

~PRELIMINARY~

***WATER QUALITY TECHNICAL REPORT
STORM WATER MANAGEMENT PLAN***

FOR THE

CHOLLAS CREEK MULT-USE PATH FEASIBILITY STUDY

Prepared For:

City of San Diego
1222 First Ave., Fourth Floor
San Diego, CA 92101
Laura Gates- Project Manager
Phone: 619-236-6006

Prepared By:

Psomas
Mr. James S. Bliss, P.E., QSD
3111 Camino del Rio North, Suite 702
San Diego, CA 92108
Phone: 619-961-2800

Original Preparation Date:

April, 2014

Revision Date:

February 2015

TABLE OF CONTENTS

TABLE OF CONTENTS	2
Project Introduction and Description.....	3
Project Features	4
Watershed Contribution.....	4
APPLICABLE LAWS, REGULATIONS, POLICIES, AND REQUIREMENTS	4
STATE IMPAIRED WATERBODIES "303(d) LIST"	5
IMPACTS TO THE HYDROLOGIC REGIME	5
BUFFER MEASURES.....	5
HYDROMODIFICATION MANAGEMENT REQUIREMENTS	6
GEOTECHNICAL CONCERNS	6
POTENTIAL POLLUTANTS OF CONCERN	6
POLLUTANT SOURCES AND CONTROLS:.....	6
CHARACTERIZATION OF PROJECT RUNOFF	10
MITIGATION MEASURES TO PROTECT WATER QUALITY	10
Low Impact Development Design BMP's:	Error! Bookmark not defined.
Proposed BMP's:	10
BMP EFFICIENCY	11
MAXIMUM EXTENT PRACTICABLE.....	11
OPERATION AND MAINTENANCE PROGRAM	12
FISCAL RESOURCES	12
REFERENCES	12
APPENDIX	
APPENDIX A	
PROJECT LOCATION MAP	
APPENDIX B.....	
WATERSHED MAP.....	
APPENDIX C.....	
PERMANENT BMP DETAILS.....	
APPENDIX D	
DRAINAGE ASSESSMENT.....	
APPENDIX E.....	
GEOLOGIC AND GEOTECHNICAL SITE ASSESSMENT	

Project Introduction and Description

This preliminary Water Quality Technical Report (WQTR) has been prepared as supporting document to the Chollas Creek Multi-Use Path to Bayshore Bikeway Feasibility Study. It is not intended to be the final WQTR. The final WQTR will be developed with the initiation of the final construction documents for the project.

The Chollas Creek Multi-Use Path project is a segment of a long-range plan to provide a multi-use path along Chollas Creek. This project involves the development of a multi-use pedestrian and bicycle path, linking Dorothy Petway Neighborhood Park in the Southeast San Diego community through the Barrio Logan community to East Harbor Drive. See Appendix A for location, preferred alignment and proposed typical sections of the trail.

The 4,000-foot-long (approximately 0.75-mile) extension of the Chollas Creek multi-use path would be constructed along Chollas Creek and developed within public street rights-of-way. The path consists of a 10 to 14 feet wide paved surface and would be primarily developed as Class I/cycletrack (separate facility) and Class III bike way with painted sharrows along a short stretch of Rigel Street. Controlled crossing signals (including reflectorized rapid flashing beacon – RRFB) would be installed at various locations to control traffic and allow bicyclists and pedestrian to cross the streets safely.

The proposed alignment for the multi-use trail would begin at Dorothy Petway Neighborhood Park, in the Southcrest community, and continues southwest along the creek to Rigel Street as a Class I bike path. The trail then continues south on Rigel Street to Main Street, as a Class III bike way, and crossing Main Street at a new crosswalk with a RRFB signal. The path would continue north on the west side of Main Street as a Class I multi-use path until it meets Chollas Creek on the northwest side of the Interstate 15 freeway ramp. The path would then follow Chollas Creek south to 32nd Street, as a Class I bike path, then continue by crossing the I-15 on-ramp and Norman Scott Drive, at crosswalks at the existing signalized intersection, at which point the Class I bike path would continue on the easterly side of 32nd Street. The path would then connect to its terminus, at the Bayshore Bikeway, on the north side of E Harbor Drive, proximate to the Pacific Fleet Station MTS trolley stop.

The construction of the project would involve the grading and construction of the multi-use path along Chollas Creek, as well as reconfiguring public streets to allow for bike facilities. Discretionary actions for the proposed project include an Encroachment Agreement from Caltrans, an easement and encroachment Agreement from the United States Navy for development within Navy right-of-way, various Encroachment Removal and Maintenance Agreements from the City of San Diego, and final design and permit approvals from the City of San Diego.

This project is required to meet the post-construction storm water quality standards of a Standard Development Project, as outlined in the San Diego Municipal Code, Land Development Manual-Storm Water Standards. The selected contractor for the project will be required to prepare and submit to the State's SMART system a Storm Water Pollution Prevention Plan (SWPPP).

Construction of the project will disturb a total of approximately 0.9 acres of soil. The project corridor is currently approximately 50% pervious and 50% impervious (public streets). Several materials are being considered for the walking/riding surface, including both impervious and pervious materials. If impervious materials are used for the 10-foot wide walking/riding surface there will be an increase of approximately 20,000 square feet of impervious area as a result of the

project. If pervious materials are selected for the surface there will be no increase in impervious area. Either way, this project shall not degrade the existing stormdrain conveyance system with the use of appropriate permanent BMP's as discussed later in this report.

Project Features

The proposed project consists of a trail alongside Chollas Creek in a similar fashion as the existing trail segment, in the Southcrest area, to the east of the beginning of this project, thus completing the most westerly segment of the overall trail system all the way to its connection to the Bayshore Bikeway at Harbor Drive. Portions of this segment will primarily follow the creek alignment. However, due to insufficient vertical headroom clearance at several roadway bridge crossings over the creek, the trail will be re-directed onto public streets (Rigel St. to Main St.), before getting back along the creekside alignment, south of Main Street.

Emerging from the creek corridor onto 32nd St., at the I-15 on-ramp and Norman Scott Drive, the trail continues south down to Harbor Drive. Again, due to insufficient headroom clearance railroad bridge crossing the creek on the east side of Harbor Drive. Where the trail is proposed to follow the creek, the trail will be constructed either alongside the creek or, where insufficient right-of-way exists, within the creek on the upper portion of the existing channel side-slopes. In these areas retaining wall will be constructed to "notch in" the level trail. The elevation of the trail, as established in the Drainage Assessment found in Appendix D, will be set such that the trail will be above the tidal backwater inundation elevation except for extreme high tide events that occur only on average about once in every 10 years. The trail at this elevation will be above the water surface elevation in the creek for storms below a 2-year event.

Where the trail is constructed alongside or within the banks of the creek it will be constructed to 14 feet in width comprised of a 10 foot wide paved walking/riding surface and 2 foot wide clear shoulders on each side. Possible materials for the walking/riding surface include concrete pavement, or permeable concrete pavement. Possible materials for the shoulders, which will be utilized as BMP areas for the trail runoff, include stabilized decomposed granite, small aggregate or permeable concrete.

Where the trail is routed onto the public street the trail will fall within the paved portions of the roadways. Minor modifications will be made to roadways (striping, sidewalk modifications) to provide for the trail as either Class I or III bike lanes.

The trail will be constructed with a maximum cross-slope of 2% and a maximum longitudinal slope of 5% to comply with current ADA design standards.

Watershed Contribution

The Chollas Creek Multi-Use Path project is located within the Pueblo Watershed in the San Diego Mesa Hydrologic Unit Area Number 908.2. The project drains into Chollas Creek, which outlets directly into San Diego Bay.

APPLICABLE LAWS, REGULATIONS, POLICIES, AND REQUIREMENTS

Federal Laws and Regulations

Clean Water Act Section 40- Water Quality Certification

State and Local Laws and Regulations

California Water Code – Porter Cologne Water Quality Control Act of 1969

Statewide General Construction Activity Storm Water Permit (Order No. 2009-0009-DWQ as amended by Order 2012-0014-DWQ)
City of San Diego, “Storm Water Standards” in the San Diego Municipal Code- Land Development Manual

STATE IMPAIRED WATERBODIES “303(d) LIST”

The receiving waters are listed on the current Clean Water Act 303(d) list for the following impairments:

Chollas Creek
Copper
Indicator bacteria
Lead
Zinc

San Diego Bay Shoreline (32nd St. Naval Station)
Benthic community effects
Sediment toxicity

IMPACTS TO HYDROLOGIC REGIME

Impacts to the hydrologic regime resulting from development typically include increased runoff volume and velocity; reduced infiltration; increased flow frequency, duration, and peaks; faster time to reach peak flow; and water quality degradation. A change to a priority project site’s hydrologic regime is considered a condition of concern if the change impacts downstream channels and habitat integrity. Conditions of concern can include problems such as flooding, erosion, scour, and other impacts that can adversely and permanently affect channel and habitat integrity.

A drainage study which evaluates the hydraulic impacts on the creek where the trail is planned to be constructed on or near the side-slopes of the creek has been prepared for the proposed project entitled “Drainage Assessment, Chollas Creek Multi-use Path, Dorothy Petway Park to Harbor Drive, San Diego, California” by Psomas, as required by the City, and is included as Appendix D.

As a result of this study, the proposed trail alignment, cross section, and profile will be designed such that the construction of the trail will not result in an increase in the water surface elevation of the storm flow conveyance of the creek by more than 0.1 feet, thus avoiding the any FEMA floodway map revisions.

A more detailed drainage report should be prepared for the proposed project, as required by the City once final design of the project is initiated. The report should evaluate any impacts to the downstream conditions as a result of increased runoff volume and velocity due to the addition of the impervious paved trail surface; reduced infiltration; increased flow frequency, duration, and peaks; faster time to reach peak flow; and water quality degradation.

The final Drainage Study will be included as Appendix E in the final WQTR. A summary of the drainage report will be provided in the final WQTR.

BUFFER MEASURES

With the intent of the project being to have the path, as much as possible, running alongside the Chollas Creek, the implementation of a buffer zone between the path and the limits of the 100-

year floodplain is not feasible. Access from the path to the creek will be restricted, however, with the use of fencing and railings installed along the creek-side of the path.

HYDROMODIFICATION MANAGEMENT REQUIREMENTS

As stated in section 4.5 of the City’s Storm Water Standards manual, Priority Development Projects must be designed such that runoff rates and durations are controlled to maintain or reduce pre-project downstream erosion conditions and protect stream habitat.

As noted in figure 4-1 of the manual, projects may be exempt from Hydromodification Management Plan criteria under some conditions.

Given that the runoff from the constructed project discharges to the Chollas Creek and South Chollas Creek, which, within the limits of this project is either a concrete lined channel or a engineered stabilized channel and therefore a stabilized conveyance system which discharges directly the San Diego Bay, this project is exempt from Hydromodification criteria. See Project Location Map in Appendix A for limits of the concrete lined channel and engineered stabilized channel sections adjacent to the project.

GEOTECHNICAL CONCERNS

A geotechnical assessment has been prepared for the proposed project entitled “Geologic and Geotechnical Site Assessment, Chollas Creek Multi-use Path, San Diego, California” dated January 6, 2014 by TerraCosta Consulting Group, Inc., as required by the City, and is included as Appendix F.

The existing surficial soils along the trail corridor are comprised of fill soils overlying alluvial and estuarine deposits. These soils, in general, consist of loose to medium dense and soft to hard sands and clays, with lenses of interbedded gravels.

Potential geologic and geotechnical issues of concern are discussed in this report, however, there were found to be no issues that would preclude the construction of this project as planned.

POTENTIAL POLLUTANTS OF CONCERN

Potential pollutants discharging from the project include the following:

- Sediment
- Nutrients
- Heavy Metals
- Organic Compounds
- Trash & Debris
- Oxygen Demanding Substances
- Oils & Grease
- Bacteria & Viruses
- Pesticides

POLLUTANT SOURCES AND CONTROLS:

The most economical and effective control for pollutants other than sediment generated on the site is through the exercise of good “housekeeping” practices and an awareness of the need for compliance with the regulatory requirements.

Sediment

Sediments are soils or other surficial materials eroded and then transported or deposited by the action of wind, water, ice, or gravity. Sediments can increase turbidity, clog fish gills, reduce spawning habitat, lower young aquatic organisms survival rate, smother bottom dwelling organisms, and suppress aquatic vegetation growth.

Sediment pollution will be a concern for this project, primarily during the construction phase when the ground is disturbed and loosened temporarily for the construction of the new improvements. Mitigation of construction period sediment pollution will be addressed with the utilization of temporary BMP's in a separate Storm Water Pollution Prevention Plan (SWPPP). After construction is completed the potential for sediment pollution is considered to be minor since all disturbed areas outside of the paved trail and shoulders will be landscaped, hydroseeded, or covered with mulch.

All projects discharging stormwater directly to water bodies listed as impaired for sedimentation/siltation (sediment) or turbidity under §303(d) of the CWA, are required to include a sampling and analysis strategy and sampling schedule to monitor the effectiveness of BMP's designed to prevent discharges of sediment that would otherwise contribute to water quality impairment.

Recommended Control Measures: The release of sediment downstream of the site or outside the controlled perimeter will be prohibited. The project area shall be revegetated immediately after the completion of the project as shown on the Landscape Plans to minimize erosion of the site after construction is completed. Storm flows from the project will be routed to Chollas Creek.

Nutrients

Nutrients are inorganic substances, such as nitrogen and phosphorous. They commonly exist in the form of mineral salts that are either dissolved or suspended in water. Primary sources of nutrients in urban runoff are fertilizers and eroded soils.

The possibility of nutrient pollution is considered to be minor for this project as the plant pallet selected for the project is compatible with the existing soils types and environment, minimizing the need for fertilizers.

Recommended Control Measures: Pollution may be minimized by working fertilizers and liming materials into the soil to depths of 4 to 6 inches, and by the proper timing of the application. Care should be taken to use only the minimum amount of phosphorus needed. The importation of topsoil near sensitive surface waters is better than utilizing fertilizers or heavily liming the subsoil since the addition of lime can affect the pH of the runoff. Storage of bulk materials shall be in designated locations and protected from the weather. Accidental spills shall be cleaned up immediately.

Heavy Metals

Metals are raw material components in non-metal products, such as fuels, adhesives, paints, and other coatings. Primary sources of metal pollution in storm water are typically commercially available metals and metal products. Metals of concern include cadmium, chromium, copper, lead, mercury, and zinc.

Heavy metal pollution for this project is considered to be minor. Being that the primary use for the Trail is for bicyclists, joggers and walkers, it is expected that motorized vehicles (Police, Fire, Sheriff, maintenance, etc.) that could leak fuels will only access the trail on very rare occasions.

Recommended Control Measures: Bioretention trenches installed within the shoulder area of the trail and catch basin filter inserts.

Organic Compounds

Organic compounds are carbon based. Commercially available or naturally occurring organic compounds are found in pesticides, solvents, and hydrocarbons.

The possibility of organic compound pollution is considered to be minor for this project as the use of pesticides can be controlled by the Trail maintenance crews using good housekeeping procedures.

Recommended Control Measures: Good housekeeping.

Trash & Debris

Trash, such as paper, plastic, polystyrene foam, and aluminum materials, and biodegradable organic matter, such as fallen leaves, grass cuttings, and food waste, are general waste products on the landscape.

Trash and debris pollution for this project is considered to be minor as it is expected that the bicyclists, joggers and walkers will not be carrying significant amounts of items that could be discarded as trash or debris along the trail.

Recommended Control Measures: Strategically placed trash receptacles will encourage the Trail users to dispose of their trash and debris in these containers.

Oxygen Demanding Substances

Oxygen demanding substances include biodegradable organic materials as well as chemicals that react with dissolved oxygen in water to form other compounds, such as decomposing plant material.

The potential for oxygen demanding substance pollution for this project can be minimized with good housekeeping procedures by the Trail maintenance crews with routine clearing of the fallen plant material.

Recommended Control Measures: Good housekeeping.

Oils & Grease

Primary sources of oils and greases are petroleum hydrocarbon products, motor or chassis products from leaking vehicles, esters, oils, fats, waxes, and high molecular-weight fatty acids.

Oil and Grease pollution for this project is considered to be minor. Being that the primary use for the Trail is for bicyclists, joggers and walkers, it is expected that motorized (Police, Fire, Sheriff, utility maintenance) vehicles which are the primary source of leaking oils and greases will only access the trail on very rare occasions.

Recommended Control Measures: Bioretention trenches installed within the shoulder area of the trail and catch basin filter inserts.

Bacteria & Viruses

Bacteria and viruses are ubiquitous microorganisms that thrive under certain environmental conditions. Their proliferation is typically caused by the transport of animal or human fecal wastes from the watershed.

The potential for bacterial and virus pollution for this project is considered to be minor. Being that dogs will be allowed to utilize the Trail with their owners, it is expected that, with signage placed along the trail and “doggie dropping” bag dispensers provided at key points along the Trail, most pet owners will clean up after their dog and eliminate the potential for fecal waste pollution.

Recommended Control Measures: All waste materials shall be located in designated waste containers and disposed of on a regular basis in accordance with the waste storage and disposal requirements. Feces from dogs shall be collected immediately and deposited in the waste container.

Pesticides

Pesticides (including herbicides) are chemical compounds commonly used to control nuisance growth or prevalence of organisms on plant material.

The possibility of pesticide pollution is considered to be minor for this project as the use of pesticides can be controlled by the Trail maintenance crews using good housekeeping procedures.

Recommended Control Measures: Good housekeeping.

Source controls for the following items as outlined in section 4.2 of the Storm Water Standards manual are not required for this project as these items listed are not being constructed as part of the project:

- Maintenance Bays
- Vehicle and Equipment Wash Areas
- Outdoor Processing Areas
- Retail and Non-Retail Fueling Areas
- Steep Hillside Landscaping
- Outdoor Material Storage Areas
- Loading Docks
- Fire Sprinkler Systems
- Air Conditioning
- Roof Materials

Sources of Elevated pH Levels in Storm Water:

Post-construction activities that may elevate the pH level in storm water are listed below:

- a. Soil amendments (lime, gypsum)

CHARACTERIZATION OF PROJECT RUNOFF

Where the trail is constructed alongside Chollas Creek, runoff from the trail will be directed to the shoulders of the trail in a sheet flow condition. To treat the first flush runoff from the trail it is proposed that a bioretention trench, as described below, be installed within the shoulder on the low side of the trail. The low flows will percolate down through the bioretention trench material for treatment and then be collected in a perforated drain pipe at the bottom of the trench. These flows will then be discharged into the creek through the upper portion of the creek sidewalls. Where possible, the discharge elevations will be set higher than the 50-year storm event water surface elevation. Higher flows above the first flush low flows will be contained within the shoulder area(s) with a curb installed along the outer edge of the shoulder. These flows will be routed to catch basins where the flows will be collected in a drain pipe and discharged into the creek similar to the flows in the bioretention trench.

Where the trail is routed onto the public streets the runoff from the trail will maintain the drainage pattern in the current existing conditions. Runoff will sheet flow off of the trail where it will continue on in the street to the collection points at existing catch basins.

Where adjoining areas next to the trail are draining toward the trail, graded/vegetated swales (in level areas) or a concrete ditch (where a retaining wall is required) will be installed to intercept the flows that would otherwise run onto the trail. These flows will be routed to catch basins where the flows will be collected and discharged into the creek as described above.

MITIGATION MEASURES TO PROTECT WATER QUALITY

Low-Impact Development Design BMP's:

- The project will be designed to minimize the amount of new impervious areas with the implementation of pervious trail surfacing (where feasible) and pervious bio-filters for the shoulders.
- Where sufficient space alongside the trail exists outside of the paved surface and shoulders for landscaping, trees and plants that add foliage material will be provided to increase rainwater interceptions and evapotranspiration. The new planting consists of a native material planting palette to minimize water use and potential for irrigation runoff and to selected to discourage pests or the use of pesticides.
- Consideration will be given to the landscape areas for increasing the water holding capacity of the soil by minimizing compaction and use of soil amendments.
- Consideration will also be given to the use of surface retention/infiltration basins within the landscape areas to promote evaporation and evapotranspiration.
- The irrigation system for these landscaped areas shall be monitored to reduce over-irrigation, and fertilizers shall only be moderately applied in the dry season.

Due to the nature of the project where no roof tops are being constructed as part of the project, the use of cisterns or rain barrels to capture rain water and release it for irrigation is not considered feasible for this project.

Proposed Permanent BMP's:

- Bioretention Trench
Lacking sufficient space alongside the trail to provide vegetated swales to treat the first flush runoff, it is recommended that a Bioretention Trench as depicted in Appendix C be installed within the shoulder of the trail on the low side. The

Bioretention Trench consists of a gravel or permeable pavement cap underlain by additional aggregate, special bioretention soil with a perforated pipe at the bottom of the trench. The trench will be lined with an impermeable PVC liner to contain the flows and direct it to the perforated pipe. The first flush flows are treated within the gravel and bioretention soil layer. The flows are then collected in the perforated pipe and discharged into creek at regular intervals via a solid pipe. The discharge points will be spaced at intervals of approximately 100' for a total of approximately 20 total discharge points. A sample BMP sizing calculation is provided in Appendix to demonstrate that the BMP had been designed to mitigate the maximum flow rate run-off per Table 4 of the City's Storm Water Standards.

- **Catch Basin Stenciling**
Any new storm drain inlets that are installed with the project and any existing inlets along the trail alignment within the public streets will be stenciled with a message warning citizens not to dump pollutants into the storm drains.
- **Doggy Dropping Bag Dispensers**
To encourage dog owners to collect and discard their pet's droppings, it is recommended that Doggy Dropping Bag Dispensers be installed at regular intervals along the trail.
- **Trash Receptacles**
It is also recommended that trash receptacles be installed at regular intervals along the trail where space allows to encourage the trail users to discard their waste in an appropriate manner. Trash receptacles should be anchored to the ground to prevent the receptacles from being knocked over. Trash receptacles should also come with covered lids to prevent bacteria leaching from rain events. Lastly, regulatory sign should be placed at the beginning, ending at and strategic locations along the trail to encourage trail users to dispose of their trash and dog waste on the trash receptacles.
- **Signage**
Signs will be installed at trailheads and other strategic locations along the trail with language prohibiting illegal dumping and littering as well as requiring proper collection and disposal of pet waste.

BMP EFFICIENCY

As discussed previously, pollutants of concern for the project include sediment, oil and grease, bacteria, heavy metals and nutrients. The site design and source control BMPs discussed above will limit the amount of fertilizers used at the project site and therefore decrease discharge of nutrients into storm water.

MAXIMUM EXTENT PRACTICABLE

The above-mentioned site design, source control and treatment BMPs are technically feasible, comply with the land use of the project, and the associated costs do not exceed the benefits of the BMPs. Therefore, the BMPs are deemed to reduce the pollution of runoff to the maximum extent practicable.

OPERATION AND MAINTENANCE PROGRAM

Maintenance of all BMPs is the responsibility of the City of San Diego. On a weekly basis, all trash, litter and debris on the premises shall be collected and disposed of properly. Irrigation practices shall be monitored to ensure that over-watering does not occur. In addition, the maintenance requirements and an inspection log for the proprietary treatment systems shall be made available from the proprietary entities and transferred to the property owner at the completion of the installation.

FISCAL RESOURCES

Funding for the maintenance program shall be accounted for in the annual budget of the City of San Diego. Evaluation of the program shall be conducted on an annual basis and any additions or changes to the program shall be made.

REFERENCES

This Water Quality Study incorporates, by reference, the appropriate elements of the following documents and plans required by local, State or Federal agencies. In addition, this document incorporates other environmental reports, permits, construction permits that were specifically prepared for this project or reference this project.

1. Current Edition of Standard Specifications for Public Works Construction and Local and City Supplements
2. Current Edition Uniform Building Code and State Amendments
3. Statewide General Construction Activity Storm Water Permit (WQ Order No. 2009-009-DWQ as amended by Order 2010-0014-DWQ)
4. County of San Diego Hazardous Waste Requirements
5. California Regional Water Quality Control Board Guidelines for CONSTRUCTION STORMWATER BEST MANAGEMENT PRACTICES FOR SOIL DISTURBING ACTIVITIES (DPW)
6. California Regional Water Quality Control Board Erosion and Sediment Control Field Manual
7. State of California Department of Transportation Storm Water Quality Handbooks
8. City of San Diego Jurisdictional Urban Runoff Management Plan.
9. San Diego Municipal Code, Land Development Manual-Storm Water Standards

APPENDIX

**APPENDIX A
PROJECT LOCATION MAP**

APPENDIX B

WATERSHED MAP

APPENDIX C

PROPOSED PERMANENT BMP DETAILS AND SIZING CALCULATIONS

**APPENDIX D
DRAINAGE ASSESSMENT**

APPENDIX E

GEOLOGIC AND GEOTECHNICAL ASSESSMENT

