

# ***Avenida de la Playa Storm Drain Upgrades***

***(SD IRWMP Project #178)***

## ***Attachment 3: Work Plan***

### **I. Introduction**

#### **Project Sponsor**

The City of San Diego is the project sponsor for the *Avenida de la Playa Storm Drain Upgrades and Dry Weather Diversion* (Project).

#### **Project Need**

The Avenida de la Playa storm sewer system drains approximately 1.28 square miles of La Jolla Shores, a highly urbanized coastal hillside neighborhood in San Diego. Due to significant urbanization, steep slopes, and a highly developed storm drain network in the upper reaches of the system, the watershed is highly responsive to rainfall events, sending fast-moving surges of storm water downstream. Runoff from this watershed is primarily collected and conveyed in the underground storm drain system until it reaches the series of pipes running along Avenida de la Playa where it discharges to a state-designated Area of Special Biological Significance (ASBS) via a beach outfall. Flooding problems are frequently reported along Avenida de la Playa between the outfall and the intersection with Camino del Sol (approximately 700 feet upstream). The flooding results from an undersized storm drain system that is unable to adequately convey peak flow from a 1-year design storm and from the limited capacity and design of the discharge outfall. Local businesses and residences are significantly impacted by the flooding, which causes not only property and infrastructure damages but also business losses associated with the impassability of flooded streets.

In addition, due to the location and design elements of the beach outfall, dry weather flows collect and stagnate, creating a known source of bacteria and other pollutants that are subsequently discharged to the receiving waters of the La Jolla State Marine Conservation Area (ASBS 29).

#### **Project Purpose**

This Project is designed to address the persistent problem of flooding along Avenida de la Playa and reduce bacteria loads to the ASBS as a result of stagnation in the existing storm drain system. To accomplish this, the Project will:

1. Replace the entire length (635 linear feet) of existing twin 51-inch-diameter pipes with dual 51-inch-high by 90-inches-wide reinforced concrete box culverts.
2. Replace approximately 750 linear feet of 72-inch diameter pipe between Camino del Sol and Paseo del Ocaso with 72-inch-high by 72-inch-wide reinforced concrete box culverts.
3. Replace the existing outfall structure with a new 25-foot by 40-foot outfall structure to accommodate a 70-foot-long weir.
4. Install hydrodynamic separators upstream to capture trash and debris before it enters the storm drain system.
5. Install a new dry weather diversion system to divert nuisance flows to the nearby sanitary sewer system and prevent stagnation.

Table 1 provides an overview of the San Diego IRWM Plan goals that are expected to be indirectly (○) or directly (●) achieved through implementation of the *Avenida de la Playa Storm Drain Upgrades and Dry Weather Diversion* project.

**Table 1: Contribution to IRWM Plan Goals**

Proposal Projects	Contribution to IRWM Plan Goals			
	1	2	3	4
<i>Avenida de la Playa Storm Drain Upgrades and Dry Weather Diversion</i>		•	•	

- **2: Protect and enhance water quality.** Water quality benefits will be achieved through multiple aspects of the Project including pollutant reduction through the installation of the new dry weather diversion system. Pollutants (bacteria, pesticides, metals, and nutrients) will be prevented from entering the La Jolla ASBS and thus improve the near shore water quality. In so doing it will improve the healthfulness of the ASBS for native species and improve the asset for visitors and users of the La Jolla shoreline.
- **3: Provide Stewardship of our Natural Resources.** The Project protects unique habitats and a diverse biological community found in the ASBS, a designated Marine Protected Area. The elimination of dry weather flows and reduction of contaminants during wet weather will help protect these valuable resources. The Project will be an integral part of a comprehensive management program for the ASBS.

Table 2 provides an overview of the San Diego IRWM Plan objectives that are expected to be indirectly (○) or directly (•) achieved through implementation of the *Avenida de la Playa Storm Drain Upgrades and Dry Weather Diversion* project.

**Table 2: Contribution to IRWM Plan Objectives**

Proposal Projects	Contribution to IRWM Plan Objectives								
	A	B	C	D	E	F	G	H	I
<i>Avenida de la Playa Storm Drain Upgrades and Dry Weather Diversion</i>	•		•			•	•	•	•

• = directly related; ○ = indirectly related

- **A: Maximize stakeholder/community involvement and stewardship.** As a result of the high profile issue of flooding and the visibility of the positive outcomes resulting from this Project, this Project will increase awareness of the problem of nuisance urban storm water flows and pollutants as well as the impacts of hydromodification due to urbanization and the associated increases in impervious areas. The Project will be conducted in concert with a larger effort to protect ASBS 29 and will be part of a well-coordinated and funded community education and outreach effort.
- **C: Further scientific and technical foundation of water management.** The Project will be monitored to assess both pollutant removal and cost-effectiveness. Based on the results of this effectiveness assessment, the City may use similar upgrades and BMPs throughout ASBS 29 and other watersheds as-needed to improve effectiveness of overall pollutant reduction.
- **F: Reduce the negative effects on waterways and watershed health caused by hydromodification and flooding.** During moderate to large rain events (0.1 inches or greater), the undersized MS4 infrastructure at Avenida de la Playa produces widespread flooding of the adjacent streets, causing damage to infrastructure, local residences and businesses, and negatively impacts water quality in the ocean.
- **G: Effectively reduce sources of pollutants and environmental stressors.** The dry weather diverters will capture and redirect nuisance dry weather urban flows directly to the sanitary sewer system and thus reduce a corresponding volume of targeted pollutants loads from the surrounding urban area being directed into the La Jolla ASBS.
- **H: Protect, restore and maintain habitat and open space.** During rain events at Avenida de la Playa, the street and adjacent sand beach habitat of the La Jolla ASBS is scoured due to

hydromodification. The scouring degrades habitat and the marine biological community in this protected biological preserve.

- **I: Optimize water-based recreational opportunities.** Pollutants, in particular bacteria and nutrients will be prevented from entering the La Jolla ASBS and thus improve the near shore water quality. In so doing it will improve the healthfulness of the ASBS for native species and improve the asset for visitors and users of the La Jolla shoreline.

### Project Goals & Objectives

The goals of the *Avenida de la Playa Storm Drain Upgrades and Dry Weather Diversion* project are to:

1. Reduce flooding
2. Reduce flood damages
3. Improve water quality
4. Enhance the beneficial uses of the La Jolla ASBS

The objectives of this Project are as follows:

- Increase capacity of the storm drain system
- Reduce flooding and related damages
- Improve the capacity and design of the beach outfall to prevent sand and trash blockages from occurring
- Improve stormwater quality
- Prevent dry weather nuisance discharges to the ASBS

### Project Abstract

This project will be at 60% design completion on September 1, 2011.

The City of San Diego is the implementing agency for the *Avenida de la Playa Storm Drain Upgrades and Dry Weather Diversion* project (Project). The Project is designed to address the persistent problem of flooding along Avenida de la Playa in La Jolla and reduce bacteria loads to the Area of Special Biological Significance (ASBS) as a result of stagnation in the existing storm drain system.

The current storm drain system is undersized and is unable to adequately convey stormwater flows from even moderate storms. As a result, flooding occurs and damages local infrastructure, residences and businesses. The Project will address this issue by installing larger storm drains that will reduce the amount of flooding that occurs.

The storm drain system terminates at a beach outfall that is located at mean sea level and is not only undersized in capacity to handle storm water flows but also is routinely blocked by sand and trash. This Project will install a new outfall that will help rectify these issues and reduce flooding. New hydrodynamic separators will also be installed throughout the storm drain system to separate trash before it reaches the outfall.

Additionally, during dry weather, stagnation in the outfall and storm drain system leads to bacterial growth, which then discharges to the ASBS. This project will install a new dry weather diversion system to divert nuisance flows to the nearby sanitary sewer system.

The *Avenida de la Playa Storm Drain Upgrades and Dry Weather Diversion* project includes the following activities:

**Concept Design:** This project was initiated in July 2007 as part of the City of San Diego (City) Storm Water Department's Fiscal Year 2008 Watershed Capital Projects Concept Design Process. The City's Storm Water Pollution Prevention Division contracted Weston Solutions, Inc. (Weston) to prepare the conceptual designs for a set of BMPs that address these regulatory requirements and the City's 5-Year Strategic Plan for Watershed Activity Implementation. Weston performed field reconnaissance for the sites identified in the Strategic Plan for Watershed Activity Implementation for potential locations

for low flow diversion structures and upgrades to existing storm drain infrastructure for the purpose of increasing storm drain conveyance capacity; thus reducing potential flooding. Working with the City, the project team identified Avenida de la Playa as a suitable site for the implementation of a Low Flow Diversion. The feasibility to implement this type of BMP was evaluated. The drainage area and potential storm water peak flows were estimated. Through the hydrologic calculations and preliminary design process, it was determined that the existing storm drain pipe could be upgraded to improve flood control in the area as well as facilitate the construction of a low flow diversion structure.

This Project is part of the City's tiered and phased BMP implementation, non-structural source control and pollution prevention BMPs, as well as structural BMPs. This Project includes several elements of Tier II of this approach, which is focused on structural LID BMPs which target runoff reduction and include components for watershed stewardship, education and outreach, and community enhancements in capital projects. The scope of this BMP conceptual design project was based on the recommendations on the type, number, location, and timeline presented in the 5-Year Strategic Plan for Watershed Activity Implementation. The Concept Design has been completed.

**Pre-Engineering Report (10% Design):** This study builds on the *Tier II & Tier III Storm Water Best Management Practices Conceptual Designs Final Report* prepared by Weston Solutions. The purpose of the Preliminary Engineering Report is to detail the scope of work, evaluate the City's Capital Improvement Projects (CIP) for adequacy of provided funds against the proposed scope of work, establish a cash loaded project schedule and get concurrence on the scope, cost, schedule and goals, identify the project risks and account for them in the scope, schedule and cost estimates. The Preliminary Engineering Report has been completed.

**30% Design:** Initial Design Effort – Fatal Flaw Analysis was performed and project performance modeled, estimated and verified. Final Design Hydrology and Hydraulic Studies, including flow drainage area calculations, Water Quality Technical Report (WQTR), estimates of the Project construction and materials costs, and an estimated construction schedule will be completed. During review of the Project design, detailed performance analysis will be performed to determine if the proposed design meets the performance specifications.

#### **Environmental Permits & Compliance:**

**60% Design & Specifications:** Detailed design review is performed at this point to ensure the incorporation of design changes made at the 30% Design submission and check for conflicts in the design with current infrastructure uses, performance and potential conflicts with other stakeholders such as other City Departments and outside agencies.

**90% & 100% Design & Specifications:** Draft Final design package is verified and circulated for review and approval from outside agencies and submitted as the permit package application for all required permits. Specification are finalized and put into a bid package with all bid quantities and measures and final contract terms.

**Construction Contract Bid & Award:** City Council approval of the construction contract, certification of CEQA process and documents and authorization to advertise and award the contract. Purchasing department award process and approval. Final permit issuances, development of the construction scheduling and phasing.

**Construction Operations:** Construction, inspection, verification, warranty monitoring, and testing of site improvements. Project closeout and as-built preparation.

**Water Quality Effectiveness Assessment and Monitoring:** Water quality sampling, monitoring and analysis, laboratory testing and analysis, comparison to the WQTR estimates and calculations, quantification of pollutant load reductions, maintenance and site improvement monitoring and conditions assessment, tracking of costs for maintenance, damage, repair, vandalism, etc.

#### **Integrated Elements of Projects**

This Project supports both the La Jolla Shores Watershed Management Plan (WMP), and the La Jolla ASBS protection implementation plan. The federal Clean Water Act requires coastal states to have and routinely update an Ocean Plan for maintenance of water quality standards. The Ocean Plan (and State Board) has prohibited storm water waste discharges (dry and wet weather runoff) to ASBS. 29. The UC Regents-University of California San Diego (UCSD), the City of San Diego and San Diego Coastkeepers are partnering on a long-term program to implement Best Management Practices (BMPs) to control non-storm water discharges and reduce or eliminate pollutant sources that drain into ASBS 29. The Project will be fully integrated with other pollution prevention measures called for in the WMP, including aggressive street sweeping, irrigation reduction, porous pavement LID, Urban Corps channel maintenance, and community based education and outreach.

### [Regional Map](#)

See attachment: Att#3\_SWF\_Avenida de la Playa\_WorkPlan\_2\_of \_Total \_3

### [Completed Work](#)

The Project is currently in the early stages of design and project alternatives are being reviewed and coordinated with the appropriate community planning groups. Pending timely approval via that process, project plans and specifications at the 30%, 60%, 90% levels are expected to be completed in July, September, and December of 2011, respectively. The Final Design is expected to be completed in February 2012.

In 2008-2009, the City of San Diego, in collaboration with other ASBS dischargers in the region, conducted extensive monitoring at the Avenida de la Playa outfall. They monitored pollutant loading from the watershed during storm events in the watershed and then compared the results to pollutant levels in the ocean receiving waters. The water quality work was done concurrently with evaluations of toxicity and biological community assessments to determine the potential impact to the protected resources of the ASBS from urban runoff. In 2009-2010, the City conducted additional assessments at Avenida de la Playa, assessing how the pollutant concentrations change over the course of a storm in the watershed (i.e, pollutograph) and in the ocean receiving waters. The objective was to determine the duration of potential toxic impacts to ASBS biota during a storm event. In 2010-2011, these studies were followed by extensive laboratory toxicity evaluations designed to mimic in situ conditions. These experiments were coupled with biological assessments of the rocky intertidal biota for a comprehensive assessment of the true impacts to the ASBS beneficial uses from storm water runoff.

### [Existing Data & Studies](#)

The following studies have been completed prior to September 2011:

- La Jolla Shores Coastal Watershed Management Plan (including receiving water assessment) (May, 2007)
- ASBS Stormwater Sediment Evaluation – Phase I (December, 2007)
- ASBS Stormwater Sediment Evaluation – Phase II (June, 2008)
- Bight '08 Regional ASBS Receiving Water Monitoring (June, 2009)
- ASBS Compliance Monitoring (June, 2010)
- ASBS Rocky Intertidal Investigation (expected June, 2011)
- TetraTech, Preliminary Drainage Analysis. Prepared for The City of San Diego, May 2010.
- TetraTech, Stormwater Pipe Preliminary Analysis. Prepared for The City of San Diego, October 2010.
- TetraTech, Avenida de la Playa Storm Water Alternative Analysis, November 2010

These documents are contained on a supplementary CD that was submitted as part of this grant proposal.

### [Project Map](#)

See attachment: Att#3\_SWF\_Avenida de la Playa\_WorkPlan\_3\_of\_Total\_3

### Project Specifics

Project	Geographic Location	Project's Relationship to SPFC
<i>Avenida de la Playa Storm Drain Upgrades and Dry Weather Diversion</i>	City of San Diego, CA. La Jolla Shores in ASBS 29. Latitude: 32.85450 Longitude:-117.25901	The State Plan of Flood Control (SPFC) is defined as the facilities, lands, programs, conditions, and mode of O&M for the State-federal flood protection system in the Central Valley region of California. The proposed <i>Avenida de la Playa Storm Drain Upgrades and Dry Weather Diversion</i> project is in San Diego County and has no connection geographically or otherwise with the SPFC

### Project Timing and Phasing

This is not a multi-phased project. It can be implemented as a stand-alone project and achieve the full project benefits.

## II. Proposed Tasks

### A. Direct Project Administration Costs

**Task 1 – Project Administration:** This task involves project administration, coordination, and review of all following project tasks. This task is not included within the budget for this project, because funds to support this task will come from the City of San Diego's General Fund.

**Task 2 – Labor Compliance Program:** This task includes the work necessary to establish and adopt a Labor Compliance Program (LCP) in accordance with CCR §16421-16439. The City of San Diego currently has an approved LCP in place – *City of San Diego, Purchasing & Contracting Department, LCP, LCP ID: 2003.00323*. The LCP has been approved by the California Department of Industrial Relations: <http://www.dir.ca.gov/lcp/lcplist.asp?lcptype=apprcur>. As such, no additional effort associated with the LCP will be conducted as part of this proposed Work Plan.

**Task 3 – Reporting:** In order to assess progress and accomplishments of the Project, the following submittals will be completed.

Project Administration Submittals	Date	Status
<b>AFTER September 2011</b>		
Project Assessment and Evaluation Plan (PAEP)	April 2012	Not started
Quarterly Progress Reports and Invoices	May 2012	Not started
Project Completion Report	May 2014	Not started

### B. Land Purchase Easement

A land purchase easement is not required for implementation of this Project.

### C. Planning/Design/Engineering/Environmental Documentation

**Task 4 – Assessment and Evaluation:**

The City of San Diego will carry out assessment and evaluation tasks relating to assessment and evaluation, feasibility studies, concept design, final design environmental documentation, and permitting for this project. Planning studies that have been completed or will be completed include the following:

- Strategic Plan for Watershed Activity Implementation
- Tier II and Tier III Storm Water Best Management Practices Conceptual Designs
- Avenida de la Playa Storm Drain Upgrades and Dry Weather Diversion Feasibility Studies & Concept Design and Drawings (10%)
- Avenida de la Playa Storm Drain Upgrades and Dry Weather Diversion Preliminary Engineering Report
- Preliminary Drainage Analysis
- Stormwater Pipe Preliminary Analysis
- Avenida de la Playa Stormwater Alternative Analysis

Studies that will be completed after September 2011 include:

- MND Addendum for Avenida de la Playa Storm Drain Upgrades and Dry Weather Diversion
- City of San Diego, Site Development Permit per the MND Addendum
- California Coast Commission, Coastal Development Permit per the MND Addendum
- Water Pollution Control Plan and Traffic Control Plan per the MND Addendum

Study Performed	Date	Status
<b>BEFORE September 2011</b>		
ASBS Stormwater Sediment Evaluation – Phase II	June, 2008	Completed
Bight '08 Regional ASBS Receiving Water Monitoring	June, 2009	Completed
ASBS Compliance Monitoring	June, 2010	Completed
ASBS Rocky Intertidal Investigation	Expected June, 2011	75% Complete
TetraTech Preliminary Drainage Analysis	May 2010	Completed
TetraTech Stormwater Pipe Preliminary Analysis	October 2010	Completed
TetraTech Avenida de la Playa Storm Drain Alternative Analysis	November 2010	Completed
<b>AFTER September 2011</b>		
TetraTech Avenida de la Playa Storm Drain and Low Flow Diversion Effectiveness Assessment	May 2014	Not Started
ASBS 29 Compliance and Program Progress Assessment & Environmental monitoring	May 2014	Not Started

#### Task 5 – Final Design:

This effort will be managed by the City of San Diego and contracted to a locally based Environmental Consulting Firm with expertise in both storm water drainage design and storm water pollution prevention. The Project is currently in the early stages of design and project alternatives are being reviewed and coordinated with the appropriate community planning groups. Pending timely approval via that process, project plans and specifications at the 30%, 60%, 90% levels are expected to be completed in July, September, and December of 2011, respectively. The Final Design is expected to be completed in February 2012.

Design Submittals	Date	Status
<b>AFTER September 2011</b>		

90% Design Submittal	December 2011	Not started
100% Avenida de la Playa Storm Drain Final	February 2012	Not started

This task is included within the proposed budget. A total grant funding request of \$302,459 out of an estimated budget cost of \$672,132 will be requested for this task as outlined in Attachment 4, Table 4-1 (Total Project Budget), line (c).

**Task 6 – Environmental Documentation:** Environmental documentation will consist of preparation of an *Avenida de la Playa Storm Drain Upgrades & Dry Weather Diversion Mitigated Negative Declaration*. This document will consist of an Initial Study in accordance with CEQA requirements, which will be initiated in September, 2011.

The City of San Diego will initiate environmental review upon award of funding (when the project formally becomes a project subject to CEQA). Once the Project is approved and funding is awarded, the

Project will be submitted to the City of San Diego's Development Services Department for review in conformance with CEQA. A Mitigated Negative Declaration is anticipated. The City of San Diego City Council will certify the CEQA document and approve construction.

The Project will require a City Coastal Development Permit and a Site Development Permit for work within the Sensitive Coastal Overlay, and would more than likely qualify for a Mitigated Negative Declaration (MND) concurrently processed. Once submitted to the City of San Diego's Development Services Department, it is expected the hearing will be approved 6 months - 9 months from submittal, or November. The project is expected to be performed within the mean high tide line (navigable waters of US), therefore an Army Corps 404 permit and other regulatory permit (CDFG, RWQCB) application is expected, adding 3 months to obtain agency permits or exemption once the MND is certified, potentially placing the schedule out to February 2012 for permitting.

Environmental Documentation	Date	Status
<b>AFTER September 2011</b>		
CEQA - Mitigated Negative Declaration	February 2012	In progress
Coastal Development Permit	February 2012	In progress
Site Development Permit	February 2012	In progress
US Army Corps of Engineers 404	April 2012	In progress

This task is not included within the proposed budget, because funds to support this task will be sourced from the City of San Diego's Watershed Capital Improvement Projects budget.

**Task 7 – Permitting:** No completed and approved permitting will be required for this Project prior to initiation of the Grant Agreement (September 2011). Prior to construction, a Water Pollution Control Plan by the approved contractor will be prepared by September 2012 to ensure compliance with the municipal storm water permit construction mandates. A Traffic Control Plan will also be prepared by September 2012 to ensure compliance with the City of San Diego Right-of-Way Construction Ordinances and regulations and to mitigate potential traffic impacts and conflicts.

As the project is expected to be performed within the mean high tide line (navigable waters of US), an Army Corps 404 permit and other regulatory permit (CDFG, RWQCB) application is expected, adding 3 months to obtain agency permits or exemption once the MND is certified, potentially placing the schedule out to February 2012 for permitting. This task is not included within the proposed budget, because funds to support this task will be sourced from the City of San Diego's Watershed Capital Improvement Projects budget.

Permit	Approval Date	Status
<b>AFTER September, 2011</b>		
San Diego Regional Water Quality Control Board – CWA Section 401 Water Quality Certification	April 2012	In progress

CEQA - Mitigated Negative Declaration	February 2012	In progress
U.S. Army Corp of Engineers – CWA Section 404 Permit Nationwide Permit	June 2012	In progress
City of San Diego – Site Development Permit	February 2012	In progress

#### D. Construction/Implementation

**Task 8 – Construction Contracting:** Construction contracting for this project will include advertisement for bids in May 2012, awarding the final contract award in September 2012, and finalizing the Notice to Proceed in October 2012. This task is not included within the proposed budget, because funds to support this task will be sourced from the City of San Diego’s Watershed Capital Improvement Projects budget.

**Task 9 – Construction:** All construction for the project will occur after the grant award takes place (after September, 2011).

This proposal consists of the following construction elements:

- Replace the entire length (635 linear feet) of existing twin 51-inch-diameter pipes with dual 51-inch-high by 90-inches-wide reinforced concrete box culverts.
- Replace approximately 750 linear feet of 72-inch diameter pipe between Camino del Sol and Paseo del Ocaso with 72-inch-high by 72-inch-wide reinforced concrete box culverts.
- Replace the existing outfall structure with a new 25-foot by 40-foot outfall structure to accommodate a 70-foot-long weir.
- Install hydrodynamic separators upstream to capture trash and debris before it enters the storm drain system
- Install a new dry weather diversion system to divert nuisance flows to the nearby sanitary sewer system and prevent stagnation

#### *Construction Building Material and Computational Methods*

##### *Storm Water Conveyance*

In the current selected design defined in the TetraTech Avenida de la Playa Storm Drain Alternative Analysis memo (November 2010), pipelines and weir structures have been sized to allow approximately 1 foot of surcharge at the connecting structures. Structures under surcharge conditions will require sealed lids to prevent storm water from discharging to the surface. The pipe is assumed to be a smooth-bore pipe and have been designed for a minimal cover condition. Additionally, manholes with formed channels will be included at all connecting structures to minimize head-loss through the structure. The outfall structure configuration includes a weir of varying length with a low flow outlet.

Normal sand elevation was estimated based upon the topographic lines provided by the City as part of electronic drawings of existing conditions. The maximum allowable weir length was assumed to be 70 feet based on practical size limits of a square shaped outfall structure with an equivalent weir length on three sides. The side of the structure facing inland will be a solid wall in order to protect the pipe connection. The low flow outlet is sized to have a 24-inch diameter opening with a “tide-flex” check valve to prevent reverse flow and sand intrusion into the outfall structure. A notch in the weir above the low flow outlet will be included to flush any sand that may have accumulated near the low flow outlet. An interior trash screen will be provided that extends across the full interior width and height of the outlet structure, providing the maximum possible area for trash collection. The top of the structure will be at elevation 8 feet NGVD.

An effective “tide-flex” check will be included in the final design to prevent sediment intrusion, while allowing discharge during storm events. Valve selection is highly dependent on available head and location of the outfall structure along the beach; for this reason, the low flow outlet was not included in the alternative hydraulic analysis. The full capacity of the low flow outlet represents a small portion of the total discharge from the outfall structure

when compared to the weir. The valve selection and analysis will occur as part of the final design.

The invert elevation of the existing pipeline was assumed to be 0.5 feet NGVD at the existing outfall structure. The invert elevation was assumed to be 1.8 feet NGVD at the connection with the 72-inch-diameter pipeline, located at the intersection of Avenida de la Playa and Camino del Sol. The pipe elevation assumptions were based on as-built record drawings and limited topographic mapping.

The maximum allowable storm drain width is 15 feet from the location of other utilities in the right of way. This assumed storm drain width under Avenida de la Playa is limited by a sanitary manhole located approximately 120 feet west of Camino del Oro. Relocating the sanitary manhole would allow the pipe width to be increased to 20 feet. This Project maximizes the pipe size based on the physical space available under Avenida de la Playa. Space for additional offline underground storm water detention storage was analyzed, but is not available in this area. A storage volume of 45 acre-feet would be required to reduce the 6-hour, 100-year design event to a peak flow of 130 cfs to match the capacity of the existing twin 51-inch diameter pipes.

This Project will include an overflow structure designed to address larger storm events. Adding an overflow structure will allow conveyance of excess flow in the storm drain system to discharge along the Avenida de la Playa roadway in an efficient and directed manner. During final design, the roadway will be analyzed to maximize storm water conveyance capacities. The final design will also address the transition from Avenida de la Playa to the beach access ramp, which will include armoring and dissipation to minimize erosion along the beach surface.

#### *Continuous Deflective Separator Units*

The elimination of trash from the storm drain system is critical to maintaining the maximum capacity of the outfall structure. Under the current configuration, trash is collected within the outfall structure before discharging into the ASBS. To prevent trash from clogging the outfall structure and reducing discharge capacity, 10 hydrodynamic separators will be installed upstream to capture trash and debris before it enters the storm drain system.

CONTECH Construction Products, Inc. has supplied hydrodynamic separators such as the Continuous Deflective Separator (CDS) unit for CALTRANS and other California municipality projects. Offline CDS units are often the most cost-effective, as they are relatively easy to install and yet treat a large drainage area. Since the majority of trash in the watershed is usually included as part of the first flush of storm event, CDS units can be sized to treat the 1" storm event (first flush) and still capture the majority of trash in the watershed. Based on typical watershed characteristics for Avenida de la Playa, a large, offline CDS unit that is capable of treating 30 cfs could treat approximately 50 acres. Since the specific source areas and volume of trash are unknown, a phased approach will be taken for installation of these units. Under currently estimated rates available from the manufacturer, the CDS unit would need to be cleaned out twice per year. The outlet structure would also require maintenance, as it would be screened to collect trash not captured by the CDS units during larger storm events.

The proposed five (5) offline CDS units will require a 10-foot diameter manhole structure attached to the drainage pipe using an 8-foot by 16-foot box structure. The manhole structure will extend 13 feet below the pipe invert to act as a vault for trash storage.

#### *Construction Tasks*

Construction tasks for this project will include three subtasks:

- **Subtask 9.1 Mobilization and Site Preparation:** This subtask includes mobilization and site preparation. This subtask envisions a payment to the contractor to reimburse upfront and onetime costs including, but not limited to, items such as bonds, insurance, time spent on employee and/or subcontractor coordination, equipment rental, and material purchases. The subtask could include all costs and activities that must be undertaken in order to make sure that construction progresses quickly and efficiently before construction actually begins. Site preparation will include demolition of the concrete (AC) pavement and base and concrete and gutter. Disposal and hauling activities are also included.
- **Subtask 9.2 Project Construction/Implementation:** This subtask includes installation of porous pavement, which includes laying the base and concrete. Portland Concrete Cement (PCC) sidewalk, curb and gutters will also be installed, utility rerouting and replacement, as well as the planter areas in the public right-of-way and the new storm drains and outfalls, CONTECH hydrodynamic separator units, manhole and all required appurtenances. This subtask also includes activities for erosion and traffic control. The contractor will be required to submit for approval, and implement during construction, erosion and traffic control measures in order to comply with City of San Diego standards and minimize water quality impacts and traffic hazards to include but not limited to an approved Traffic Control Plan and Storm Water Pollution Prevention Plans.
- **Subtask 9.3 Performance Testing and Demobilization:** Materials, install devices and equipment as well as improvements in the right-of-way will be tested prior to acceptance. The storm water conveyance improvements, flow equalization systems, outfall and CDS units shall be tested and verified for proper operation and installation during the warranty period over one winter storm cycle prior to acceptance. Planted vegetation shall be maintained and verified established before acceptance and full construction site demobilization. This task also includes the post construction effectiveness monitoring and including of the results and findings in a final project report and ASBS 29 Ocean Plan compliance monitoring reports.
  - **Subtask 9.3.1**
    - This task includes monitoring the effectiveness of the *Avenida de la Playa Storm Drain Upgrades and Dry Weather Diversion* project to determine the extent to which the Project will reduce flooding, improve water quality, and enhance the beneficial uses of the ASBS. To assess project effectiveness, a Before-After-Control-Impact (BACI) design will be used, wherein monitoring assessments will be made before the project is initiated and after construction is completed. The assessments will take place during dry weather conditions, to assess the effectiveness of the dry weather diversion, and during wet weather conditions, to assess changes in flooding impacts, water quality, and trash removal.
    - During dry weather, the existing conditions of the Avenida de la Playa storm drain and the outfall will be assessed by monitoring flow and collecting samples for water chemistry and bacterial analyses. Several samples will be collected to allow for a robust analysis of existing conditions prior to project completion. A thorough visual inspection of the outfall with photo-documentation of pre-construction conditions will also be conducted. After the project is completed, the sampling protocol will be repeated for comparison to pre-construction conditions. Concentration and load reductions will be calculated from constituent concentrations and flow measurements to determine the effectiveness of the dry weather diversion.
    - During wet weather, pre-construction assessment of flow, water quality (including trash), and extent of flooding will be conducted. Pre-construction monitoring will consist of pollutograph monitoring, where discrete samples are taken over the course of a storm event and analyzed for bacteria and chemical constituents. The extent of flooding will be documented through visual observations and photodocumentation and by recording the area of inundation on a site map. The protocol will be repeated during a similar-sized storm after construction is completed and the data sets will be compared to determine the effectiveness of the project in reducing flooding, removing trash, and improving water quality. The

monitoring will follow Surface Water Ambient Monitoring Program and ASBS Special Protections guidelines to ensure that the results are statistically viable and scientifically defensible. After the assessment is completed, a report will be prepared documenting the results of the study. The report will be submitted to the grantors and applicable resource agencies for review, and then finalized after incorporating reviewer comments. These data will be compared and assessed to other effectiveness assessment data collected in the watershed for other projects to assist in the overall assessment of pollution reduction and source abatement projects

#### E. Environmental Compliance/Mitigation/Enhancement

**Task 10 – Environmental Compliance/Mitigation/Enhancement:** Before construction of this Project, a CEQA review will be conducted by the City (see Task 6) and mitigation measures will be determined and incorporated into the Project, if necessary. The costs associated with these tasks will not be included within the proposed budget, because funds to support this task will be sourced from the City of San Diego's Watershed Capital Improvement Projects budget.

#### F. Construction Administration

**Task 11 – Construction Administration:** This task involves administration, coordination, and review of the construction contract and all other related construction tasks. This task is not included within the proposed budget, because funds to support this task will be sourced from the City of San Diego's Watershed Capital Improvement Projects budget.

#### G. Other Costs (Assessment & Monitoring)

**Task 12 – Other Costs:** No other tasks or costs are included in this Project. All other task and costs included within the proposed budget will be sourced from the City of San Diego's Watershed Capital Improvement Projects budget.

#### H. Construction/Implementation Contingency

**Task 13 – Construction/Implementation Contingency:** Contingency is typically estimated for City of San Diego Capital Improvements Projects in the public right-of-way and on public facilities at 15% of the total construction cost, less mobilization, erosion control, and traffic control lump sum costs

Avenida de la Playa Storm Drain  
 Figure 3  
 Region Map



**ASBS Drainages**

**Threat Level**

- High
- Low - Med High

- Storm Drains
- ▭ LJ Shores Watershed Boundary
- ▭ ASBS No.31
- ▭ ASBS No. 29

