
North Coast Regional Water Quality Control Board

June 7, 2016

California Regional Water Quality Control Board North Coast Region

Monitoring and Reporting Program No. R1-2010-0066 Revised June 7, 2016

for

California Department of Transportation Highway 101 – Willits Bypass Project WDID No. 1B10019WNME

Mendocino County

1.0 INTRODUCTION and OBJECTIVES

This Monitoring and Reporting Program (MRP) is issued as a condition of the California Department of Transportation's Highway 101 Willits Bypass Project Clean Water Act Section 401 Water Quality Certification (401 certification) and requires the monitoring and assessment of waters of the State (wetlands, streams, and riparian areas) and the submission of technical reports. The objective of monitoring conducted under this MRP is to provide the California Department of Transportation (Caltrans) and the North Coast Regional Water Quality Control Board (Regional Water Board) with information concerning the conditions, quality, and concentration trends of waters of the State within and adjacent to the Highway 101 Willits Bypass Project alignment and the associated off-site mitigation lands.

This MRP has been revised to reflect the changes made to the monitoring program since August 6, 2010. This MRP requires the collection and evaluation of data to supplement the June 2014 Willits Bypass Mitigation and Monitoring Proposal (June 2014 MMP), and modifies the August 6, 2010, MRP (Order No. R1-2010-0066).

This MRP makes a distinction between project areas associated with construction of the new State Route 101 (“Bypass Alignment”) and those areas associated with mitigation actions outside of the Bypass Alignment (“Mitigation Lands”). The Bypass Alignment and Mitigation Lands are collectively referred to as the “Project” within this MRP.

Implementation of this MRP will allow the Regional Water Board to:

1. Assess the biological, chemical, and physical characteristics and conditions of resources for both the Bypass alignment and the associated mitigation lands, prior to, during, and after construction of the Bypass alignment;
2. Determine whether the appropriate mitigation is being provided to compensate for impacts to jurisdictional resources;
3. Determine whether the Project is complying with the Water Quality Control Plan for the North Coast Region (Basin Plan), Total Maximum Daily Loads (TMDLs), and all applicable water quality standards;
4. Assess receiving water quality trends;
5. Evaluate activities that may warrant corrective actions;
6. Identify pollutant sources; and
7. Measure and assess the reductions or prevention in pollutant loads.

To compensate for the impacts to wetlands, Caltrans is using a watershed approach to achieve an increase in functions and values on mitigation lands. Verifying this increase in functions and values requires documentation of pre-Project baseline conditions of surface waters for both the Bypass Alignment and the Mitigation Lands.

Baseline data will also be used to determine whether the Bypass, both during and after construction, is in compliance with the Basin Plan, California’s antidegradation policy described in State Water Board Resolution No. 68-16, and the United States Environmental Protection Agency (USEPA) established sediment and temperature total maximum daily loads (TMDLs) for the Upper Main Eel River and tributaries (including Tomki Creek, Outlet Creek and Lake Pillsbury). Pursuant to Regional Water Board Resolution R1-2004-0087, *Total Maximum Daily Load Implementation Policy Statement for Sediment-Impaired Receiving Waters within the North Coast Region* (also known as the “Sediment TMDL Implementation Policy”), the Executive Officer is directed to “rely on the use of all available authorities, including existing regulatory standards, and permitting and enforcement tools to more effectively and efficaciously pursue compliance with sediment-related standards by all dischargers of sediment waste.”

From August 2010 to October 20, 2014, Caltrans has conducted baseline monitoring to characterize Project area conditions. Caltrans has submitted Baseline Reports that include the monitoring, sampling and analysis of various surface water quality parameters, stream and wetland hydrology assessments, California Rapid Assessment Method (CRAM) wetland

and riverine assessments, bioassessments, shade surveys, and erosion inventories. The data presented in the Baseline Reports have been used by the USEPA, California Department of Fish and Wildlife (DFW), Regional Water Board and Caltrans to develop applicable performance standards for wetlands, stream and riparian areas (riverine wetlands).

Data collection and evaluation shall be implemented in three separate task phases for both the Bypass Alignment and Mitigation Lands. The three phases and associated tasks of this MRP are:

Task Phase I

1. Construction Compliance Monitoring and Reporting Tasks (Bypass Alignment)
 - a) Conduct monitoring within the stream reaches along the Bypass Alignment;
 - b) Submit monthly and rainy day reports on construction compliance; and
 - c) Annual Report summary of construction compliance.

2. Construction Compliance Monitoring and Reporting Tasks (Mitigation Lands)
 - a) Conduct water quality monitoring within the Mitigation Lands; and
 - b) Annual qualitative status reports on progress of plantings, and mitigation construction compliance, and mitigation trends and progress.

Task Phase II

1. Reestablishment Success Evaluation Tasks (Bypass Alignment)
 - a) Conduct water quality monitoring within the stream reaches along the Bypass Alignment to verify reestablishment success;
 - b) Collect bioassessment data within the stream reaches along the Bypass Alignment to verify reestablishment success;
 - c) Collect wetland data for bypass to verify reestablishment success;
 - d) Annual reporting on compliance and mitigation progress; and
 - e) Final Mitigation Report verifying success.

2. Enhancement and Reestablishment Success Evaluation Tasks (Mitigation Lands)
 - a) Conduct water quality monitoring within the mitigation lands to verify reestablishment and enhancement success;
 - b) Collect bioassessment data for the mitigation lands to verify reestablishment and enhancement success;
 - c) Collect wetland data for the mitigation lands to verify reestablishment and enhancement success;
 - d) Annual reporting on compliance and mitigation progress; and
 - e) Final Mitigation Report verifying success.

Task Phase III

1. Long Term Total Maximum Daily Load (TMDL) and Land Management Compliance Tasks (Bypass Alignment)
 - a) Once success has been achieved for the Bypass Alignment reestablishment areas, Caltrans shall develop a TMDL Compliance Plan and Long Term Management Plan.
2. Long Term Total Maximum Daily Load (TMDL) and Land Management Compliance Tasks (Mitigation Lands)
 - a) Once success has been achieved for the Mitigation Lands, Caltrans shall develop a TMDL Compliance Plan and Long Term Management Plan.

2.0 Surface Water Monitoring and Reporting Program Development

2.1 Level 2 Rapid Assessment Protocols

Pre-project wetland assessments were conducted in accordance with California Rapid Assessment Method CRAM for riverine and wet meadow wetlands.

2.2 Level 3 Bioassessment Protocols

Pre-project bioassessments were conducted prior to initiating any ground-disturbing activities or vegetation removal. For the Bypass Alignment, post-project bioassessments shall be performed after at least one winter season resulting in surface runoff after project-related ground disturbance has ceased. In addition, Mitigation Lands post-project bioassessments shall be performed the season after the completion of the mitigation actions and at years five and ten of the mitigation monitoring period. The stream bioassessments must be performed in accordance with:

- The State Water Resources Control Board (SWRCB) Surface Water Ambient Monitoring Program (SWAMP) *Standard Operating Procedures for Collecting Benthic Macroinvertebrate Samples and Associated Physical and Chemical Data for Ambient Bioassessments in California*, dated February 2007;
- SWAMP *Standard Operating Procedure and Interim Guidance on Quality Assurance for SWAMP Bioassessments* memo, dated May 21, 2007; and
- SWAMP *Amendment to SWAMP Interim Guidance on Quality Assurance for SWAMP Bioassessments*, dated September 17, 2008.

In addition, the SWAMP *Collecting Stream Algae Samples and Associated Physical Habitat and Chemical Data for Ambient Bioassessments in California- Standard Operating Procedures*, dated June 2010, shall be used for the algae portion of the bioassessment.

Bioassessments must be conducted in accordance with the stream algae samples and the “full” suite of physical habitat characterization measurements, using the

“reachwide benthos (Multi-Habitat) procedure.” The SWRCB SWAMP standard operating procedures, memos, and guidance documents can be found online at: http://www.swrcb.ca.gov/water_issues/programs/swamp/tools.shtml#methods

2.3 Site-Specific Shade

Procedures for monitoring maximum site-specific shade shall be performed consistent with the Caltrans-prepared, February 2012, *Technical Memorandum: Analysis of Maximum Site Shade Potential, Category I, II, and III Riparian Areas*.

3.0 PHASE I - Construction Compliance Monitoring and Reporting

In order to demonstrate whether the Bypass Alignment is in compliance with the applicable water quality objectives, Caltrans shall conduct construction compliance monitoring in accordance with this MRP and the Water Quality Certification. Construction compliance monitoring shall occur during all phases of construction at static locations throughout the Bypass Alignment during the construction phase.

3.1 Water Quality Monitoring for the Bypass Alignment

The following constituents shall be monitored at the corresponding frequencies during all phases of Project construction.

Constituent(s)	Frequency
Stream flow	Continuous
pH	Continuous
Temperature (Air and Water)	Continuous
Total Dissolved Solids	Continuous
Turbidity	Continuous
Specific Conductance	Continuous
Dissolved Oxygen	Continuous

Water quality data shall be collected at the following 15 locations along the Bypass alignment for construction compliance monitoring (Figure 1):

- Upper Haehl Creek immediately upstream of the Schmidbauer driveway culvert (WQ-1), and downstream of the Haehl Creek interchange (WQ-3);
- Middle Haehl Creek bridge construction upstream of the project footprint (WQ-4) and downstream of the project footprint (WQ-5);
- Baechtel Creek upstream of the Baechtel Creek retaining wall construction footprint (WQ-6), upstream of the Haehl Creek confluence (WQ-7), Lower Haehl Creek upstream of the bypass footprint (WQ-8);
- Lower Haehl Creek downstream of the viaduct construction footprint, but upstream of the Baechtel Creek confluence (WQ-9); Baechtel Creek upstream of the viaduct construction footprint (WQ-10);

- Outlet Creek downstream of the viaduct construction footprint (WQ-11) and Broaddus Creek upstream of the viaduct construction footprint (WQ-12);
- Mill Creek upstream of the viaduct construction footprint (WQ-13) downstream of the viaduct construction footprint (WQ-14); and Upp Creek upstream (WQ-15) and downstream of the interchange construction footprint (WQ-17).

3.2 Water Quality Objectives

The relevant water quality requirements, parameters, and objectives applicable to the Project are summarized below. However, the list below is not all-inclusive of all relevant water quality requirements; water quality objectives and the authority and jurisdiction of the Regional Water Board are not limited to the list below.

Constituent	Concentrations
pH ¹	>6.5 or <8.5
Temperature ²	<0.5 degrees F
Dissolved Oxygen ³	>7.0 mg/L or (>9.0 mg/L)
Total Dissolved Solids	<230 ⁴ or <125 ⁵
Turbidity	<20% above background
Specific Conductance ⁶	<400 ⁵ or <200 ⁶

3.3 Reporting

This section describes monthly and periodic rain event reporting required during the construction phase of the Project. Construction phase information is also required in Annual Project Reports; details for the Annual Project Reports may be found in Section 5.0., *Required Plans and Reports*.

3.3.1 Monthly Monitoring Reports

Monthly monitoring reports shall be submitted to the Executive Officer of the Regional Water Board during all phases of Project construction. Monthly monitoring reports shall be submitted to the Regional Water Board by the 15th of each month and document the prior months Project activities. The monthly monitoring reports shall include, at a minimum:

¹ Changes in normal ambient pH levels shall not change 0.5 units within the range specified in fresh waters with designated COLD or WARM beneficial uses.

² The natural receiving water temperature of intrastate waters shall not be altered unless it can be demonstrated to the satisfaction of the Regional Water Board that such alteration in temperature does not adversely affect beneficial uses. At no time or place shall the temperature of any COLD water be increased by more than 5°F above natural receiving water temperature.

³ Waters designated SPWN during critical spawning and egg incubation periods is >9.0 mg/l

⁴ 90% or more of the yearly values must be less than or equal this limit.

⁵ 50% or more of the monthly means must be less than this limit.

⁶ micromhos @ 77°F

1. A summary of discharges;
2. A summary of corrective actions taken (if necessary);
3. Photographs representative of site conditions;
4. All field sampling measurements and/or results;
5. Project status (e.g., upcoming construction schedule and disturbed soil area updates);
6. Water quality monitor daily observation and inspection reports; and
7. All field monitoring equipment calibration logs.

3.3.2 Rainy Day Reports

Caltrans shall take photos of all areas disturbed by Project activities, including all excess materials disposal areas, after rainfall events that generate visible runoff. A report containing these photos shall be submitted within ten days of the rainfall event that generated runoff from the disturbed areas.

4.0 Phase II – Evaluating Success for the Mitigation Land Establishment⁷ and Rehabilitation⁸ and Bypass Alignment Reestablishment⁹ Areas

The following post-Bypass construction monitoring shall be implemented to track performance and determine success.

4.1 Post-Construction Bypass Alignment Water Quality

The following water quality monitoring program will be conducted for one calendar year at years one, five, and ten as part of compliance monitoring in the Bypass Alignment areas after the Bypass Alignment is opened to traffic. Year one monitoring shall occur in 2017. The monitoring term may be extended or reduced depending on the monitoring results.

Constituent(s)	Frequency
Stream flow	Continuous
pH	Continuous
Temperature (Air and Water)	Continuous
Total Dissolved Solids	Continuous
Turbidity	Continuous
Specific Conductance	Continuous
Dissolved Oxygen	Continuous

⁷ The MMP defines establishment as the creation of a new sensitive biological resource or habitat.

⁸ The MMP defines rehabilitation as the enhancement of an existing sensitive biological resource or habitat as a result of a proposed action.

⁹ The MMP defines reestablishment as areas temporarily affected by onsite or offsite construction activities that will be brought back to pre-project conditions.

Constituent(s)	Frequency
Bioassessment – BMI, Phab, & Algae	Summer and Spring Surveys twice per year (July/August and April/May) at years one, five and ten
CRAM Score	To be determined per CRAM methodology (Spring) at years one, five and ten, using the same locations used during baseline monitoring.

4.1.1 Bypass Alignment Monitoring Locations

Water quality data will be collected at the following 15 locations along the Bypass Alignment (Figure 1):

- Upper Haehl Creek immediately upstream of the Schmidbauer driveway culvert (WQ-1) and downstream of the Haehl Creek interchange (WQ-3);
- Middle Haehl Creek bridge construction upstream of the project footprint (WQ-4) and downstream of the project footprint (WQ-5);
- Baechtel Creek upstream of the Baechtel Creek retaining wall construction footprint (WQ-6), upstream of the Haehl Creek confluence (WQ-7), Lower Haehl Creek upstream of the bypass footprint (WQ-8);
- Lower Haehl Creek downstream of the viaduct construction footprint, but upstream of the Baechtel Creek confluence (WQ-9); and Baechtel Creek upstream of the viaduct construction footprint (WQ-10);
- Outlet Creek downstream of the viaduct construction footprint (WQ-11) and Broaddus Creek upstream of the viaduct construction footprint (WQ-12);
- Mill Creek upstream of the viaduct construction footprint (WQ-13) downstream of the viaduct construction footprint (WQ-14); and
- Upp Creek upstream (WQ-15) and downstream of the interchange construction footprint (WQ-17).

Bioassessment monitoring shall occur at the following 13 locations along the Bypass Alignment:

- Upper Haehl Creek upstream of the Haehl Creek interchange (BA-1), within the Haehl Creek interchange creek reestablishment area(BA-2), and downstream of the Haehl Creek interchange (BA-3);
- Baechtel Creek below its confluence with Haehl Creek (BA-4), along the Category I riparian enhancement area parcels (BA-5), and below the riparian enhancement area (BA-6);

- Outlet Creek downstream of the Baechtel-Broaddus Creek confluence but upstream of the Category I riparian enhancement area (BA-7);
- Mill Creek upstream of the bypass footprint (BA-8), below the bypass footprint (BA-9), and downstream of the Category I riparian enhancement parcel (BA-10); and
- Upp Creek upstream of the Quail Meadows interchange (BA-11), within the Quail Meadows interchange creek reestablishment area (BA-12), and downstream of the Quail Meadows interchange (BA-13).

4.2 Mitigation Lands Monitoring

The following water quality monitoring program will be conducted for one calendar year at years one, five, and ten as part of establishment and enhancement monitoring in the Mitigation Lands. Year one monitoring shall occur no later than 2018, unless all mitigation construction is completed in 2016, then year one monitoring shall occur in 2017. The mitigation actions are defined as construction events (e.g., wetland creation, riparian creation, bank erosion stabilization), not management activities (e.g., grazing management).

Constituent(s)	Frequency
Stream flow	Continuous
pH	Continuous
Temperature (air and water)	Continuous
Total Dissolved Solids	Continuous
Turbidity	Continuous
Specific Conductance	Continuous
Dissolved Oxygen	Continuous
Total Settleable Solids	Monthly*
Total Nitrogen	Monthly*
Ammonia	Monthly*
Nitrate	Monthly*
Total and Dissolved Phosphorus	Monthly*
Fecal Coliform ¹⁰	Monthly*
Enterococcus	Monthly*
Total Organic Carbon	Monthly*
Bioassessment – BMI, Phab, & Algae	Twice per year (July/August and April/May) at years one, five and ten
CRAM Score	To be determined per CRAM methodology (Spring) at years one, five and ten, using the

¹⁰ Standard Method 9221 using dilution series to quantify actual fecal coliform concentrations

Constituent(s)	Frequency
	same locations used during baseline monitoring.
* Additional precipitation event sampling to be conducted in conjunction with the “first flush” event and the seven subsequent storm events > 0.5 inches of precipitation in 24 hours and which generate visible runoff, during year one only. Precipitation events are separated by 48 hours of dry weather.	

In addition, monthly and precipitation event-based monitoring shall include visual observations of the appearance of the stream, including color, presence of floating or suspended matter or debris; appearance of the receiving water at the station location (e.g., occurrence of erosion and scouring, solids deposition, unusual aquatic growth, algae); and observations about the receiving water, such as the presence of aquatic life.

Water quality data will be collected at the following 10 locations throughout the offsite mitigation parcels (Figure 1):

- Old Outlet Creek, west of parcel 108-010-06 along the Category I riparian creation area (WQ-21), and west of parcel 108-010-06 downstream of the Category II riparian creation site on lower Wild Oat Canyon Creek (WQ-22);
- Outlet Creek downstream of parcels 108-030-05 (WQ-18) and 108-020-04 (WQ-19);
- Davis Creek upstream of parcel 108-070-08 (WQ-23), downstream of parcel 108-060-01 (WQ-24), and downstream of parcel 108-010-05 (WQ-25);
- Berry Creek upstream of Category I riparian creation on parcel 108-070-09 (WQ-26), and downstream of parcel 108-060-02 (WQ-28); and
- Outlet Creek (WQ-27) downstream of the confluence with Davis Creek and Caltrans existing Highway 101 Outlet Creek Bridge.

Bioassessment monitoring shall occur at the following 10 locations at the offsite mitigation lands:

- Outlet Creek downstream of parcels 108-030-05 (BA-14) and 108-020-04 (BA-15);
- Old Outlet Creek downstream of parcel 108-030-04 (BA-16), west of parcel 108-010-06 along the Category I riparian creation area (BA-17), and west of parcel 108-010-06 downstream of the Category II riparian creation site on lower Wild Oat Canyon Creek (BA-18);
- Davis Creek upstream of parcel 108-070-08 (BA-19), downstream of parcel 108-060-01 (BA-20), and downstream of parcel 108-010-05 (BA-21); and

- Berry Creek upstream of Category I riparian creation on parcel 108-070-09 (BA-22), and downstream of parcel 108-060-02 (BA-24).

5.0 REQUIRED PLANS AND REPORTS

The following plans and reports shall be submitted to the Regional Water Board within the specified timeframes. A table is provided at the end of this section that summarizes all reports and associated due dates (*Table 1: Required Reports and Due Dates*).

5.1 Quality Assurance Project Plan—*required 90 days from MRP issuance*

Caltrans shall revise the QAPP for the Bypass footprint (including onsite reestablishment areas) and the offsite mitigation lands to reflect improvements in surface water quality monitoring procedures made since the July 2010, QAPP. The QAPP shall be submitted to the Executive Officer of the Regional Water Board for review, consideration, and concurrence. The purposes of the QAPP are to:

1. Identify and document the appropriate standard operating procedures for sample collection, handling, and analysis;
2. Establish protocols and primary purposes for data assessment, evaluation and use;
3. Establish protocols for implementing changes to the sample collection and laboratory analysis methodologies; and
4. Identify data management protocols for saving and sharing data.

5.2 Annual Project Reports—*first due date January 31, 2017*

Caltrans shall provide the Regional Water Board with an Annual Report no later than **January 31st** of every year beginning with issuance of this Order and continuing until the Regional Water Board accepts the Final Mitigation Report. The Annual Report shall cover all Project activities from the previous year, and include the following information:

1. A summary of all monitoring reports identified in this Order;
2. A general description of the status of the Project site and Project activities, including actual or projected completion dates, if known;
3. Annual General Inspection Report, as detailed in MMP section 11.4.4;
4. A summary of the current implementation status of each mitigation measure;
5. An assessment of the effectiveness of each completed or partially completed mitigation measure in minimizing and mitigating project impacts and meeting the Final MMP performance standards;
6. Results and an evaluation of the data collected from this MRP;

7. Monthly Monitoring and Rainy Day Reports; and
8. A compliance table (spreadsheet) that presents each condition of the Water Quality Certification and the MRP, time frame (yearly calendar), Project milestones and achievements, all reported discharges, and all violations of this MRP and conditions of the Water Quality Certification.

5.3 Annual Grazing Plans—*first due date December 1, 2016*

Not later than December 1 of each year, Caltrans shall provide the Regional Water Board with a Grazing Plan (Plan) for review and acceptance. The Plan shall identify grazing strategies for the following calendar year and be informed by the previous years' grazing results. The Plan shall include all information described in Section 3.4.5 of the May 2014 Willits Bypass Project Grazing Management Plan. The Plan shall also include details for any proposed grazing trials or special studies. A copy of the Plan shall also be provided to the California Department of Fish and Wildlife (CDFW) when it is submitted to the Regional Water Board. The Regional Water Board will consider CDFW's comments during its review of the Plan. If Caltrans does not receive comments from the Regional Water Board within 15 working days from the date of receipt of submittal, the Plan shall be considered acceptable, unless the Regional Water Board notifies Caltrans that additional review time is necessary after receipt of the Plan.

If the timeline for proposed grazing trials or studies are not compatible with the annual Grazing Plan submittal timeline, Caltrans may submit the trial or study proposal at any other time for Regional Water Board review and acceptance. A copy must also be provided to CDFW and the Regional Water Board will consider CDFW's comments during its review of the trial or study. If Caltrans does not receive comments from the Regional Water Board within 15 working days from the date of receipt of submittal, the trial or study shall be considered acceptable, unless the Regional Water Board notifies Caltrans that additional review time is necessary after receipt of the Plan.

5.4 Annual Grazing Reports—*first due date March 1, 2017*

Not later than March 1 of each year, Caltrans shall provide the Regional Water Board with a Grazing Report to summarize grazing activities from the previous calendar year. The Report shall include all information described in Section 4.3 of the May 2014 Willits Bypass Project Grazing Management Plan. The Report shall also include results of any grazing trials or special studies conducted during the reporting period. A copy of the Report shall also be provided to the California Department of Fish and Wildlife (CDFW) when it is submitted to the Regional Water Board.

5.5 EcoAtlas Project Information—*due July 31, 2016*

It has been determined through regional, state, and national studies that tracking of mitigation projects must be improved to better assess their performance and success. In addition, to effectively carry out the State's Wetlands Conservation Policy of no net loss to wetlands, the State needs to closely track both wetland losses and mitigation project success. Therefore, we require that Caltrans use the EcoAtlas Project Tracker (ptrack.ecoatlas.org) to provide Project information for all Project impacts and mitigation measures. An EcoAtlas data entry tutorial from San Francisco Estuary Institute may be made available for Caltrans staff upon request.

Project information concerning impacts and mitigation shall be made publically available at the web link: <http://www.ecoatlas.org/regions/ecoregion/klamath-north-coast/projects>.

Each individual Willits Bypass mitigation parcel shall be entered into EcoAtlas Project Tracker as an individual mitigation project. The "Project Name" entered for each mitigation parcel within Project Tracker shall begin with "Willits Bypass Project," followed by the parcel name and APN number (e.g., Willits Bypass Project, Brooke 038-020-11"). Where one or more mitigation type occurs within the boundaries of an individual mitigation parcel (e.g., wetland rehabilitation and riparian establishment), then those separate mitigation categories shall be represented within the project entry as individual "Project Sites," with their own discrete boundaries and performance criteria.

Caltrans is required to enter all Project information describing impacts and mitigation measures into EcoAtlas no later than August 30, 2016.

In addition, Caltrans is required to update the Project information and upload relevant files to the Project file libraries as they become available (e.g., annual monitoring reports) throughout the duration of the Project.

5.6 Final Baseline Report—*due September 1, 2016*

Caltrans shall submit a Final Baseline Report that compiles and summarizes all collected baseline data. The Final Baseline Report shall be submitted not later than September 1, 2016. The Final Baseline Report shall be uploaded to EcoAtlas.

5.7 Annual Slope Stability Reports—*Required upon Bypass Alignment completion*

Caltrans shall provide yearly slope evaluation and erosion control monitoring reports for 10 years subsequent to Bypass Alignment construction completion. Bypass Alignment construction shall be considered complete once the Regional Water Board accepts the respective Notice of Termination filed by Caltrans in the State Water Board's Storm Water Multiple Application and Report Tracking System (SMARTS).

The scope of the reports shall include all areas of the Bypass Alignment subject to cut, fill, or grading during construction. To ensure the reduction of sediment transport into Outlet Creek, Caltrans shall conduct inspections prior to and subsequent to each rainy season for 10 years after the Bypass Alignment is opened to traffic. Reports shall include, at a minimum:

1. Name and title of personnel conducting monitoring and/or maintenance;
2. Observation dates;
3. Site photographs;
4. Maps including percent coverage of established erosion control and revegetation efforts; and
5. An erosion evaluation.

If slope failures, excessive erosion, or other potential impacts to water quality occur subsequent to Project completion, corrective actions shall be required to mitigate the impacts.

5.8 Final Mitigation Reports

5.8.1 Final Bypass Alignment Reestablishment Report—*Required 120 days after reestablishment completion*

No later than 120 days after completion of reestablishment on the Bypass Alignment, Caltrans shall submit a Final Reestablishment Report that includes, at a minimum:

1. A summary of all reestablishment activities performed on the Bypass Alignment, including locations, activity, and dates of installation; and
2. A description of and rationale for any deviations from the Final MMP.

5.8.2 Final Mitigation Lands Report—*Required 120 days after mitigation completion*

No later than 120 days after achieving success criteria for the off-site mitigation lands, Caltrans shall provide the Regional Water Board with a Final Mitigation Lands Report. The Final Mitigation Lands Report shall include, at a minimum:

1. A summary of all monthly monitoring reports and annual status reports;
2. Copies of all mitigation monitoring reports documenting when success criteria for each of the mitigation measures were achieved;
3. All available information about mitigation measures, data collection for the MRP, and projects taken to implement the sediment and temperature TMDLs;
4. Each yearly compliance calendar;
5. An assessment of the effectiveness of the required measures in avoiding, minimizing, and mitigating Project impacts;

6. Any recommendations on how mitigation measures might be changed to more effectively minimize impacts to water quality and mitigate the impacts of future projects;
 7. A final long term management plan that includes the following elements:
 - a. Water Quality Monitoring plans to verify habitat enhancement, compliance with the basin plan, and TMDL;
 - b. Inspections of the erosion sites shall be conducted annually to assess the stability and condition of the reestablishment actions and for all the sites identified in Appendix J of the Final MMP;
 - c. All adaptive management plans and actions (e.g. stream channel or bank stabilization, vegetation management, and erosion control) for waters of the State (i.e., streams, riparian areas, and wetlands) shall be submitted to the Executive Officer of the Regional Water Board for prior review and concurrence.
 8. Revised Property Analysis Record and endowment calculation approved by the long term manager; and
 9. Any other pertinent information.
- 5.9 Data Management and Reporting System—*Required 90 days from MRP issuance*
- Caltrans shall develop, and Regional Water Board shall approve, a data management and reporting system to efficiently and effectively report sampling and monitoring data. The data management and reporting system shall include:
1. A procedure for submitting all CRAM scores collected for the Willits Bypass Project to the SFEI CRAM database no later than August 30, 2016. Caltrans shall work with SFEI staff to determine the best approach for uploading older versions of CRAM assessments;
 2. A plan to submit all grab sample data collected for the Willits Bypass Project to the California Environmental Data Exchange Network (CEDEN);
 3. A commitment to maintain the Caltrans web-based telemetry portal to display real-time continuous data, for the duration of continuous data collection. Use of the California Environmental Data Exchange Center (CEDEC) is not required to display collected continuous data provided Caltrans is using its web-based telemetry portal;
 4. A commitment to post the telemetry portal web address on the Caltrans Willits Bypass Project page, no later than 30 days from MRP issuance;
 5. A commitment to provide all raw, continuous data and quality assurance reports in annual reports; and
 6. A commitment to provide all continuous data in a graphical format and provide an inventory of continuous data alerts in monthly reports.

Table 1: Required Reports and Due Dates

Report Type	Due Dates	MRP Section
Quality Assurance Project Plan	90 days from MRP issuance	5.1
Annual Project Reports	January 31, annually, starting in 2017	5.2
Annual Grazing Plans	December 1, annually, starting in 2016	5.3
Annual Grazing Reports	March 1, annually, starting in 2017	5.4
EcoAtlas Project Information	July 31, 2016	5.5
Final Baseline Report	September 1, 2016	5.6
Annual Slope Stability Reports	Required upon Bypass Alignment completion	5.7
Final Bypass Alignment Reestablishment Report	Required 120 days after reestablishment completion	5.8.1
Final Mitigation Lands Report	Required 120 days after mitigation completion	5.8.2
Data Management and Reporting System	Required 90 days from MRP issuance	5.9

6.0 PERFORMANCE STANDARDS

Performance standards are observable or measurable physical, chemical, and/or biological attributes that may be used to determine if the mitigation activities are meeting their objectives. Caltrans shall include progress towards meeting mitigation performance standards in each annual report.

6.1 Bypass Alignment Primary Performance Standards

The below primary metric performance standards reflect the performance standards detailed in the June 2014, MMP. On-site mitigation activities are comprised of reestablished wet meadow wetlands (Groups A, B, and C), reestablished riparian wetlands, and reestablished riparian habitat.

6.1.1 Group A and B Reestablished Wet Meadow Wetland Areas Primary Metrics

Standard 1: Wetland Species Cover

Demonstrate a predominance of hydrophytic vegetation as per the United States Army Corps of Engineers (USACE) Arid West supplement in years 1-5.

Standard 2: Species Richness

A minimum of 15 species from the target list of species in Table 7.5 of the June 2014 MMP will be seeded or planted, starting in Year 1.

Standard 3: Invasive Species Cover

No increase in invasive species cover over baseline invasive species cover of adjacent wet meadow habitat, in years 1-5. Invasive species cover shall be measured at the same sampling points used for estimating wetland species cover.

Standard 4: Wetland Hydrology

Wetland hydrology shall be present (i.e., ponding or soil saturation). Wetland hydrology shall be monitored only if an individual site does not meet the wetland plant species parameter according to the USACE wetland delineation protocol. If the wetland plant species parameter is not met, an assessment of soils and hydrology shall be performed to determine the reason for the absence of or low wetland species cover.

6.1.2 Group C Reestablished Wet Meadow Wetlands Primary Metrics

Standard 1: Relative Cover by Wetland Plant Species

Demonstrate a predominance of hydrophytic vegetation per the USACE Arid West supplement in years 1-4 and no decrease in relative cover by wetland plant species from-construction relative wetland plant species cover in year 5.

Standard 2: Relative Cover by Native Wetland Plant Species

Relative cover by native wetland plant species shall be 50% in year 1, 55% in year 2, 60% in year 3, 65% in year 4, and 70% in year 5. Relative cover by native wetland plant species shall be calculated relative to total wetland species cover.

Standard 3: Species Richness

A minimum of 15 species from the target list of species in Table 7.5 of the June 2014 MMP will be seeded or planted, starting in Year 1.

Standard 4: Hydroperiod

The hydroperiod shall be the same cover class as characterized by the USACE assessment of pre-project wetland hydrology. Hydroperiod monitoring will commence once cumulative rainfall has reached approximately five inches.

Standard 5: Absolute Cover by Invasive Plants

Absolute cover by invasive species shall not increase over baseline in years 1-5.

6.1.3 Riparian Wetland Reestablishment Areas Primary Metrics

Standard 1: Plant Survival

70% of mitigation plants shall survive at years 1-3, and 60% in years 4 and 5.

Standard 2: Plant Vigor

Mitigation plants shall have a vigor rating of greater than 1.0 in years 1-4, and equal to or greater than 2.0 in year 5.

Standard 3: Relative Cover by Stratum, of Native Woody Species

Woody mitigation species shall have at least 10% relative cover at year 5, 20% at year 6, 30% at year 8, and 40% at year 10.

Standard 4: Hydroperiod

The hydroperiod shall be the same cover class as characterized by the USACE assessment of pre-project wetland hydrology. Hydroperiod monitoring will commence once cumulative rainfall has reached approximately five inches.

6.1.4 Riparian Non-Wetland, Other Waters Reestablishment Areas Primary Metrics

Standard 1: Plant Vigor

Mitigation plants shall have a vigor rating of greater than 1.0 in years 1-4, and equal to or greater than 2.0 in year 5.

Standard 2: Relative Cover by Stratum, of Native Woody Species

Woody mitigation species shall have at least 10% relative cover at year 5, 20% at year 6, 30% at year 8, and 40% at year 10.

6.2. Mitigation Land Primary Metric Performance Standards

The below primary metric performance standards reflect the performance standards detailed in the June 2014, MMP. Mitigation Land activities are comprised of North Coast semaphore grass establishment, Baker's meadowfoam rehabilitation, North Coast semaphore grass rehabilitation, wetland establishment, wet meadow rehabilitation, riparian establishment, and other waters rehabilitation.

6.2.1 North Coast Semaphore Grass Establishment Area Primary Metrics

Standard 1: Plant Survival and Vigor—Transplant Individuals from Impact Area

Document initial survival and growth of transplants at year 0 in a pilot study. Based on initial results, target potentially suitable habitat areas for the remaining transplants; document results in annual monitoring reports and a final report after Year 10. The mitigation objective is to achieve 60% survival of transplanted individuals at the end of 10 years. However, because this is an experimental action, quantitative performance standards have not been assigned and no remedial actions are required.

Standard 2: Plant Survival and Vigor—Propagate Container Plants from Seed

Conduct one replacement planting for plants that have died at the end of Year 5; document results in annual monitoring reports and a final report after Year 10. The mitigation objective is to achieve 60% survival of transplanted individuals at the end of 10 years. However, because this is an experimental action, quantitative

performance standards have not been assigned and no remedial actions are required.

Standard 3: Invasive Species

Absolute cover by invasive species shall not increase over baseline in the North Coast semaphore grass establishment areas in years 0-10.

6.2.2 North Coast Semaphore Grass Rehabilitation Area Primary Metrics

Standard 1: Population Distribution and Abundance

There shall be stable or an increasing trend in population distribution and abundance in years 0-10.

Standard 2: Absolute Cover by Woody Vegetation in the Understory

There shall be no increase in absolute cover by woody vegetation in the understory, in years 0-10.

Standard 3: Invasive Species

Absolute cover by invasive species shall not increase over baseline in the North Coast semaphore grass enhancement areas, in years 0-10.

6.2.3 Baker's Meadowfoam Rehabilitation Area Primary Metrics

Standard 1: Population Distribution and Abundance

There shall be a stable or increasing trend in population distribution and abundance after controlling for climatic variability, in years 0-10. Climatic variability from the previous rainy season shall be used to identify trends in Baker's meadowfoam populations from year to year.

Standard 2: Absolute Cover by Other Native Plant Species

There shall be a stable or increasing trend in absolute percent cover of native plant associates in years 0-10.

Standard 3: Invasive Species

Absolute cover by invasive species shall not increase over baseline within the Baker's meadowfoam populations in years 0-10.

6.2.4 Group 1 Wetland Establishment Areas

Standard 1: Relative Cover by Wetland Plant Species

Demonstrate a predominance of hydrophytic vegetation at Year 5. Point-intercept transects shall be used following methods used in the August 2013 *Baseline Vegetation Monitoring Results for Willits Bypass Project Off-site Wetland Rehabilitation Sites* (2013 Baseline Vegetation Survey).

Standard 2: Relative cover by native wetland plant species

Relative cover of native wetland plant species to total wetland species cover shall be 70% at Year 5.

Standard 3: Species Richness

A minimum of 15 species from the target list of species in Table 7.5 of the June 2014 MMP will be seeded or planted, starting in Year 1. The areas shall be monitored for 5 years to document species richness. Species richness monitoring methodology shall follow the methodology employed for the 2013 Baseline Vegetation Survey. A relevé survey shall also be performed in each established wetland at least once to assess species richness. Monitoring results shall be included in annual monitoring reports submitted to the Regional Water Board.

Standard 4: Hydroperiod

The hydroperiod shall be within \pm ten percent of the hydroperiod for monitoring reference sites by Year 5. Hydroperiod monitoring shall include determining the extent of ponding and soil saturation.

Standard 5: Absolute Cover by Invasive Plants

Absolute cover by invasive species shall be less than or equal to ten percent absolute cover of the established wetland area. Absolute cover monitoring methodology shall follow the point-intercept transect methodology employed for the 2013 Baseline Vegetation Survey. A relevé survey shall also be performed in each established wetland at least once to assess absolute cover by invasive plants. Monitoring results shall be included in annual monitoring reports submitted to the Regional Water Board.

6.2.5 Group 2 Wetland Establishment Areas

Standard 1: Relative Cover by Wetland Plant Species

At Year 10, demonstrate a predominance of hydrophytic vegetation at Year 10 per the USACE Delineation Manual Arid West Supplement. Relative cover will be monitored using randomly selected 1-square meter quadrats placed along permanent 100-meter-long transects.

Standard 2: Relative Cover by Native Wetland Plant Species

Relative cover of native wetland plant species to total wetland species cover shall be 70% at Year 10.

Standard 3: Species Richness

A minimum of 15 species from the target list of species in Table 7.5 of the June 2014 MMP will be seeded or planted, starting in Year 1. The areas shall be monitored for 10 years to document species richness. Species richness monitoring methodology shall follow the methodology employed for the 2013 Baseline Vegetation Survey. A

relevé survey shall also be performed in each established wetland at least once to assess species richness. Monitoring results shall be included in annual monitoring reports submitted to the Regional Water Board.

Standard 4: Hydroperiod

The hydroperiod shall be within \pm ten percent of the hydroperiod for monitoring reference sites by Year 10. Hydroperiod monitoring shall include determining the extent of ponding and soil saturation.

Standard 5: Absolute Cover by Invasive Plants

Absolute cover by invasive species shall be less than or equal to ten percent absolute cover of the established wetland area. Absolute cover monitoring methodology shall follow the point-intercept transect methodology employed for the 2013 Baseline Vegetation Survey. A relevé survey shall also be performed in each established wetland at least once to assess absolute cover by invasive plants. Monitoring results shall be included in annual monitoring reports submitted to the Regional Water Board.

6.2.6 Wetland (Wet Meadow) Rehabilitation Areas

Standard 1: CRAM Biotic Attribute Values

At year 10, categorical improvement in 75% of assessment areas with baseline CRAM-metric score of "3" or "6" to "9," within the *plant mosaic complexity*, *plant co-dominant species*, and *percent invasion* metric categories of the CRAM Wet Meadow Module. And, no degradation below the baseline CRAM score in all other assessment areas (i.e., assessment areas with baseline CRAM-metric scores of 9 or 12).

Standard 2: Absolute Percent Cover by Invasive Species

Absolute cover by invasive species shall not increase over baseline in the rehabilitated wetlands, and be less than or equal to ten percent absolute cover.

6.2.7 Riparian Establishment Areas and Other Waters Rehabilitation

Standard 1: Plant Survival

Riparian planting areas shall have 70% survival Years 1-3 and 60% survival at Years 4 and 5. Planting areas shall be monitored for survival trend(s) by species, by surveying up to 25% of each quadrant of each planted area, utilizing random subsamples and extrapolating trends. Replacement plants may be included in this monitoring provided supplemental watering has not been employed on the respective plant in the previous two growing seasons.

Standard 2: Plant Vigor

Each respective plant species shall have an average vigor score greater than 1.0 in Years 1-4. Average vigor score, by species, shall be equal to or greater than 2.0 at Year 5.

Standard 3: Percent Vegetation Cover by Native Tree Species

At year 10, absolute canopy cover by native tree species shall be no less than 40% in all riparian planting areas.

Standard 4: Plant Vegetation Cover by Native Shrub Species

At year 10, absolute canopy cover by native shrub species shall be no less than 40% in all riparian planting areas.

Standard 5: CRAM Biotic Attribute Values

At year 10, categorical improvement in 75% of assessment areas with baseline CRAM-metric score of "3" or "6" to "9," within the *vertical biotic structure, horizontal interspersions and zonation, invasive species, structure patch richness, and topographic complexity metric categories* of the CRAM Riverine Module; and, no degradation below the baseline CRAM score in all other assessment areas (i.e., assessment areas with baseline CRAM-metric scores of 9 or 12).

6.3 Mitigation Area Wetland and Riverine Secondary Metric Performance Standards

Secondary metrics shall include the comparison of baseline water quality results to those of the mitigation and restoration monitoring and the Basin Plan Water Quality Objectives. Water Quality Objectives serve to support and protect existing Beneficial Uses within the watershed. The baseline data shall be used as the pre-project condition. Secondary metrics may be used to inform additional lines of evidence by indicating the improvement of water quality in receiving waters and therefore, indicating watershed enhancement and mitigation success. If strong evidence indicates the improvement of water quality, the secondary metrics may serve as/replace primary performance standards, subject to the acceptance of the Executive Officer. The below secondary metric performance standards reflect the performance standards detailed in the June 2014 MMP.

6.3.1 Wetland (Wet Meadow) Rehabilitation Areas

Standard 1: Lines of Evidence Showing Improvement in Water Quality

Caltrans may propose secondary wet meadow rehabilitation success metrics, subject to review and acceptance of the Executive Officer, that indicate a net water quality improvement within wetland rehabilitation areas. Water quality parameters may include biostimulatory substances, bacteria, toxicity, and sediment, turbidity, and settleable materials. The following guidelines must be used in development of proposed success metrics:

- Biostimulatory Substances – Applicable nutrients must demonstrate a notable reduction in concentration;
- Bacteria - Fecal coliform and/or *enterococcus* must demonstrate a notable reduction in concentration of the 90th percentile and geometric mean as compared to baseline results; and ,
- Sediment, Turbidity, Settleable Materials – Caltrans may provide an evaluation of sediment data that indicates an improvement to water quality and beneficial uses;

Standard 2: Baker's Meadowfoam Habitat

Baker's meadowfoam demonstrates a stable or increasing trend in population distribution and abundance, there is a stable or increasing trend in absolute percent cover of native plant associates and the absolute cover by invasive species doesn't increase over baseline.

6.3.2 Riparian Establishment Areas and Other Waters Rehabilitation

Standard 1: Temperature

75% tree and shrub cover at year 10, at the baseline sampling locations; and, percent of effective shade for each subreach either remains at baseline or increases to 80% at year 10, except at Davis Creek.

Standard 2: Sediment

At the five erosion sites selected for repair, there must be an increase in stability and condition. At all erosion sites identified in the June 2014 MMP, Appendix N, the sites shall remain stable compared to baseline conditions and not contribute to excessive sedimentation.

Standard 3: Lines of Evidence Showing Improvement in Water Quality

Caltrans may propose secondary wet meadow rehabilitation success metrics, subject to review and acceptance of the Executive Officer, that indicate a net water quality improvement within riparian establishment and other water rehabilitation areas. In addition to the water quality parameter guidelines identified in section 6.3.1, these additional guidelines also apply in development of proposed secondary success metrics:

- Dissolved Oxygen and pH – Data indicates positive changes in the DO and pH as compared to baseline and is correlated with the controllable factors of the mitigation; and

- Bioassessment – Improving trends for *Benthic Macroinvertebrates* community composition or specific indicators index of biological integrity developed for the project watershed area based on baseline results.

7.0 PHASE III – TMDL COMPLIANCE – BYPASS AND MITIGATION LANDS

Once success has been achieved for the Bypass Alignment reestablishment repair areas and the Mitigation Lands, Caltrans shall develop individual TMDL Compliance Plans for these two areas. The TMDL compliance plan for the Bypass Alignment shall be incorporated into the Annual District Storm Water Work Plans and Reports, while the TMDL compliance plan for the Mitigation Lands shall be incorporated into the Mitigation Lands Long Term Management Plan and enrolled under the appropriate regulatory permit as determined by the Executive Officer of the Regional Water Board.

All previously gathered data shall be evaluated to determine the minimum amount of monitoring necessary to regularly evaluate whether the Bypass Alignment and Mitigation Lands are continuing to remain in compliance with the Basin Plan and applicable TMDLs, or if there are contributing factors to degradation and impairments of water quality and beneficial uses.

Ordered by _____
Matthias St. John
Executive Officer

June 7, 2016