

Long Form - Storm Water Data Report



Dist-County-Route: 04-SF-101\_\_\_\_\_

Post Mile Limits: PM T4.71/6.71\_\_\_\_\_

Project Type: Bus Rapid Transit (BRT) Improvements\_\_\_\_\_

Project ID (or EA): 04-3A270\_\_\_\_\_

Program Identification:\_\_\_\_\_

Phase:  PID
 PA/ED
 PS&E

Regional Water Quality Control Board(s): San Francisco Bay RWQCB (Region 2)\_\_\_\_\_

Is the Project required to consider Treatment BMPs? Yes  No 
If yes, can Treatment BMPs be incorporated into the project? Yes  No

If No, a Technical Data Report must be submitted to the RWQCB at least 30 days prior to the projects RTL date. List RTL Date: July 2015\_\_\_\_\_

Total Disturbed Soil Area: 5.8 acres\_\_\_\_\_ Risk Level: Level 2\_\_\_\_\_
Estimated: Construction Start Date: November 2015 Construction Completion Date: January 2018
Notification of Intent (NOI) Date to be submitted: January 2015\_\_\_\_\_

Erosivity Waiver Yes  Date:\_\_\_\_\_ No 
Notification of ADL reuse (if Yes, provide date) Yes  Date: TBD No 
Separate Dewatering Permit (if yes, permit number) Yes  Permit #\_\_\_\_\_ 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.

Richard S. Bottcher 5/22/13

Richard Bottcher, Registered Project Engineer Date

I have reviewed the stormwater quality design issues and find this report to be complete, current and accurate:

Nandini Shridhar, Project Manager Date

Robert Sorenson, Designated Maintenance Representative Date

David Yam, Designated Landscape Architect Representative Date

[Stamp Required for PS&E only] Norman Gonsalves, District/Regional Design SW Coordinator or Designee Date

## STORM WATER DATA INFORMATION

### 1. Project Description

- The San Francisco County Transportation Authority (Authority), in cooperation with the Federal Transit Administration (FTA) and the San Francisco Municipal Transportation Agency (SFMTA), proposes to implement bus rapid transit (BRT) improvements along Van Ness Avenue (Highway 101) in San Francisco. The proposed project extends 2.0 miles from Mission Street in the south to Lombard Street in the north. This SWDR pertains to the locally preferred alternative – the Center Lane BRT with Right-Side Boarding/Single Median and Limited Left Turns Alternative.

The proposed project would reconfigure the existing roadway cross section to provide for dedicated bus lanes and transit platforms, while upgrading pedestrian safety and urban design features. Left and right turn pocket locations would be adjusted to smooth traffic flow and reduce conflicts with transit.

The project would construct the following improvements within the project limits:

- Dedicated bus lane in each direction operating in the inside lane (Lane 1) adjacent to a center landscaped median, through conversion of a mixed-flow traffic lane and reduction in the median width;
- Removal of all existing left turn pockets, with the exception of northbound at Lombard Street, and southbound at Broadway;
- Level- or near level-boarding station platforms located on a median island at approximately three-block intervals, with right-side passenger loading and unloading, high-level amenities, and all-door boarding for passengers with proof of payment;
- Pedestrian enhancements including corner bulbs at most intersections, upgrading of curb ramps to current ADA standards, and installation of pedestrian countdown and accessible (audible) pedestrian signals at all intersections;
- Landscaping and streetscape improvements and amenities;
- Traffic signal infrastructure for real-time traffic management including traffic signal replacement, fiber interconnect, transit signal priority, protected left turn phases at intersections, variable real-time message signs and real-time bus arrival information displays (NextMuni) funded under the SFgo and Signal Replacement Program<sup>1</sup>;
- Replacement of the overhead contact system poles and street lights, funded by the San Francisco Public Utilities Commission (SFPUC); and

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<sup>1</sup> The SFgo and Signal Replacement Program is a package of technology-based transportation management system tools being implemented by SFMTA.

- Rehabilitation of the existing pavement structural section, planned in coordination with the State Highway Operation and Protection Program (SHOPP).

In addition, the following two changes to circulation have recently been implemented by SFMTA, and are included in the project:

- Conversion of Hayes Street to two-way operation;
- Conversion of Fell Street to two-way operation west of Van Ness Avenue.

With the exception of median reconfiguration and localized improvements for intersection corner bulb-outs, and replacement of the overhead contact system (OCS) support poles/streetlights, the majority of the improvements occur within the existing curb-to-curb pavement.

Dedicated lanes for BRT would be provided only within the Van Ness Avenue corridor from Mission Street to Lombard Street; North of Filbert Street, bus service would continue in mixed-flow lanes and terminate with a turnaround at North Point Street; south of the project area, bus service would continue in mixed-flow lanes servicing Muni Routes 47 and 49, as at present.

- The total project area is 29.9 acres. The total Disturbed Soil Area (DSA) for the proposed project was determined to be 5.8 acres. The DSA was calculated based on: 1) construction of new transitway and median reconfiguration along Van Ness Avenue between Mission Street and Lombard Street; 2) placement of new stations; 3) relocation or replacement of the 11-ft deep sewer throughout the corridor, and 4) trenching for other utility relocations. All the DSA is within the state right-of-way.
- The proposed project would result in a reduction in "net" impervious surface (0.2 acres), and consequently, no new impervious surface is being proposed. The total project area is 29.9 acres, and out of these 29.9 acres 0.7 acres are pervious (landscaped area) and 29.2 acres are impervious (paved area). If the proposed project is implemented, 0.2 acres of existing impervious surface will be converted to landscape (pervious surface). Therefore, post project conditions would be as follows: The project area is 29.9 acres, which is comprised of 0.9 acres of landscaped area (pervious), and 29.0 acres of paved area (impervious). Therefore, "Net" impervious surface = 0.0 acres (new) + 29.0 acres (re-worked) = 29.0 acres
- All proposed improvements would be located within an area that drains to the City of San Francisco's combined sewer system. The combined sewer system collects and treats both wastewater and storm water in the same network of pipes. Since the proposed project would result in a minor decrease in impervious surface, there would be no increase in flows. Therefore, this project would not create capacity concerns with the combined sewer system.

## 2. Site Data and Storm Water Quality Design Issues (refer to Checklists SW-1, SW-2, and SW-3)

- The north portion of the project falls under Hydrologic Unit Bay Bridges, Hydrologic Area 204.30 within the San Francisco Bayside area, while the south portion of the project falls in Hydrologic Unit South Bay, Hydrologic Sub-Area 204.40, within the San Mateo Bayside area. The north part of the project area is located in the Central San Francisco Bay Watershed and the south part of the project area is located in South Bay Watershed. In general, runoff flows through the City's combined drainage system which drains northerly and easterly to the Bay. The drainage system in the City of San Francisco is a combined sewer system, meaning, the domestic sewage, industrial wastewater, and stormwater runoff are all collected in the same pipes (combined sewer). The sewer system discharges through the North Shore transportation/storage structures with the help of pump stations to the North Point Wet Weather Facility (which operates only during rainstorms to treat flow from the northeastern section of the bay side) or to the Southeast Treatment Plant. The storm water and waste water from the project site will be treated in the North Point Wet Weather Facility or Southeast Treatment Plant before discharging to the San Francisco Bay. There are no significant streams within this portion of the watershed.
- The project area drains via a combined sewer system to the Central San Francisco Bay, which is the identified receiving water for this project. Central San Francisco Bay is designated as impaired under Section 303 (d) of the Clean Water Act (CWA) for several Pollutants of Concern (POCs) which are: Chlordane, Dichloro-Diphenyl-Trichloroethane (DDT), Dieldrin, Dioxin Compounds (including 2,3,7,8-TCDD), Exotic Species, Furan Compounds, Mercury, Polychlorinated Biphenyls (PCBs), Polycyclic Aromatic Hydrocarbons (PAHs), and Selenium.
- In accordance with the San Francisco Regional Water Quality Control Board (Region 2) Basin Plan, the beneficial uses of San Francisco Bay in this area include industrial service and process supply, commercial fishing, shellfish harvesting, estuarine habitat, migration of aquatic organisms, rare and endangered species habitat, spawning, wildlife habitat, contact recreation, non contact recreation, and navigation.
- There are no Drinking Water Reservoirs and/or Recharge Facilities within project limits.
- There are no Region 2 special requirements/concerns, other than the mercury TMDL that has been identified for the Central San Francisco Bay.
- The proposed project is located in the northwestern quadrant of the City and County of San Francisco, California. In general, City of San Francisco climate is mild during summer when temperatures tend to be in the 60s and cool during winter when temperatures tend to be in the 50s (Fahrenheit). The warmest month of the year is September with an average maximum temperature of 71 degrees, while the coldest month of the year is January with an average minimum temperature of 46 degrees. The annual average precipitation at San Francisco is 22 inches. Winter months tend to be wetter than summer months. The wettest month of the year is January with an average rainfall of 4.7 inches. The "rainy season," as defined by Region 2, is from October 1st through May 1st.



- Soil information was obtained from the Geologic Impacts Assessment Report provided by AGS, Inc. (June 2009). The results of the report are as follows:
  - Mission Street to McAllister Street - This section consists of approximately 6 to 8 feet of loose- to medium-dense sandy fill material. Beneath the sandy fill soils, medium-dense to very-dense sand exists to a depth of 25 to 30 feet below the ground surface (bgs).
  - McAllister Street to Clay Street - Geophysical data from the site indicates average conditions across the site consist of loose fill soils to a depth of approximately 4 feet bgs, stiff soils and sand to a depth of approximately 10 feet bgs, and hard sediments deeper than approximately 14 -15 feet bgs.
  - Clay Street to Union Street - This section is characterized as having silty sand to a depth of approximately 23 to 24.5 feet bgs with a few lenses of gravel. Silty clay was found beneath the sand, which was described as medium-stiff to stiff.
  - Union Street to North Point Street - This section is characterized as having shallow rock formations (sandstone and shale) at a depth less than 5 feet bgs.
- The terrain in the project area of San Francisco is characteristically hilly, consisting of gently to moderately steep sloping hills and ridges, ranging from an elevation of 200 feet to over 900 feet, separated by small valleys or basins. The Van Ness Avenue BRT project corridor crosses near the low point of one of these east-west trending ridgelines, which connect Nob Hill to the east with Pacific Heights to the west. Further north, the project corridor crosses near the western toe of Russian Hill. Local variations in slope reflect the drainage pattern. The valleys are typically filled by sediments, particularly by the irregular forms of alluvium and dune sands. The native topography has also been altered by urban development, particularly by the grading and placement of fill materials along the entire length of the project corridor.
- None of the geologic formations in the project area are considered useful aquifers due to poor overall water quality and high concentrations of undesirable minerals. Geologic mapping indicates the groundwater table occurs less than 20 feet below the ground surface in most of the lower lying areas along the project area, where the ground elevation is less than approximately 150 feet above mean sea-level (CA DWR, 2004).
- From Mission Street to McAllister Street, groundwater was encountered at a depth of approximately 20 feet bgs. From McAllister Street to Clay Street, groundwater was not encountered when testing was performed from 39 feet to the maximum depth explored of 50 feet bgs. From Clay Street to Union Street, groundwater was not encountered when six borings were drilled to as deep as 26.5 feet bgs. From Union Street to North Point Street, no major groundwater was encountered according to the Geologic Impacts Assessment Report prepared by AGS, Inc. (AGS, 2009).
- This project may involve the reuse of soil containing Aerially Deposited Lead (ADL). ADL is known to exist along the California State Highway System. Lead-contaminated soil may be attributable to the historical use of leaded gasoline. Van Ness Avenue has

existed since 1906. Commercial distribution and use of leaded gasoline was common before 1973, but has been restricted in use by the US EPA since the mid- 1970s. ADL generated from the emissions of vehicles fueled by leaded gasoline, may be present within exposed soils adjacent to Van Ness Ave. Prior to construction, a study will be performed to analyze the lead level. If required, a Non Standard Special Provision Lead Compliance Plan would be applied.

- There are no existing Treatment BMPs within the project limits.

### 3. Regional Water Quality Control Board Agreements

- To date, no meetings have been held with the RWQCB to discuss this project and no agreements have been made.
- A 401 Water Quality Certification is not required for this project.
- This project will be constructed within the Caltrans right-of-way. Therefore, the NPDES Construction General Permit (Order No. 2009-0009-DWQ) applies to this project. The City of San Francisco will file a Notice of Intent (NOI) with the State Water Resources Control Board at least 30 days prior to start of construction to comply with the NPDES Construction General Permit (Order No. 2009-0009-DWQ).

### 4. Proposed Design Pollution Prevention BMPs to be used on the Project.

#### Downstream Effects Related to Potentially Increased Flow, Checklist DPP-1, Parts 1 and 2

- Within the project limits, the total project area is 29.9 acres. The existing landscaping (pervious area) is 0.7 acre, and the existing impervious area is 29.2 acres. After the proposed construction is complete, the landscaping (pervious area) will be 0.9 acres, and the impervious area will be 29.0 acres. Given the fact that the proposed project will result in less impervious surface area, there would be no resulting increase to velocity or volume of downstream flow.
- The City of San Francisco uses a combined sewer system. San Francisco is divided into two drainage basins, or watersheds, along a meandering line connecting high points from north to south. The sewer system discharges to the two treatments via the help of pump stations and the connecting pipes. The project discharges to the North Point Wet Weather Facility, which operates only during rainstorms to treat flow from the northeastern section of the bay side, or Southeast Treatment Plant. No channels are present within the project site.
- The proposed 0.2 acre landscaping will be contained within the median, and will not increase the sediment loading.
- The proposed improvement will not impact the hydraulic condition within the project site, or downstream.

#### Slope/Surface Protection Systems, Checklist DPP-1, Parts 1 and 3

- There are no cut or fill areas proposed with this project, and therefore, no new slopes would be created or modified.
- In general, construction would include pavement rehabilitation, shallow ground disturbance, minor earthwork grading and soil excavation within the roadway median and sidewalk areas. The disturbed soil area would be approximately 5.8 acres. The impacts related to such construction would be minimal because the proposed project would require nominal earthwork and the area of soil to be disturbed would be limited.

#### Concentrated Flow Conveyance Systems, Checklist DPP-1, Parts 1 and 4

- The proposed project will not create or modify ditches, dikes, berms, or swales.
- With the existing project condition, storm water is directed towards the curbside storm drains. Under the proposed project condition, surface runoff from the transitway would be collected at new median inlets. Since the proposed project would result in a decrease in impervious surface area within the project limits, there would be less flow generated from the site during post construction condition.

#### Preservation of Existing Vegetation, Checklist DPP-1, Parts 1 and 5

- The proposed project will result in increased pervious surface area, primarily due to the increase in area of landscaped medians. Although existing vegetation would be preserved as much as possible, the implementation of this project would result in more vegetated surfaces within the project limits compared to the existing condition.

### **5. Proposed Permanent Treatment BMPs to be used on the Project**

The narrative below documents how the proposed project is not required to implement Treatment BMPs. This determination was made by following the guidance provided in the Evaluation Documentation Form.

#### Treatment BMP Strategy, Checklist T-1

- There are no Targeted Design Constituent(s) identified at the location of the proposed project.
- Since the proposed project is not a new facility or major reconstruction, and it would not result in a change in line/grade or hydraulic capacity, this project is not required to consider Treatment BMPs. Additionally, the proposed project would not result in a net decrease in impervious surface, which would result in less runoff generated from the project area compared to the current condition.



## 6. Proposed Temporary Construction Site BMPs to be used on Project

- A Storm Water Pollution Prevention Plan (SWPPP) will be prepared and implemented for this project. It will identify construction-period Best Management Practices (BMPs) to reduce water quality impacts. The SWPPP will emphasize: 1) temporary erosion control measures to reduce sedimentation and turbidity of surface runoff from disturbed areas, 2) personnel training, 3) scheduling and implementation of BMPs during construction, 4) identification of non-storm water discharge BMPs, and 5) mitigation and monitoring during construction.
- Dewatering is not anticipated during the construction of the project.
- Since this project is in the PA/ED phase, Construction Site BMPs are not known at this time. However, the following is a general list of Construction Site BMPs that are expected to be implemented for this project:

### Lump Sum Items:

- SS-1 Scheduling
- SS-2 Preservation of Existing Vegetation
- NS-1 Water Conservation Practices
- NS-3 Paving and Grinding Operations
- NS-6 Illicit Connection/Illegal Discharge Detection and Reporting.
- 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
- WM-7 Contaminated Soil Management
- WM-8 Concrete Waste Management
- WM-9 Sanitary/Septic Waste Management
- WM-10 Liquid Waste Management

### Separate Bid-Line Items:

- Temporary Silt Fence (BEES Item No. 074029) – 1000 ft
- Temporary Check Dams (BEES Item No. 074035) – 40 ea.
- Temporary Drain Inlet Protection (BEES Item No. 074038) – 80 ea.
- Prepare SWPPP (BEES Item No. 074019)
- Storm Water Sampling and Analysis (BEES Item No. 066597)
- Water Pollution Control (BEES Item No. 074020)
- Construction Site Management (BEES Item No. 074016)



For each of the separate bid-line items listed above, an estimate is provided for the quantity and cost. For the items identified under lump sum, the funding for these items is covered under Water Pollution Control and Construction Site Management.

### 7. Maintenance BMPs (Drain Inlet Stenciling)

Drain inlets will be stenciled in areas accessible to pedestrians in accordance with project plans and specifications.

#### Required Attachments

- Vicinity Map
- Evaluation Documentation Form (EDF)

#### Supplemental Attachments

- Storm Water BMP Cost Summary
- BMP cost information from: Project Planning Cost Estimate (PPCE) during PID and PA/ED project phases; Preliminary Engineer's Cost Estimate (PECE) for PS&E project phase
- Checklist SW-1, Site Data Sources
- Checklist SW-2, Storm Water Quality Issues Summary
- Checklist SW-3, Measures for Avoiding or Reducing Potential Storm Water BMPs
- Checklists DPP-1, Parts 1

### Checklist SW-1, Site Data Sources

Prepared by: Ryan Hansen Date: 5/22/2013 District-Co-Route: 04-SF-101

PM : T4.71/6.71 Project ID (or EA): 04-3A270 RWQCB: San Francisco Bay RWQCB

Information for the following data categories should be obtained, reviewed and referenced as necessary throughout the project planning phase. Collect 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 5.5 of this document. Example categories have been listed below; add additional categories, as needed. Summarize pertinent information in Section 2 of the SWDR.

DATA CATEGORY/SOURCES	Date
<b>Topographic</b>	
<ul style="list-style-type: none"> <li>USGS Quadrangle Maps</li> </ul>	Varies
<ul style="list-style-type: none"> <li></li> </ul>	
<ul style="list-style-type: none"> <li></li> </ul>	
<b>Hydraulic</b>	
<ul style="list-style-type: none"> <li>Groundwater Information <a href="http://pubs.usgs.gov/ha/ha730/ch_b/index.html">http://pubs.usgs.gov/ha/ha730/ch_b/index.html</a></li> </ul>	Accessed June, 2009
<ul style="list-style-type: none"> <li></li> </ul>	
<ul style="list-style-type: none"> <li></li> </ul>	
<b>Soils</b>	
<ul style="list-style-type: none"> <li>AGS Inc., Geologic Impacts Assessment Report</li> </ul>	June 2009
<ul style="list-style-type: none"> <li></li> </ul>	
<ul style="list-style-type: none"> <li></li> </ul>	
<b>Climatic</b>	
<ul style="list-style-type: none"> <li>Weather <a href="http://www.idcide.com/weather/ca/san-francisco.htm">http://www.idcide.com/weather/ca/san-francisco.htm</a></li> </ul>	Accessed 2013
<ul style="list-style-type: none"> <li></li> </ul>	
<ul style="list-style-type: none"> <li></li> </ul>	
<b>Water Quality</b>	
<ul style="list-style-type: none"> <li>Caltrans Water Quality Planning Tool (<a href="http://www.water-programs.com/wqpt.htm">http://www.water-programs.com/wqpt.htm</a>)</li> </ul>	Accessed 2013
<ul style="list-style-type: none"> <li>California State Water Resources Control Board, Federal 303(d) List of Impaired Water Bodies</li> </ul>	2010
<ul style="list-style-type: none"> <li></li> </ul>	
<b>Other Data Categories</b>	
<ul style="list-style-type: none"> <li></li> </ul>	

## Checklist SW-2, Storm Water Quality Issues Summary

Prepared by: Ryan Hansen Date: 5/22/13 District-Co-Route: 04-SF-101

PM : T4.71/6.71 Project ID (or EA): 04-3A270 RWQCB: San Francisco RWQCB

The following questions provide a guide to collecting critical information relevant to project stormwater quality issues. Complete responses to applicable questions, consulting other Caltrans functional units (Environmental, Landscape Architecture, Maintenance, etc.) and the District/Regional Storm Water Coordinator as necessary. Summarize pertinent responses in Section 2 of the SWDR.

- |  |  |  |
|--|--|--|
| 1. Determine the receiving waters that may be affected by the project throughout the project life cycle (i.e., construction, maintenance and operation).   | <input checked="" type="checkbox"/> Complete | <input type="checkbox"/> NA            |
| 2. For the project limits, list the 303(d) impaired receiving water bodies and their constituents of concern.  | <input checked="" type="checkbox"/> Complete | <input type="checkbox"/> NA            |
| 3. Determine if there are any municipal or domestic water supply reservoirs or groundwater percolation facilities within the project limits. Consider appropriate spill contamination and spill prevention control measures for these new areas. | <input checked="" type="checkbox"/> Complete | <input type="checkbox"/> NA            |
| 4. Determine the RWQCB special requirements, including TMDLs, effluent limits, etc.  | <input checked="" type="checkbox"/> Complete | <input type="checkbox"/> NA            |
| 5. Determine regulatory agencies seasonal construction and construction exclusion dates or restrictions required by federal, state, or local agencies.   | <input checked="" type="checkbox"/> Complete | <input type="checkbox"/> NA            |
| 6. Determine if a 401 certification will be required.  | <input checked="" type="checkbox"/> Complete | <input type="checkbox"/> NA            |
| 7. List rainy season dates.  | <input checked="" type="checkbox"/> Complete | <input type="checkbox"/> NA            |
| 8. Determine the general climate of the project area. Identify annual rainfall and rainfall intensity curves.  | <input checked="" type="checkbox"/> Complete | <input type="checkbox"/> NA            |
| 9. If considering Treatment BMPs, determine the soil classification, permeability, erodibility, and depth to groundwater.  | <input type="checkbox"/> Complete            | <input checked="" type="checkbox"/> NA |
| 10. Determine contaminated soils within the project area.  | <input type="checkbox"/> Complete            | <input type="checkbox"/> NA            |
| 11. Determine the total disturbed soil area of the project.  | <input checked="" type="checkbox"/> Complete | <input type="checkbox"/> NA            |
| 12. Describe the topography of the project site.   | <input checked="" type="checkbox"/> Complete | <input type="checkbox"/> 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, etc.).  | <input checked="" type="checkbox"/> Complete | <input type="checkbox"/> 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?   | <input checked="" type="checkbox"/> Complete | <input type="checkbox"/> NA            |
| 15. Determine if a right-of-way certification is required.   | <input checked="" type="checkbox"/> Complete | <input type="checkbox"/> NA            |
| 16. 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.   | <input type="checkbox"/> Complete            | <input checked="" type="checkbox"/> NA |
| 17. Determine if project area has any slope stabilization concerns.  | <input checked="" type="checkbox"/> Complete | <input type="checkbox"/> NA            |
| 18. Describe the local land use within the project area and adjacent areas.  | <input checked="" type="checkbox"/> Complete | <input type="checkbox"/> NA            |
| 19. Evaluate the presence of dry weather flow.   | <input checked="" type="checkbox"/> Complete | <input type="checkbox"/> NA            |

## Checklist SW-3, Measures for Avoiding or Reducing Potential Storm Water Impacts

Prepared by: Ryan Hansen Date: 5/22/2013 District-Co-Route: 04-SF-101

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The PE must 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.

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 storm water 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 storm water impacts? Yes No NA

## Design Pollution Prevention BMPs

### Checklist DPP-1, Part 1

Prepared by: Ryan Hansen Date: 5/22/13 District-Co-Route: 04-SF-101

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#### Consideration of Design Pollution Prevention BMPs

##### Consideration of Downstream Effects Related to Potentially Increased Flow [to streams or channels]

- Will project increase velocity or volume of downstream flow?  Yes  No  NA
- Will the project discharge to unlined channels?  Yes  No  NA
- Will project increase potential sediment load of downstream flow?  Yes  No  NA
- Will 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 DPP-1, Part 2 checklist.

##### Slope/Surface Protection Systems

- Will 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 DPP-1, Part 3 checklist.

##### 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 DPP-1, Part 4 checklist.

##### Preservation of Existing Vegetation

It is the goal of the Storm Water Program to maximize the protection of desirable existing vegetation to provide erosion and sediment control benefits on all projects.

Complete

Consider **Preservation of Existing Vegetation**, complete the DPP-1, Part 5 checklist.