects with either a Stormwater Pollution Prevention Plan (SWPPP) or Water Pollution Control Program (WPCP) require an Annual Certification of Compliance by July 15th of each year.
- Document the project site inspection for annual certification on form CEM-2030, "Stormwater Site Inspection Report."
- A legally responsible person (LRP) or a signatory approved by the LRP must certify the Stormwater Pollution Prevention Plan Annual Certification of Compliance.
  - For Caltrans, the LRP is the district director. The LRP may authorize the project resident engineer to be the approved signatory.
  - For a local agency, the LRP is either a principal executive officer or ranking elected official. The local agency's LRP may authorize the project resident engineer to be the approved signatory. If the local agency's LRP has not approved the local agency's resident engineer to be an approved signatory then the local agency's LRP must sign in the resident engineer signature box of the Annual Certification of Compliance.
  - For a private entity performing work in the state right-of-way under an encroachment permit, the LRP must be one of the following:
    - For a corporation—a responsible corporate officer.
    - For a partnership or sole proprietorship—a general partner or the proprietor, respectively.
    - The private entity's LRP may not authorize an approved signatory.
- File a completed copy of this form in SWPPP/WPCP file category 20.70, Annual Certification of Compliance.
- This form is used for Annual Certification as well as replaces form CEM-2001.

Form

Contract Number/Co/Rte/PM
For local agency encroachment permit projects, write the encroachment permit number in the Contract Number field.

Project Identifier Number
Caltrans projects starting July 1, 2010, will have a Project Identifier Number (PIN). For projects without a PIN, write "N/A' in the field.

WDID Number
For projects that have Water Pollution Control Program, enter "WPCP" in this field.

SWPPP Projects Site Risk Level
Check the box for the appropriate SWPPP risk level, or N/A for projects residing in the Lake Tahoe Hydrologic Unit, or N/A for projects that have Water Pollution Control Program.

APPENDIX D

Subcontractor/Material Supplier Notification Letter and Contact Information

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

APPENDIX D NOTIFICATION LOG

CEM-20DAPP (NEW 9/2012)

CONTRACT NUMBER/CO/RTE/PM	PROJECT IDENTIFIER NUMBER	WDID NUMBER	DATE

☐ **SUBCONTRACTOR SWPPP NOTIFICATION LOG**

☐ **MATERIAL SUPPLIER SWPPP NOTIFICATION LOG**

Log No.	Subcontractor/Materials Supplier Name	Subcontractor/Materials Supplier Address	Type of Work Performed/ Material Supplied	Contact Name Email Address	Phone Number	After Hours Phone Number	Date Notification Letter Sent
1	ABC Rock	16923 Rock Road Rock Valley, CA 90000	Rock	Rocky Rocky@dot.ca.gov	(916) 227-7314	(916) 227-7314	02/09/10

ADA Notice For individuals with sensory disabilities, this document is available in alternate formats. For information call (916) 654-6410 or TDD (916) 654-3880 or write Records and Forms Management, 1120 N Street, MS-89, Sacramento, CA 95814.

APPENDIX E

CEM-2023 Stormwater Training Record Form

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

STORMWATER TRAINING RECORD

CEM-2023 (REV 11/2013)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER
CONTRACTOR NAME AND ADDRESS	PROJECT SITE RISK LEVEL ☐ Risk Level 1 ☐ N/A. WPCP ☐ Risk Level 2 ☐ N/A. Project Resides in the Lake Tahoe Hydrologic Unit and is regulated under Order No. R6T-2011-0019, NPDES No. CAG616002. ☐ Risk Level 3
SUBMITTED BY CONTRACTOR (PRINT AND SIGN NAME)	DATE

Stormwater Training Record

Training Course Title or Specific Training Objective	Location	Date of Training
Stormwater Topics ☐ Temporary soil stabilization ☐ Tracking controls ☐ Non-stormwater management ☐ Waste management and materials pollution control ☐ Spill prevention and control ☐ BMPs required for work activities current week ☐ Stormwater pollution prevention plan ☐ Water pollution control program ☐ Temporary sediment control ☐ Wind erosion control ☐ Stormwater discharge sampling ☐ Pre-storm activities ☐ Permanent soil stabilization ☐ Initial project training	Instructor Name Instructor Title Instructor Phone Number Course Length (hours)	Training Audience ☐ General ☐ BMPs ☐ SWPPP

Attendee Roster

Name	Phone Number	Initials	Company Name

ADA Notice For individuals with sensory disabilities, this document is available in alternate formats. For information, call (916) 654-6410, TTY 711, or write to Records and Forms Management, 1120 N Street, MS-89, Sacramento, CA 95814.

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

STORMWATER TRAINING RECORD

CEM-2023 (REV 11/2013)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER

Attendee Roster (Continued)

Name	Phone Number	Initials	Company Name

Review and Record Keeping

Has training information been entered into the optional Stormwater Training Log (CEM-2024)? ☐ Yes ☐ No

I have reviewed this document and, based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, to the best of my knowledge and belief the information submitted is true, accurate, and complete.

Water Pollution Control Manager (name)	Date

Water Pollution Control Manager (signature)

Instructions

General Information

- Projects with either a Stormwater Pollution Prevention Plan (SWPPP) or Water Pollution Control Program (WPCP) require the information on this form to document stormwater training for contractor and subcontractor managers, supervisors, and employees. Include the form and required training documentation in the stormwater annual report for SWPPP projects.
- Use this form to document training for employees responsible for activities associated with Construction General Permit compliance and contract specifications. Use this form to document required weekly stormwater training.
- Provide this training record and an updated copy of CEM-2024 (CEM-2024 is an optional form used at the WPCM's discretion) "Stormwater Training Log," to the resident engineer (RE) within five days of the date of training.
- Attach additional copies of page 2 of this form if necessary to record all individuals attending this training.
- Stormwater training needs to be completed at the frequency stipulated in the project specifications and/or the SWPPP, whichever is more frequent.
- Names may be written or typed. Initials must be original. Originals are filed with RE as stipulated above.
- Attach copy of training material/topic with submittal to RE.

Form

- **Contract Number/Co/Rte/PM**
  For local agency encroachment permit projects write the encroachment permit number in the Contract Number field.
- **Project Identifier Number**
  Caltrans projects starting July 1, 2010, will have a Project Identifier Number (PIN). For projects without a PIN, write N/A in the field.
- **WDID Number**
  For projects with Water Pollution Control Program, enter "WPCP."
- **Attendee Roster**
  Enter employee name, contractor or subcontractor company name and employee phone number.
- **Training Audience**
  Enter one of the following responses:

  General—Training for individuals responsible for activities associated with compliance with the Construction General Permit.

  BMPs—Training for individuals responsible for BMP installation, inspection, maintenance, and repair.

  SWPPP—Training for individuals responsible for overseeing, revising, and amending the SWPPP.

APPENDIX F

CEM-2024 Stormwater Training Log-Optional Form

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

STORMWATER TRAINING LOG - OPTIONAL

CEM-2024 (REV 11/2013)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER
CONTRACTOR NAME AND ADDRESS	PROJECT SITE RISK LEVEL ☐ Risk Level 1 ☐ N/A. WPCP ☐ Risk Level 2 ☐ N/A. Project resides in the Lake Tahoe Hydrologic Unit and is regulated under Order No. R6T-2011-0019, NPDES No. CAG616002. ☐ Risk Level 3
SUBMITTED BY CONTRACTOR (PRINT AND SIGN NAME)	DATE

STORMWATER TRAINING LOG

Date of Training	Training Audience	Number of Training Attendees	Stormwater Training Course Title or Topics Covered	Date Training Documentation (CEM-2023) Provided to Resident Engineer
	☐ General ☐ BMPs ☐ SWPPP			
	☐ General ☐ BMPs ☐ SWPPP			
	☐ General ☐ BMPs ☐ SWPPP			
	☐ General ☐ BMPs ☐ SWPPP			
	☐ General ☐ BMPs ☐ SWPPP			
	☐ General ☐ BMPs ☐ SWPPP			
	☐ General ☐ BMPs ☐ SWPPP			
	☐ General ☐ BMPs ☐ SWPPP			
	☐ General ☐ BMPs ☐ SWPPP			

ADA Notice For individuals with sensory disabilities, this document is available in alternate formats. For information, call (916) 654-6410, TTY 711, write to Records and Forms Management, 1120 N Street, MS-89, Sacramento, CA 95814.

Instructions

General Information

- For projects with either a Stormwater Pollution Prevention Plan (SWPPP) or a Water Pollution Control Program (WPCP) the information shown on this form may be used to document stormwater training for contractor and subcontractor managers, supervisors, and employees. The stormwater annual report for SWPPP projects will include required training documentation and the information on this form, or in another form used at the discretion of the Water Pollution Control Manager (WPCM).
- If this form is used, provide an updated copy of CEM-2024 with attached training documentation to the resident engineer within five days of training, along with CEM-2023 and a copy of training materials and topic(s) covered.
- This form is optional, and provided as a management tool for the WPCM to assist in compiling and organizing information required of the annual report.

Form

Contract Number/Co/Rte/PM
For local agency encroachment permit projects, write the encroachment permit number in the Contract Number field.

Project Identifier Number
Caltrans projects starting July 1, 2010, will have a Project Identifier Number (PIN). For projects without a PIN, write N/A in the field.

WDID Number
For projects with Water Pollution Control Program enter "WPCP" in this field.

Training Audience
Check one of the following responses:
General—training for individuals responsible for activities associated with compliance with the General Construction Permit.
BMPs—training for individuals responsible for BMP installation, inspection, maintenance, and repair.
SWPPP—training for individuals responsible for overseeing revising and amending the SWPPP.

APPENDIX G

CEM-2030 Stormwater Site Inspection Report

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

STORMWATER SITE INSPECTION REPORT

CEM-2030 (REV 3/2014)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER
CONTRACTOR NAME AND ADDRESS	PROJECT SITE RISK LEVEL ☐ Risk Level 1 ☐ N/A. WPCP ☐ Risk Level 2 ☐ N/A. Project resides in The Lake Tahoe Hydrologic Unit and is regulated under Order No. R6T-2011-019, NPDES No. CAG616002 ☐ Risk Level 3
Submitted by contractor (print and sign name)	Date
Water Pollution Control Manager name and company name	Phone number Emergency (24/7) phone number

General Information

Inspector's Name	Accompanied by Caltrans staff? ☐ YES ☐ NO If Yes, Name/Initials:	Date of Inspection

Weather Condition	Precipitation Condition		Wind Condition
☐ Clear	☐ None		☐ None
☐ Partly cloudy	☐ Misty	☐ Heavy rain	☐ Less than 5 mph
☐ Cloudy	☐ Light rain	☐ Hail	☐ Greater than 5 mph
	☐ Rain	☐ Snow	

Construction Phase	Site Information
☐ Highway construction	Total project area: _____ acres
☐ Plant establishment	Total project disturbed soil area: _____ acres
☐ Suspension of work (inactive site)	Current phase disturbed soil area: _____ acres
	Current phase inactive disturbed soil: _____ acres

Inspection Type *Check appropriate box(es)*	**Storm Information**	
☐ Weekly ☐ Quarterly non-stormwater	Time elapsed since last storm _____ days	Precipitation amount from last storm _____ inches
☐ Pre-storm	Time storm is expected _____ (time) _____ (date)	Expected precipitation amount _____ inches
☐ During storm event	Time elapsed since storm began _____ hours-minutes	Precipitation amount from storm recorded from site rain gauge _____ inches
☐ Post storm	Time elapsed since storm _____ hours-minutes	Precipitation amount from storm recorded from site rain gauge _____ inches

Date	Daily Site Inspection of Best Management Practices (BMP) List Daily inspections for previous calendar week. Do not include weekly inspection.	Daily inspection performed by	Any corrective actions identified as completed or new?		If yes, were the actions added or verified on CEM-2035, as appropriate?		Date shown on corrective action form
			YES	NO	YES	NO	
			☐	☐	☐	☐	
			☐	☐	☐	☐	
			☐	☐	☐	☐	
			☐	☐	☐	☐	
			☐	☐	☐	☐	

ADA Notice For individuals with sensory disabilities, this document is available in alternate formats. For information, call (916) 445-1233, TTY 711, or write to Records and Forms Management, 1120 N Street, MS-89, Sacramento, CA 95814.

STORMWATER SITE INSPECTION REPORT

CEM-2030 (REV 3/2014)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER

Site Inspection of Best Management Practices

If this form will be completed by hand in the field, click on "Show Entire Form" button at the top of page one to expand the sections, then print the form to take to the field. If the inspection form does not contain enough lines for all locations, use the "Add Item" button so that all BMP locations are inspected and reported.

Preservation of Existing Vegetation ☒ Yes ☐ No	Right location?		Properly installed?		Maintenance or repair necessary?		Photos?	Comments and Required Actions
	Yes	No	Yes	No	Yes	No	Yes	
Location 1								
Location 2								
Location 3								

Disturbed Soil Area (DSA) Management ☒ Yes ☐ No List all potential DSAs by location	Has area been disturbed? If no, stop here.		Date DSA first disturbed?	Is the DSA inactive and listed as a location on both temporary soil stabilization and temporary linear sediment barriers? If yes, stop here.		Is there a storm event forecasted? If yes, stop here and take action.		Are there construction activities currently in progress within the DSA? If yes, stop here.		If no to previous question, what is the last day construction activities were in progress?	How many days has the DSA been active? If more then 14 days, take action.
	Yes	No	Date	Yes	No	Yes	No	Yes	No	Date	Days
Location 1											
Location 2											

Notes:

1. If it has been 14 days since a DSA has had active construction activities, the DSA is inactive and must be reported as a location on temporary soil stabilization and temporary linear sediment barriers.
2. DSAs must have erosion control and have temporary linear sediment barriers installed prior to a storm event.

Location Number	Comments / Corrective Actions	Action No.
1		
2		

Temporary Soil Stabilization ☒ Yes ☐ No	Inactive areas covered?		100% coverage of required areas?		Stabilized areas free from visible erosion?		Photos?	Comments and Required Actions	Action No.
	Yes	No	Yes	No	Yes	No	Yes		
Location 1									
Location 2									
Location 3									

STORMWATER SITE INSPECTION REPORT

CEM-2030 (REV 3/2014)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER

Site Inspection of Best Management Practices, continued

For project specific BMPs, insert the BMP name and additional inspection requirements below.

Temporary Linear Sediment Barriers ☒ Yes ☐ No	Right location?		Properly installed or cross barriers installed?		Maintenance performed when 1/3 height or repair needed?		Photos?	Comments and Required Actions	Action No.
	Yes	No	Yes	No	Yes	No	Yes		
Location 1									
Location 2									
Location 3									

Storm Drain Inlet Protection ☒ Yes ☐ No	All inlets protected?		Properly installed?		Maintenance or repair needed?		Photos?	Comments and Required Actions	Action No.
	Yes	No	Yes	No	Yes	No	Yes		
Location 1									
Location 2									
Location 3									

Stockpile Management ☒ Yes ☐ No	Date stockpile created	Is the stockpile listed as a location on stockpile management inactive stockpiles? If yes, stop here.		Is there a storm event forecasted? If yes, stop here and take action.		Is stockpile being actively used? If yes, stop here.		If no to previous question, what is the last day stockpile was actively used?	How long since stockpile actively used?	Has it been 3 days since the stockpile has been actively used? If yes, take action.	
	Date	Yes	No	Yes	No	Yes	No	Date	Days	Yes	No
Location 1											
Location 2											

Notes:

1. If it has been 3 days (72 hours) since a stockpile has been active then the stockpile is inactive and must be reported as a location on stockpile management inactive stockpiles.
2. Stockpiles must be covered and have perimeter control installed prior to a storm event.

Location Number	Comments / Corrective Actions	Photos? Yes	Action No.
1			
2			

STORMWATER SITE INSPECTION REPORT

CEM-2030 (REV 3/2014)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER

Inactive Stockpile Management

☒ Yes ☐ No

Type of Material or Waste	Is the stockpile properly located?		Is the stockpile covered?		Does the stockpile have a perimeter control?		Does the stockpile need maintenance or repair?	
	Yes	No	Yes	No	Yes	No	Yes	No
Location 1								
Location 2								

Location Number	Comments / Corrective Actions	Photos? Yes	Action No.
1			
2			

Sediment and Desilting Basins

☐ Yes ☒ No — Not Needed

Tracking Controls

☒ Yes ☐ No

	Do all entrances and exits have tracking controls?		Is pavement free from visible sediment tracking?		Does sediment need to be removed from rock or ribbed plates?		Is daily sweeping done?		Photos?	Comments and Required Actions	Action No.
	Yes	No	Yes	No	Yes	No	Yes	No	Yes		
Location 1											
Location 2											
Location 3											

Wind Erosion Control

☒ Yes ☐ No

	Water trucks on-site?		Visible dust?		Photos?	Comments and Required Actions	Action No.
	Yes	No	Yes	No	Yes		
Location 1							
Location 2							
Location 3							

Dewatering Operations

☐ Yes ☒ No — Not Needed

Temporary Stream Crossing

☐ Yes ☒ No — Not Needed

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

STORMWATER SITE INSPECTION REPORT

CEM-2030 (REV 3/2014)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER

Material Storage ☒ Yes ☐ No	Located away from drainage courses and water courses?		Areas protected from run on and runoff?		Bagged and boxed materials stored on pallets?		Areas reasonably clean and free of spills, leaks, and other material?		Is material inventory up to date?		Liquid materials in secondary containment?		Photos?
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Location 1													
Location 2													
Location 3													

	Comments and Required Actions	Action No.
Location 1		
Location 2		
Location 3		

Waste Management Sanitation Facilities ☒ Yes ☐ No	Located away from drainage courses and water courses?		Secured to ground or foundation?		Clean and has adequate capacity?		Ground checked for any spills or leaks?		Any spills or leaks found?		Photos?
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Location 1											
Location 2											
Location 3											

Location Number	Comments / Corrective Actions	Action No.
1		
2		
3		

Project-specific BMP ☒ Yes ☐ No	Properly located?		Properly installed?		Maintenance or repair needed?		Photos?	Comments and Required Actions	Action No.
	Yes	No	Yes	No	Yes	No	Yes		
Location 1									
Location 2									
Location 3									

STORMWATER SITE INSPECTION REPORT

CEM-2030 (REV 3/2014)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER

Site Inspection of Best Management Practices, continued

For project specific BMPs, insert the BMP name and additional inspection requirements below.

Project-specific BMP ☒ Yes ☐ No	Properly located?		Properly installed?		Maintenance or repair needed?						Photos?
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Location 1											
Location 2											
Location 3											

	Comments and Required Actions	Action No.
Location 1		
Location 2		
Location 3		

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

STORMWATER SITE INSPECTION REPORT

CEM-2030 (REV 3/2014)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER

Site Inspection Report General Comments

Are the BMPs installed as required by the Stormwater Pollution Prevention Plan for the phase of construction?

☐ Yes ☐ No

Does the SWPPP need to be amended?

☐ Yes ☐ No

Does the SWPPP currently reflect the current site conditions and contractor operations?

☐ Yes ☐ No

Is hazardous waste stored on the jobsite?

☐ Yes ☐ No

Are there water pollution control concerns on the project site not addressed by the comments and required actions shown above for BMPs, based on the field review of the jobsite?

☐ Yes ☐ No

If yes, provide details, comments, and required actions below for each location.

Location	Water Pollution Control Concern	Comments and Required Actions	Action No.

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

STORMWATER SITE INSPECTION REPORT

CEM-2030 (REV 3/2014)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER

Stormwater Inspection Report Certification

I certify under penalty of law that this Stormwater Inspection Report was performed in accordance with the General Permit. The information contained in this inspection report was gathered from a field site inspection. I am aware that Section 309 (c)(4) of the Clean Water Act provides for significant penalties, including fines and imprisonment for knowingly submitting a false material statement, representation, or certification.

Stormwater Inspector (Name)	Date Report Completed

Stormwater Inspector (Signature)

I certify under penalty of law that this Stormwater Inspection Report was performed in accordance with the General Permit by me or under my direction or supervision. The information contained in this inspection report was gathered and evaluated by qualified personnel prior to submittal. Based on my review of the information and inquiry of those who gathered and evaluated the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

I am aware that Section 309 (c)(4) of the Clean Water Act provides for significant penalties, including fines and imprisonment for knowingly submitting a false material statement, representation, or certification.

Water Pollution Control Manager (Name)	Date

Water Pollution Control Manager (Signature)

Stormwater Inspection Report Acceptance

If hazardous waste is stored on the jobsite, the resident engineer should notify the district hazardous waste coordinator.

Was the District Hazardous Waste Coordinator notified?

- ☐ N/A, no hazardous waste stored on the jobsite
- ☐ YES, Date _____ Time _____
- ☐ NO

Accepted by Resident Engineer (Print Name)	Date

Resident Engineer (Signature)

Instructions

General Information

- Construction General Permit attachments C, D, and E, Section G.5. require the information on this form.
- If the inspection form does not contain enough lines to report all locations on a jobsite, click on the "Add Item" button so that all locations are inspected and reported.
- Obtain forecasted precipitation information from the National Weather Service Forecast Office website, http://www.srh.noaa.gov/forecast.
- Weather information should be the best estimate of the beginning of the storm event, duration of the event, and time elapsed since the last storm.
- Rainfall amounts should be recorded from the project site rain gauge.
- "Daily Site Inspection of Best Management Practices" section is to be filled out by the water pollution control manager.

Storm Visual Inspections

- For non-visible pollutant inspections, report on all locations shown in the Stormwater Pollution Prevention Plan.

Required Actions

- All corrective actions identified in this report must also be recorded on Form CEM-2035, "Stormwater Corrective Actions Summary."
- Locations identified where BMPs are failing or have other shortcomings require implementation of repairs or design changes within 72 hours of identification, and BMP repairs or other changes must be completed as soon as possible.

APPENDIX H

CEM-2034 Monthly Stormwater Best Management & Materials Inventory Report Form

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

MONTHLY STORMWATER BEST MANAGEMENT PRACTICES & MATERIALS INVENTORY REPORT - OPTIONAL

CEM-2034 (NEW 12/2013)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER
CONTRACTOR NAME AND ADDRESS	PROJECT SITE RISK LEVEL ☐ Risk Level 1 ☐ N/A. WPCP ☐ Risk Level 2 ☐ N/A. Project resides in the Lake Tahoe Hydrologic Unit and is regulated under Order No. R6T-2011-0019, NPDES No. CAG616002 ☐ Risk Level 3

Water Pollution Control Manager (print name and sign)	Date
Submitted by contractor (print name and sign)	Date

Provide a monthly list of stored best management practices and materials on site.

Construction Phase	Site Information
☐ Highway construction	_____ Total project area (acres)
☐ Plant establishment	_____ Total project disturbed soil area (acres)
☐ Suspension of work (inactive site)	_____ Current phase disturbed soil area (acres)
	_____ Current phase inactive disturbed soil (acres)

Stormwater Best Management Practices and Materials on Site

	Location where stored: _____ BMP Name	BMP ID	Quantity on hand	Unit	Estimated quantity needed if rain event predicted, spill occurs or BMP fails
1					

ADA Notice For individuals with sensory disabilities, this document is available in alternate formats. For information, call (916) 445-1233, TTY 711, or write to Records and Forms Management, 1120 N Street, MS-89, Sacramento, CA 95814.

MONTHLY STORMWATER BEST MANAGEMENT PRACTICES & MATERIALS INVENTORY REPORT - OPTIONAL

CEM-2034 (NEW 12/2013)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER

Stormwater Best Management Practices and Materials on Site

	Location where stored: / BMP Name	BMP ID	Quantity on hand	Unit	Estimated quantity needed if rain event predicted, spill occurs or BMP fails
2					
3	Location where stored: / BMP Name	BMP ID	Quantity on hand	Unit	Estimated quantity needed if rain event predicted, spill occurs or BMP fails

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STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

MONTHLY STORMWATER BEST MANAGEMENT PRACTICES & MATERIALS INVENTORY REPORT - OPTIONAL

CEM-2034 (NEW 12/2013)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER

Stormwater Best Management Practices and Materials on Site

	Location where stored: _____ BMP Name	BMP ID	Quantity on hand	Unit	Estimated quantity needed if rain event predicted, spill occurs or BMP fails

	Location where stored: _____ BMP Name	BMP ID	Quantity on hand	Unit	Estimated quantity needed if rain event predicted, spill occurs or BMP fails

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MONTHLY STORMWATER BEST MANAGEMENT PRACTICES & MATERIALS INVENTORY REPORT - OPTIONAL

Instructions

General Information

- The Water Pollution Control Manager must oversee preparation of this form and submit a copy to the resident engineer every month.
- Attach additional copies of page 2 and page 3 of this form to include all required locations.
- Insert consecutive numbers for each location when using page 2 or page 3 of this form

BMP Name	BMP ID
Temporary Soil Stabilization	
Preservation of existing vegetation	SS-02
Hydraulic mulch	SS-03
Hydroseeding	SS-04
Soil binders	SS-05
Straw mulch	SS-06
Geotextiles, mats, plastic covers, and lined ditches	SS-07
Wood mulching	SS-08
Earth dikes, drainage swales and lined ditches	SS-09
Outlet protection and velocity dissipation devices	SS-10
Slope drains	SS-11
Streambank stabilization	SS-12
Temporary Sediment Control	
Silt fence	SC-01
Sediment or distilling basin	SC-02
Sediment trap	SC-03
Checkdams	SC-04
Fiber rolls	SC-05
Gravel bag berm	SC-06
Sandbag barrier	SC-08
Straw bale barrier	SC-09
Storm drain inlet protection	SC-10
Wind Erosion Control	
Wind erosion control	WE-01
Tracking Controls	
Stabilized construction entrance and exit	TC-01
Stabilized construction roadway	TC-02
Entrance and exit tire wash	TC-03
Street sweeping	TC-04

BMP Name	BMP ID
Non-Stormwater Management	
Water conservation practices	NS-01
Dewatering operations	NS-02
Paving and grinding operations	NS-03
Temporary stream crossing	NS-04
Clear water diversion	NS-05
Illegal connection or discharge detection and reporting	NS-06
Potable water and irrigation	NS-07
Vehicle and equipment cleaning	NS-08
Vehicle and equipment fueling	NS-09
Vehicle and equipment maintenance	NS-10
Pile-driving operations	NS-11
Concrete curing	NS-12
Material and equipment use over water	NS-13
Concrete finishing	NS-14
Structure demolition or removal over or adjacent to water	NS-15
Waste Management and Pollution Control	
Material delivery and storage	WM-01
Material use	WM-02
Stockpile management	WM-03
Spill prevention and control	WM-04
Solid waste management	WM-05
Hazardous waste management	WM-06
Contaminated soil management	WM-07
Concrete waste management	WM-08
Sanitary or septic waste management	WM-09
Liquid waste management	WM-10

ADA Notice For individuals with sensory disabilities, this document is available in alternate formats. For information, call (916) 445-1233, TTY 711, or write to Records and Forms Management, 1120 N Street, MS-89, Sacramento, CA 95814.

APPENDIX I

CEM-2035 Stormwater Corrective Actions Summary

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

STORMWATER CORRECTIVE ACTIONS SUMMARY

CEM-2035 (REV 11/2013)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER
CONTRACTOR NAME AND ADDRESS	SWPPP PROJECT SITE RISK LEVEL ☐ Risk Level 1 ☐ N/A. WPCP ☐ Risk Level 2 ☐ N/A. Project resides in the Lake Tahoe Hydrologic Unit and is regulated under Order No. R6T-2011-0019, NPDES No. CAG616002. ☐ Risk Level 3
Submitted by contractor (print and sign name)	Date

Implement required actions identified in this Stormwater Corrective Actions Summary as soon as possible, but actions must begin within 72 hours of the site inspection, or be completed before the next predicted rain event, whichever is sooner.

Corrective action number	Verification of Stormwater Site Inspection Corrective Actions		Date Corrective Actions Identified:
	BMP Type	Location	
	Required Action	Comments	
	Date Completed	Verified by (print name and title)	Verified by (signature)
	BMP Type	Location	
	Required Action	Comments	
	Date Completed	Verified by (print name and title)	Verified by (signature)
	BMP Type	Location	
	Required Action	Comments	
	Date Completed	Verified by (print name and title)	Verified by (signature)
	BMP Type	Location	
	Required Action	Comments	
	Date Completed	Verified by (print name and title)	Verified by (signature)
	BMP Type	Location	
	Required Action	Comments	
	Date Completed	Verified by (print name and title)	Verified by (signature)
	BMP Type	Location	
	Required Action	Comments	
	Date Completed	Verified by (print name and title)	Verified by (signature)

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

STORMWATER CORRECTIVE ACTIONS SUMMARY

CEM-2035 (REV 11/2013)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER

Stormwater Site Inspection Report Corrective Action Summary Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the people who manage the system or are directly responsible for gathering the information, the information submitted is true, accurate, and complete to the best of my knowledge and belief. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment of knowing violations.

Water Pollution Control Manager (name)	Date
Water Pollution Control Manager (signature)	

Stormwater Site Inspection Report Corrective Action Summary Acceptance

Resident Engineer (name)	Date
Resident Engineer (signature)	

Instructions

General Information

- If the summary form does not have enough lines to report all required actions, use additional copies of this form's page 1 to report all required corrective actions from an inspection form.
- On page 1 of this form and additional copies of page 1, insert consecutive numbers for each required corrective action.

Required Actions

- Identified locations—where BMPs are failing or have other shortcomings—require repairs or design changes within 72 hours of identification and complete BMP repairs or other changes as soon as possible, or before the next predicted rain event, whichever is sooner, per the Lake Tahoe Hydrologic Unit Permit.
- Daily inspections required for waste containers (covered at end of shift), tracking, and others per project specifications.

ADA Notice For individuals with sensory disabilities, this document is available in alternate formats. For information, call (916) 445-1233, TTY 711, or write to Records and Forms Management, 1120 N Street, MS-89, Sacramento, CA 95814.

APPENDIX J

CEM-2045 Rain Event Action Plan Forms

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

RAIN EVENT ACTION PLAN

CEM-2045 (REV 05/2015)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER
CONTRACTOR NAME AND ADDRESS	PROJECT SITE RISK LEVEL ☐ Risk Level 2 ☐ Risk Level 3
Submitted by contractor (print and sign name)	Date
Water Pollution Control Manager name and company name	Phone number
	Emergency (24/7) phone number
Erosion and sediment control provider or subcontractor name and company	Phone number
	Emergency (24/7) phone number
Stormwater sampling and testing agent or subcontractor name and company	Phone number
	Emergency (24/7) phone number

Storm Information

Attach forecasted precipitation information from the National Weather Service Forecast Office website, **http://www.srh.noaa.gov/forecast**.

Project site ZIP code	Date forecast checked	Time forecast checked
Forecast percentage probability of precipitation in 0 - 24 hours	Expected precipitation amount	Date
Forecast percentage probability of precipitation in 24 - 48 hours	Expected precipitation amount	Date
Forecast percentage probability of precipitation in 48 - 72 hours	Expected precipitation amount	Date
Will predicted weather pattern rain event produce 1/2-inch or more rain? ☐ Yes ☐ No	**Note:** A qualifying rain event happens when a predicted weather pattern will produce 1/2-inch or more of precipitation. A qualifying rain event will require stormwater visual monitoring site inspections and sampling and analysis of stormwater discharges.	

Phase Information

☐ Highway Construction Phase ☐ Plant Establishment Phase ☐ Inactive

Sampling Schedule

Based on the weather forecast, stormwater discharge sampling is required to begin on_____ (date) at approximately _____(time).
Stormwater discharge sampling is required every 24 hours during an extended storm event based on the predicted duration of the storm event. It is required on the following dates:

_____ _____ _____ _____ _____ _____

ADA Notice For individuals with sensory disabilities, this document is available in alternate formats. For information, call (916) 445-1233, TTY 711, or write to Records and Forms Management, 1120 N Street, MS-89, Sacramento, CA 95814.

RAIN EVENT ACTION PLAN

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER

Activities Associated with Highway Construction Projects, Plant Establishment, Inactive Projects

Check ALL boxes below that apply to current project site.

☐ Cleaning and grubbing	☐ Finish grading	☐ Traffic striping and pavement markings
☐ Earthwork	☐ Structure construction	☐ Highway planting
☐ Culvert construction	☐ Soundwall construction	☐ Soil amendments
☐ Rough grading	☐ Curbs, gutters, and sidewalks	☐ Plant establishment
☐ Storm drain installation	☐ Paving operations	☐ Material delivery and storage
☐ Utility installation water-gas-sewer	☐ Finishing roadway	☐ Equipment maintenance and fueling
☐ Structure foundations (including piles)	☐ Metal beam guard rail installation	☐ Erosion and sediment control
☐ Subgrade grading	☐ Sign installation	☐ Other _____
☐ Subbase and base placement	☐ Highway electrical work	☐ Other _____

Subcontractors or Trades Active on Site for Highway Construction, Plant Establishment, Inactive Projects

Check All boxes below that apply to current project site.

☐ Grading (operating engineers)	☐ Curb, gutter and sidewalk (carpenters, laborers and concrete finishers)
☐ Underground storm drain (operating engineers and laborers)	☐ Lighting and signals (operating engineers and electricians)
☐ Underground utilities (operating engineers and laborers)	☐ Metal beam guard rail (operating engineers and laborers)
☐ Underground utilities (public or private utility company)	☐ Signs (operating engineers)
☐ Pile installation (pile butts)	☐ Traffic striping and pavement markings
☐ Concrete foundations (carpenters, laborers, and concrete finishers)	☐ Masonry soundwalls (masons and laborers)
☐ Bar reinforcement placement	☐ Erosion and sediment control
☐ Structure construction (carpenters and laborers)	☐ Highway planting
☐ Concrete placement (operating engineer, laborers and concrete finishers)	☐ Other _____
☐ Hot mix asphalt placement (operating engineers and laborers)	☐ Other _____

Trade (Subcontractor) Information Provided

Check ALL boxes below that apply to current project site.

☐ Project SWPPP Handout	☐ Tailgate Meetings
☐ Contract Specifications	☐ Poster and Signage
☐ Educational Material Handout	☐ Other _____
☐ SWPPP Training Workshop	☐ Other _____

RAIN EVENT ACTION PLAN

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER

Predicted Rain-Event-Triggered Actions

Activity	Actions Required Before Predicted Rain Event
Information and Scheduling	☐ Project superintendent informed of predicted rain at _____ (time) on _____ (date). ☐ Foreman and subcontractors informed of predicted rain. ☐ Erosion control or sediment control provider notified to provide: ☐ Pre-storm crew with at least _____ people ☐ Pre-storm crew to start implementing storm event actions by _____ (time) on _____ (date) ☐ Sample collection and testing provider alerted if non-visible pollutant sampling and testing required. List of non-visible pollutant sampling locations and parameters: 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ ☐ Check that adequate erosion and sediment control materials are on hand for: ☐ Pre-storm required actions ☐ Extended storm event maintenance and repair ☐ Confirm that the BMP site map is updated and provide a copy to erosion and sediment control provider or subcontractor. ☐ Other _____ ☐ Other _____ ☐ Other _____ ☐ Other _____
	Additional Actions Required Before a Qualifying Rain Event
	☐ Pre-storm stormwater site inspection completed. ☐ Listed corrective actions identified by pre-storm stormwater site inspection that must be corrected before storm event on page 7 of this Rain Event Action Plan (REAP). ☐ Staff scheduled for inspections during storm. ☐ Erosion control or sediment control provider notified at _____ (time) on _____ (date) to provide crew during the storm event of at least _____. ☐ The attached contingency plan is to be implemented in the event of flooding:

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER

Predicted Rain-Event-Triggered Actions, (continued)

Activity	Construction Site Monitoring Program Actions Required Before a Qualifying Rain Event
Information and Scheduling	☐ Review the discharge location site map for the current phase of the project and include additional non-visible pollutant sampling locations identified during pre-storm stormwater site inspection. ☐ Alert sample collection and testing provider that sampling will be required and provide the following: ☐ Updated discharge location site map ☐ The required number of sampling locations for this phase of the project: ☐ _____ Discharge points ☐ _____ Run-on locations ☐ _____ Receiving waters for Risk Level 3 ☐ _____ Non-visible potential discharge points Run-on Sampling Locations 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ Discharge Sampling Locations 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ Receiving Water Sampling Locations 1. _____ 2. _____ 3. _____ 4. _____ 5. _____

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER

Predicted Rain-Event-Triggered Actions, (continued)

Activity	Actions Required Before Predicted Rain Event
Material Storage Areas	☐ Material covered or in sheds (For example: treated wood and metals) ☐ Stockpiles covered and perimeter control installed ☐ Other _____ ☐ Other _____ ☐ Other _____
Waste Management Areas	☐ Dumpsters closed ☐ Drain holes plugged ☐ Recycling bins covered ☐ Sanitary stations bermed and protected from tipping ☐ Other _____ ☐ Other _____ ☐ Other _____
Concrete Rinse Out Areas	☐ Wash-out bins covered ☐ Adequate capacity for rain ☐ Other _____ ☐ Other _____
Operations	☐ Operations to shut down for rain event ☐ Grading ☐ Concrete pours ☐ Hot mix asphalt paving ☐ Other _____ ☐ Other _____ ☐ Soil amendments not to be applied within the 24 hours before a rain event ☐ Other _____ ☐ Other _____

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER

Predicted Rain-Event-Triggered Actions, (continued)

Activity	Actions Required Before Predicted Rain Event
Secure Site for Storm Event	☐ Trenches and excavation protected. ☐ Perimeter and excavations protected. ☐ Other _____ ☐ Other _____
Site Erosion and Sediment Control BMPs	☐ Site perimeter controls are in place. ☐ Catch basin and drop inlet protection are in place. ☐ Sediment basins and traps have adequate capacity. ☐ Deploy temporary perimeter control on inactive areas. ☐ Deploy temporary perimeter control around active disturbed soil areas and active stockpiles. ☐ Sweep access roads. ☐ Other _____ ☐ Other _____ ☐ Other _____
Spills and Drips	☐ Clean up all spills and drips, including paint, fuel, and oil. ☐ Empty drip pans. ☐ Other _____ ☐ Other _____
Pre-storm Inspection Identified Corrective Actions	Corrective Action Number ☐ _____ ____ ☐ _____ ____ ☐ _____ ____ ☐ _____ ____ ☐ _____ ____ ☐ _____ ____ ☐ _____ ____ ☐ _____ ____ ☐ _____ ____

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER

Certification of Rain Event Action Plan

I certify under penalty of law that this Rain Event Action Plan (REAP) will be implemented in accordance with the Construction General Permit by me or under my direction or supervision. The information contained in this REAP was gathered and evaluated by qualified personnel before submittal. Based on my review of the information and inquiry of those who gathered and evaluated the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

I am aware that Section 309 (c)(4) of the Clean Water Act provides for significant penalties, including fines and imprisonment for knowingly submitting false material statement, representation or certification.

Water Pollution Control Manager name	Date
Water Pollution Control Manager signature	

Accepted by resident engineer name	Date
Resident engineer signature	

Instruction

General Information

- This form must be completed for Risk Level 2 and Risk Level 3 projects with the chance for precipitation of 50 percent or greater, within 72 hours of the forecast date. The Rain Event Action Plan (REAP) must be developed 48 hours prior to any likely precipitation rain event (any weather pattern that is forecast to have a 50 percent or greater probability of producing precipitation in the project area).
- The CGP requires a pre-storm inspection within two business days (48 hours) prior to a "qualifying rain event" which is defined as any event producing precipitation of 0.5 inch or more over the duration of the rain event. Because the size of a rain event cannot be accurately predicted, Caltrans requires a pre-storm inspection based on a forecasted storm event, which is defined as any rain event that is forecasted to produce 0.1 inch or more of precipitation within any 24-hour period. The trigger for a pre-storm event visual inspection is the same as for a REAP: 50 percent or greater probability of producing 0.1 inch or more of precipitation within any 24-hour period in the project area based on the National Weather Service Forecast Office (National Oceanic and Atmospheric Administration).
- Within 24 hours prior to a storm event, the REAP must be submitted to the resident engineer. The REAP must be made available on site and implementation begun no later than 24 hours prior to the likely precipitation event.
- File this form in SWPPP File Category 20.45.

Form

- **Contract Number/Co/Rte/PM**
  For encroachment permit projects, write the local agency or private entity encroachment permit number in the contract number field.
- **Project Identifier Number**
  For projects without a number, write N/A in the field.

APPENDIX K

CEM-2061 Notice of Discharge Form

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

NOTICE OF DISCHARGE REPORT

CEM-2061 (REV 11/2013)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM PROJECT IDENTIFIER NUMBER WDID NUMBER
CONTRACTOR NAME AND ADDRESS	PROJECT SITE RISK LEVEL ☐ Risk Level 1 ☐ Risk Level 2 ☐ Risk Level 3 ☐ N/A. WPCP ☐ N/A. Project resides in the Lake Tahoe Hydrologic Unit and is regulated under Order No. R6T-2011-0019, NPDES No. CAG616002.

Submitted by contractor (print and sign name)	Date

Notice of Discharge General Information

Location	Date discharge discovered

Discharge identified by stormwater visual site inspection?	Discharge discovered by contractor during daily work?	Discharge samples taken?	Discharge type	Exceedance of applicable water quality standard
☐ YES ☐ NO	☐ YES ☐ NO	☐ YES ☐ NO	☐ Stormwater ☐ Authorized non-stormwater ☐ Non-authorized non-stormwater	☐ Turbidity ☐ pH ☐ _____

Discharge identified by Regional Water Quality Control Board?	Discharge identified by State Water Resources Control Board?	Date and time water pollution control manager notified of discharge
☐ YES ☐ NO	☐ YES ☐ NO	Date and time resident engineer notified of discharge

Storm Event Information

Complete this section for stormwater discharges

Start of storm event	End of storm event	Duration of storm event	Storm event precipitation amount recorded from site rain gauge	Storm event precipitation amount recorded from governmental rain gauge
_____ *Date* _____ *Time*	_____ *Date* _____ *Time*	_____ *Hours : Minutes.*	_____ *inches*	_____ *inches*

Notice of Discharge Information

The nature and cause of the water quality standard exceedance, based on a visual observation of the discharge location	Photographs ☐ YES ☐ NO
BMPs currently installed at the location of the discharge	☐ YES ☐ NO

Additional BMPs that will be implemented to prevent or reduce pollutants causing or contributing to exceedance of a water quality standard

Implementation schedule for additional BMPs

ADA Notice For individuals with sensory disabilities, this document is available in alternate formats. For information, call (916) 445-1233, TTY 711, or write to Records and Forms Management, 1120 N Street, MS-89, Sacramento, CA 95814.

NOTICE OF DISCHARGE REPORT

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER

Notice of Discharge Information (continued)

Maintenance or repair of BMPs

Implementation schedule for BMPs maintenance or repair

Other required corrective actions

Implementation schedule for corrective actions

Summary of actions taken to reduce the pollutants causing or contributing to the water quality standard exceedance

Sampling and Analysis Results

Required when discharge samples are taken. Attach CEM-2052 or lab results report

- Are discharge samples taken? ☐ YES ☐ NO
- Is CEM-2052 attached? ☐ YES ☐ NO ☐ N/A
- Is lab results report attached? ☐ YES ☐ NO ☐ RESULTS PENDING
- If applicable, provide lab information: lab name, contract name, date samples sent, attach a copy of chain of custody, etc.

ADA Notice For individuals with sensory disabilities, this document is available in alternate formats. For information, call (916) 445-1233, TTY 711, or write to Records and Forms Management, 1120 N Street, MS-89, Sacramento, CA 95814.

NOTICE OF DISCHARGE REPORT

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER

Notice of Discharge Report Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, to the best of my knowledge and belief, the information submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

Water Pollution Control Manager (name)	Date
Water Pollution Control Manager (signature)	

For Caltrans Use

Accepted by Resident Engineer (name)	Date
Resident Engineer(signature)	

Discharge reported by telephone or email to the Regional Water Quality Control Board (RWQCB) within 48 hours of discovery? A. Immediately and no later than 24 hours after discovery? ☐ YES ☐ NO B. Within 5 working days? ☐ YES ☐ NO C. As soon as possible but within 48 hours? ☐ YES ☐ NO	Date discharge reported to RWQCB	Resident engineer intials
Notice of Discharge Report submitted to RWQCB within 14 days (3 days for District 7 and District 11)? A. Within 24 hours? ☐ YES ☐ NO B. Within 14 days (3 days for District 7 and 11)? ☐ YES ☐ NO	Date report submitted to RWQCB	Resident engineer intials
Discharge reported orally to the Lahontan RWQCB within 24 hours of discovery? ☐ YES ☐ NO	Date called Lahontan RWQCB	Resident engineer intials
Electronic submittal of NEL exceedance sample results to Lahontan RWQCB and SMARTS within 5 business days? ☐ YES ☐ NO	Date report submitted	Resident engineer intials

ADA Notice For individuals with sensory disabilities, this document is available in alternate formats. For information, call (916) 445-1233, TTY 711, or write to Records and Forms Management, 1120 N Street, MS-89, Sacramento, CA 95814.

Instructions

General Information

- This form is required for compliance with provisions in Section E-2, "Receiving Water Limitations for Construction," of the National Pollutant Discharge Elimination System (NPDES) Permit Statewide Storm Water Permit and Waste Discharge Requirements (WDRs) for the State of California, Department of Transportation (Caltrans), Order No. 99-06-DWQ, NPDES No. CAS000003.
- This form is to be completed when the contractor, Caltrans, State Water Resources Control Board, or Regional Water Quality Control Board staff determines that stormwater discharges, authorized non-stormwater discharges, or non-authorized, non-stormwater discharges are causing or contributing to an exceedance of an applicable water quality standard.
- This form is appropriate when there is evidence of a discharge that occurred outside of business hours where no sampling occurred.
- Water quality standards are contained in the Statewide Water Quality Control Plan or applicable Regional Water Quality Control Boards (RWQCBs) Basin Plan.
- Water quality standards are contained in the Statewide Water Quality Control Plan or applicable Regional Water Quality Control Boards (RWQCBs) Basin Plan.
- Sampling guidance is found in the current edition of the *Construction Site Monitoring Program Guidance Manual.*
- Include a copy of the completed form in the project Storm Water Pollution Prevention Plan (SWPPP) files.

Form

- **Project Identifier Number**
  Caltrans projects starting July 1, 2010, will have a project identifier number. For projects without a number, write N/A in the field.
- **Contract Number/Co/Rte/PM**
  For encroachment permit projects, write the local agency or private entity encroachment permit number in the contract number field.
- **Storm Event Information**
  Leave section blank if box is checked for either authorized or non-authorized non-stormwater discharge.
- **Discharge Information**
  Do not leave any subsection blank. Caltrans permit specifically requires Caltrans to submit the information in this section to RWQCBs.
  For non-stormwater discharges, describe the construction operation or activity that caused the discharge.
- **Sampling and Analysis Results**
  Leave this section blank if the no box is checked for discharge samples taken.
- **Analysis Results**
  Analytical results less than the method detection limit shall be reported as "Less than the method detection limit."
- **Analysis Information**
  Leave section blank if the no box is checked for discharge samples taken.
- **Notice of Discharge Report Certification**
  For instruction on reporting timelines, see Section 9.4, Noncompliance Reporting, of Statewide Stormwater Management Plan, May 2003.

ADA Notice For individuals with sensory disabilities, this document is available in alternate formats. For information, call (916) 654-6410, TTY 711, or write to Records and Forms Management, 1120 N Street, MS-89, Sacramento, CA 95814.

APPENDIX L

CEM-2058 Stormwater Meter Calibration Record– Specialty Meters Form

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

STORMWATER METER CALIBRATION RECORD - SPECIALTY METERS

CEM-2058 (REV 12/2013)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID
CONTRACTOR NAME AND ADDRESS	PROJECT SITE RISK LEVEL ☐ Risk Level 1 ☐ N/A. WPCP ☐ Risk Level 2 ☐ N/A. Project resides in the Lake Tahoe Hydrologic Unit and is regulated under Order No. R6T-2011-0019, NPDES No. CAG616002. ☐ Risk Level 3
SUBMITTED BY CONTRACTOR (PRINT AND SIGN NAME)	DATE

Meter

Multi-meter: ☐ YES ☐ NO

Meter Manufacturer	Meter Model Number	Meter Serial Number

Conductivity Meter Calibration Date _____

Standard Solution (uS/cm)	Cal Standard Solution Expiration Date	Initial Calibration		Re-Calibration		Drift Check		Notes	Initials
		Time		Time		Time			
		Cal	Read	Cal	Read	Read	Acceptable Performance		

Meter Manufacturer	Meter Model Number	Meter Serial Number

Dissolved Oxygen Meter Calibration Date _____

Standard	Cal Standard Solution Expiration Date	Initial Calibration		Re-Calibration		Drift Check		Notes	Initials
		Time		Time		Time			
		Cal	Read	Cal	Read	Read	Acceptable Performance		

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STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

STORMWATER METER CALIBRATION RECORD - SPECIALTY METERS

CEM-2058 (REV 12/2013)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER

Meter Manufacturer	Meter Model Number	Meter Serial Number

Meter Calibration Date _____

Standard	Cal Standard Solution Expiration Date	Initial Calibration		Re-Calibration		Drift Check		Notes	Initials
		Time		Time		Time			
		Cal	Read	Cal	Read	Read	Acceptable Performance		

Meter Manufacturer	Meter Model Number	Meter Serial Number

Meter Calibration Date _____

Standard	Cal Standard Solution Expiration Date	Initial Calibration		Re-Calibration		Drift Check		Notes	Initials
		Time		Time		Time			
		Cal	Read	Cal	Read	Read	Acceptable Performance		

Date	Notes

Review

I have reviewed this document and, based on my inquiry of the person or persons who manage the system of those persons directly responsible for gathering the information, to the best of my knowledge and belief, the information submitted is true, accurate, and complete.

Water Pollution Control Manager	Date

Water Pollution Control Manager Signature

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Instructions

General Information

- Projects with a Construction Site Monitoring Program require the information on this form as part of the Stormwater Pollution Prevention Plan for specialty stormwater analysis meter calibration if a specialty meter was used. This form is not intended to be used with a turbidity or pH meter.
- Completed forms shall be filed in project file category 20.55, Field Testing Equipment Maintenance and Calibration Records.

Form

Contract Number/Co/Rte/PM
For local agency encroachment permit projects, write the encroachment permit number in the Contract Number field.

Project Identifier Number
Caltrans projects starting July 1, 2010, will have a Project Identifier Number (PIN). For projects without a PIN, write "N/A" in the field.

Acceptable performance for conductivity drift is ±10 percent, and acceptable performance for dissolved oxygen is ±10 percent.

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APPENDIX M

CEM-2051 Stormwater Sampling and Testing Activity Log – Optional Form

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

STORMWATER SAMPLING AND ANALYSIS LOG - OPTIONAL

CEM-2051 (REV 1/2014)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER
CONTRACTOR NAME AND ADDRESS	PROJECT SITE RISK LEVEL ☐ Risk Level 1 ☐ Risk Level 2 ☐ Risk Level 3 ☐ N/A. Project resides in the Lake Tahoe Hydrologic Unit and is regulated under Order No. R6T-2011-0019, NPDES No. CAG616002.

SUBMITTED BY CONTRACTOR (PRINT AND SIGN NAME)	DATE

STORMWATER SAMPLING AND ANALYSIS LOG REVIEW

I have reviewed this document and based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, to the best of my knowledge and belief, the information submitted is true, accurate, and complete.

Are laboratory test results attached to this stormwater sampling and analysis log submittal?

☐ YES ☐ NO

Water Pollution Control Manager Signature	Date

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STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

STORMWATER SAMPLING AND ANALYSIS LOG - OPTIONAL

CEM-2051 (REV 1/2014)

CONTRACT NUMBER/CO/RTE/PM	PROJECT IDENTIFIER NUMBER	WDID NUMBER	DATE

STORMWATER SAMPLING AND ANALYSIS LOG

Log Number	Date of Sampling	Sampling Location	Time Sample Taken	Amount of Precipitation	Sample Identification	Analysis	Analysis Result	Daily Average Analysis Result	Lab Report Attached
						☐ Turbidity ☐ pH ☐ _____			☐ Yes ☐ No
						☐ Turbidity ☐ pH ☐ _____			☐ Yes ☐ No
						☐ Turbidity ☐ pH ☐ _____			☐ Yes ☐ No
						☐ Turbidity ☐ pH ☐ _____			☐ Yes ☐ No
						☐ Turbidity ☐ pH ☐ _____			☐ Yes ☐ No
						☐ Turbidity ☐ pH ☐ _____			☐ Yes ☐ No
						☐ Turbidity ☐ pH ☐ _____			☐ Yes ☐ No
						☐ Turbidity ☐ pH ☐ _____			☐ Yes ☐ No

Instructions

General Information

- The information shown on this form is required for projects with a Stormwater Pollution Prevention Plan (SWPPP) to document stormwater sampling and analysis. The information on this form is required for the stormwater annual report for SWPPP projects.
- Complete this form after every storm event that requires sampling and analysis.
- Complete this form weekly for logging non-stormwater sampling and analysis, and indicate in the sampling location column the reason for non-stormwater samples, such as sample from dewatering operation.
- This form is provided as an optional management tool, to be used at the discretion of the water pollution control manager.

Form

Contract Number/Co/Rte/PM
For local agency encroachment permit projects, write the encroachment permit number in the Contract Number field.

Project Identifier Number
Caltrans projects starting July 1, 2010, will have a Project Identifier Number (PIN). For projects without a PIN, write N/A in the field.

Log No.
Log numbering should be consecutive starting from the first storm event to the last storm event for a project.

Amount of Precipitation
Enter the cumulative amount of precipitation from the storm event at the time each sample is taken.

Analysis Result
For turbidity and pH, a minimum of three samples is required to determine the daily average. If more than three daily samples are taken, use two rows to report all samples, and report the daily average in the second row.

APPENDIX N

CEM-2052 Stormwater Sample Field Test Report Form

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

STORMWATER SAMPLE FIELD TEST REPORT/ RECEIVING WATER MONITORING REPORT

CEM-2052 (REV 7/2014)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER
CONTRACTOR NAME AND ADDRESS	PROJECT SITE RISK LEVEL ☐ Risk Level 1 ☐ N/A. WPCP ☐ Risk Level 2 ☐ N/A. Project resides in the Lake Tahoe Hydrologic Unit and is regulated under Order No. R6T-2011-0019, NPDES No. CAG616002. ☐ Risk Level 3
Submitted by contractor (print and sign name)	Date

Stormwater Samples Analysis

Date of sampling	
Sample location identification number	Date of Analysis
Sample Analyzed By (signature)	Samples to be analyzed for parameters ☐ Turbidity ☐ pH ☐ Other _____ ☐ Other _____
Sampled Analyzed By (print name)	
Analyzer Phone Number ( )	
Company	

Turbidity Analysis Information

Meter Manufacturer	Model Number	Serial Number	Calibration Date
Analytical Method	Method Reporting Unit	Method Detection Limit	

pH Analysis Information

pH Meter Manufacturer	Model Number	Serial Number	Calibration Date
Analytical Method	Method Reporting Unit	Method Detection Limit	

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STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

STORMWATER SAMPLE FIELD TEST REPORT/ RECEIVING WATER MONITORING REPORT

CEM-2052 (REV 7/2014)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER

Turbidity Calibration Record

Date	Standard Solution (NTU)	Cal Standard Solution Expiration Date	Initial Calibration Time:		Re-Calibration Time:		Drift Check Time:		Notes	Initials
			Cal	Read	Cal	Read	Read	Acceptable Performance		

pH Calibration Record

Buffer Solution Expiration Date: pH4.0 Date _____ pH7.0 Date _____ pH10.0 Date _____

Date	Electrode Number	Temperature at Calibration	Buffers Used for Calibration. Check those that apply.			Slope %	Re-check pH 7.0	Notes	Initials
			pH 4.0	pH 7.0	pH 10.0				

Stormwater Sample Analysis Results - Discharge Points

Sample Identification	Exception See Instructions	pH	NTU	Parameter Analysis *		
				Time Sample Collected	Time Sample Read	Sample Value and Units
Qualifying Rain Event Daily Average Analysis Result						

Stormwater Sample Analysis Results - Run-On Points

Sample Identification	Exception See Instructions	pH	NTU	Parameter Analysis *		
				Time Sample Collected	Time Sample Read	Sample Value and Units
Qualifying Rain Event Daily Average Analysis Result						

* Complete and attach CEM-2058 to document calibration of instruments used to analyze these parameters.

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

STORMWATER SAMPLE FIELD TEST REPORT/ RECEIVING WATER MONITORING REPORT

CEM-2052 (REV 7/2014)

Receiving Water Sample Analysis Results

Sample Identification	Exception See Instructions	pH	NTU	SSC	Parameter Analysis *		
					Time Sample Collected	Time Sample Read	Sample Value and Units
Qualifying Rain Event Daily Average Analysis Result							

Review and Record Keeping

Test results entered into sampling and testing activity log?	Numeric action level exceedance?	Receiving water monitoring triggers exceeded?	ATS NEL exceeded?
☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No

* Complete and attach CEM-2058 to document calibration of instruments used to analyze these parameters.

Instructions

General Information

- This form is required for compliance with provisions in Section I of Attachments C, D, and E of the National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities, Order No. 2009-0009-DWQ, NPDES No. CAS000002 and provisions of General Waste Discharge Requirements and National Pollutant Discharge Elimination System Permit for Lake Tahoe Hydrologic Unit Order No. R6T-2011-0019 NPDES No. CAG616002.
- The Caltrans, *Construction Site Monitoring Program Guidance Manual*, latest edition, contains sampling guidance.
- Complete form CEM-2058 if other parameters are tested.
- Sampling and sample preservation must be in accordance with the current edition of "Standard Methods for the Examination of Water and Wastewater" (American Public Health Association).
- Collect, maintain, and ship samples according to the State Water Resources Control Board's (SWRCB), Surface Water Ambient Monitoring Program's (SWAMP) Quality Assurance Program Plan (QAPrP), latest edition.
- Complete a separate stormwater sample field analysis report daily for each sampling location.
- Include a copy of the completed form in the project Stormwater Pollution Prevention Plan files.

Form

Contract Number/Co/Rte/PM
For local agency encroachment permit projects, write the encroachment permit number in the Contract Number field.

Analysis Result
Analytical results less than the method detection limit must be reported as "less than the method detection limit".

Project Identifier Number
Caltrans projects starting July 1, 2010, will have a Project Identifier Number (PIN). For projects without a PIN, enter N/A in the field.

Qualifying Rain Event Daily Average Analysis Result
A minimum of three daily samples are required to calculate the daily average for a qualifying rain event.

Sample pH Analysis
Sample pH reading must be done within 15 minutes of sample collection.

Numeric Action Level Exceedance
In the event that any daily average effluent samples analysis results exceeds an applicable Numeric Action Level (NAL), complete form CEM-2062 "Numeric Action Level Exceedance Report," and submit all storm event sampling results to the State Water Resources Control Board (SWRCB) no later than ten days after the conclusion of the storm event.

Receiving Water Monitoring Trigger (RWMT) Exceedance
In the event that any daily average RWMT is exceeded, complete form CEM-2062, "Numeric Action Level Exceedance Report / Receiving Water Monitoring Trigger Report" and submit all storm event sampling results to the resident engineer within six hours.

Add Exceptions Reasons:

N - No Run-off at time of inspection

O - Outside of normal business hours

U - Unsafe conditions/unsafe access

APPENDIX O

CEM-2062 Numeric Action Level Exceedance Report Form

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

NUMERIC ACTION LEVEL EXCEEDANCE REPORT

CEM-2062 (REV 7/2014)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER
CONTRACTOR NAME AND ADDRESS	PROJECT SITE RISK LEVEL ☐ Risk Level 2 ☐ Risk Level 3

Submitted by contractor (print and sign name)	Date

Numeric Action Level Exceedance Information: Attach CEM-2052

Storm Event Information

Start of storm event	End of storm event	Duration of storm event	Storm event precipitation amount recorded from site rain gauge	Storm event precipitation amount recorded from governmental rain gauge
_____ *Date* _____ *Time*	_____ *Date* _____ *Time*	_____ *Hours : Minutes*	_____ *inches*	_____ *inches*

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STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

NUMERIC ACTION LEVEL EXCEEDANCE REPORT

CEM-2062 (REV 7/2014)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER

Exceedance Location Information

	Photographs
Visual observation of location	☐ YES ☐ NO
The nature and cause of the water quality standard exceedance, based on a visual observation of the discharge location	☐ YES ☐ NO
BMPs currently installed at the location of the discharge	☐ YES ☐ NO
Additional BMPs that will be implemented to prevent or reduce pollutants causing or contributing to exceedance of a water quality standard Implementation schedule for additional BMPs	☐ YES ☐ NO
Maintenance or repair of BMPs Implementation schedule for BMPs maintenance or repair	☐ YES ☐ NO
Other required corrective actions Implementation schedule for corrective actions	☐ YES ☐ NO

NUMERIC ACTION LEVEL EXCEEDANCE REPORT

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER

Numeric Action Level Exceedance Report Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those person directly responsible for gathering the information, to the best of my knowledge and belief, the information submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

Water Pollution Control Manager name	Date
Water Pollution Control Manager signature	

For Caltrans Use

Resident engineer name	Date
Resident engineer signature	

Numeric Action Level Exceedance Report submitted to State Board SMARTS database within 24 hours after NAL exceedance was identified? ☐ YES ☐ NO	Date input	Resident engineer initials
All storm event sampling results submitted to State Water Board SMARTS database within 10 days after the conclusion of the storm event? ☐ YES ☐ NO	Date input	Resident engineer initials

Notice of Discharge Reporting

Discharge reported by telephone or email to the Regional Water Quality Control Board (RWQCB) within 48 hours of discovery? ☐ YES ☐ NO	Date discharge reported to RWQCB	Resident engineer intials
Notice of Discharge Report submitted to RWQCB within 14 days (3 days for District 7 and District 11)? ☐ YES ☐ NO	Date report submitted to RWQCB	Resident engineer intials

Instructions

General Information

- This form is required for compliance with provisions for Numeric Action Level (NAL) Exceedance Report in Section I of Attachment D or E of the National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated With Construction and Land Disturbance Activities, Order No. 2009-0009-DWQ, NPDES No. CAS000002.
- Sampling guidance is found in the Caltrans, *Construction Site Monitoring Program Guidance Manual*, latest edition.
- In the event that any daily average effluent sample analysis result exceeds an applicable NAL, submit all storm event sampling results to the State Regional Water Quality Control Board (RWQCB) no later than 10 days after the conclusion of the storm event.
- RWQCBs have the authority to require the submittal of an NAL Exceedance Report.
- You may submit an NAL Exceedance Report to RWQCB instead of a Notice of Discharge Report.
- Include a copy of the completed form in the project Storm Water Pollution Prevention Plan (SWPP) files.

Form

Contract Number/Co/Rte/PM
For local agency encroachment permit projects write the encroachment permit number in the Contract Number field.

Project Identifier Number
Caltrans projects starting July 1, 2010, will have a Project Identifier Number (PIN). For projects without a PIN, write N/A in the field.

Storm Event Precipitation Amount at Sample Time
At time of sample collection, record amount of precipitation from onsite rain gauge.

Analysis Results
Analytical results that are less than the method detection limit shall be reported as "Less than the method detection limit."

Qualifying Rain Event Daily Average Analysis Result
A minimum of three daily samples is required to calculate the daily average for a qualifying rain event.

SWPPP FILES

**Will be provided by the Contractor