



**CITY OF PACIFICA
COUNCIL AGENDA SUMMARY REPORT**

9/26/2022

SUBJECT:

Study Session #2 regarding the 2022 Storm Drainage Master Plan

RECOMMENDED ACTION:

Receive an informational presentation regarding the status of the 2022 Storm Drainage Master Plan following the Study Session held on July 11, 2022 and provide comments and direction to City Staff.

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BACKGROUND/DISCUSSION:

In 2012, the City hired Carollo Engineers to develop a Storm Drainage Master Plan that modeled the City's existing storm drainage system. The 2012 plan identified several key infrastructure improvement projects including new storm drain lines on Linda Mar Boulevard, new storm drain lines on Avalon Drive and Edgemar Avenue, and a new storm drain pump station located in the vicinity of Clarendon Road and Lakeside Avenue, adjacent to the Sharp Park Golf Course. Although City staff sought funding for these projects, no funding was identified, and the projects were not constructed.

A Study Session with Council was held on July 11, 2022 regarding the 2022 Storm Drainage Master Plan (2022 SDMP). This is also being developed by Carollo Engineers and significant outreach to the community was conducted through social media to allow for input from the public. One of the purposes of the Study Session was to update Council on the progress of the 2022 Storm SDMP. Other objectives for the Study Session were to obtain the Council's comments to help finalize the 2022 SDMP. Topics that were discussed at the July 11, 2022 Study Session included flow monitoring, hydraulic modeling, public outreach efforts, design storms, and potential impacts from climate change.

Below are follow-up topics of interest that were raised by City Council during that Study Session, along with staff corresponding responses:

1.) 100-Year Storm Design:

Council requested that the SDMP discuss the 100-year design storm. The 100-year storm is also called a 1%/year chance storm event. The SDMP report will identify the volume of rain associated with the 100-year event per Council request (including the existing 100-year event and the future event with climate change impacts). As is the case for most municipalities, the City's storm drainage system is not designed to accommodate a 100-year design storm and developing system improvements to accommodate that level of storm would be cost prohibitive, particularly considering the City's current availability of funding for storm drainage projects. Additionally, waiting to secure this high level of funding to build such a system likely would delay drainage improvements for years. The 2022 SDMP designs improvements for 50-year storm events as this is considered a robust design and best practice. Additionally, flows related to projected climate change have been included in the design calculations, providing an added factor of safety. This allows for a good balance in the design of cost versus risk.

2.) Low Impact Development (LID):

LID measures are used to reduce runoff and mimic a site's predevelopment hydrology. They retain and treat stormwater runoff using infiltration, evapotranspiration, rainwater harvesting/use or biotreatment. One such example is a bioretention basin located on Crespi Drive, adjacent to Cabrillo School. Stormwater runoff flows into the bioretention basin so that any debris from the street can settle out of the stormwater and be treated by the retention basin. Examples of LID measures will be provided during the staff presentation during the Study Session.

3.) Wastewater Treatment Plant (WWTP) Data Volumes:

The WWTP flow average between wet weather months and dry weather months is 0.84 MGD (Million gallons per day). The implementation of a sewer system infiltration and inflow (I/I) reduction program on the City's sewer system, as is proposed in the current Wastewater Capital Improvement Program, will likely reduce the amount of I/I that runs through the system and is treated at the plant. The ultimate success of I/I reduction programs varies depending on a number of factors, including the sources of I/I, and nature and extent of I/I mitigation performed. Reducing I/I into the WWTP would provide a significant benefit; however, it is not possible to accurately quantify the impact this would have on the City's storm drainage system. One of the reasons related to this is the unknown nature of where blocked I/I will flow. It may not necessarily flow to the storm drain system and may instead flow to waterways, continue as groundwater, or become surface drainage. The City continues to assess the issue of I/I in the sewer system and will also assess impacts of I/I repairs on the City's storm drain system.

Existing and Future System Analysis and Recommendations:

A temporary flow monitoring program was initiated to capture wet weather stormwater runoffs during the month of December 2021 for the SDMP. With the flow rate data captured, a hydraulic/hydrologic model was developed to understand the storm drain system's existing capacities such as allowable flood depths and to identify deficiencies. The hydraulic models were run with existing 10-year, 24-hour events and 50-year, 24-hour events which included contributions from climate change.

The 2022 SDMP was developed using 10- and 50-year storm events and allowable flood depths were evaluated for each design storm (including future increases in the 10- and 50-year design storms due to climate change). The hydraulic models for 10-year, 24-hour events and for 50-year, 24-hour events were analyzed, and the recommended improvements were classified into

three types:

- Category 1 Improvements - These projects are needed to mitigate severe flooding concerns under the 10-year and 50-year design storms. Based on the risk of severe flooding that may cause property damage, these are identified as the highest priority storm drain projects and include the Lower Linda Mar, Monterey Road, and Sharp Park Improvements.
- Category 2 Improvements - These projects are needed to address ongoing drainage issues that are considered less severe than the Category 1 improvements (i.e., areas where there is a lower potential for property damage compared to the Category 1 improvements). The project is comprised of Edgemar Avenue Improvements.
- Category 3 Improvements - Category 3 includes projects to address model simulated flooding under the 50-year design storm that have not historically been observed by City staff, nuisance drainage as well as other projects to extend storm drain infrastructure to unserved areas. Although important, delay in constructing these projects is not anticipated to cause near-term property damage. These projects could be implemented during larger utility upgrade or development projects. These projects include Madeira Drive, Rockaway Beach Avenue, and Lauren Avenue.

Preliminary Planning Level Costs:

Preliminary construction costs for the proposed improvements shown in the 2022 SDMP were developed in conjunction with Freyer & Laureta, an engineering firm specializing in storm drain improvement costing. The Association for the Advancement of Cost Engineering (AACE) defines an Order of Magnitude Estimate for master plan studies as an approximate estimate made without detailed engineering data. These are considered high-level estimates and a final detailed project design would be necessary for more accurate costing. Higher contingencies are included as part of the estimate to account for this.

These high-level project cost estimates are calculated based on a variety of elements, such as the project location, size, length, land acquisition needs, and other factors. As noted above, allowances for project contingencies (consistent with an “Order of Magnitude” type estimate) are also included in the project costs prepared as a part of this study for better cost accuracy. The proposed system improvements, capacity upgrades, and long-term maintenance plan set the foundation for the City’s storm drainage system CIP. The cost estimates presented in this study are developed from bid tabulations, cost curves, information obtained from previous studies, and Carollo Engineers experience on other projects. The costs are based on an Engineering News Record Construction Cost Index (ENR CCI).

Category 1 Improvement Construction Costs: - As noted, these projects are needed to mitigate severe flooding concerns under the 10-year and 50-year design storms. These are the highest priority projects due to the higher risk of flooding and include:

- *Lower Linda Mar Boulevard – Installation of new 30” and 36” storm drain lines on Linda Mar Boulevard and installation of larger catch basins in Arguello Boulevard and Anza Drive - approximate project cost \$5,200,000.*
- *Monterey Road – Installation of new storm drain lines and catch basins on Monterey Road. Modification may include a new storm drain line within Big Inch Creek - approximate project cost \$6,900,000.*
- *Sharp Park – Construction of a new storm drainage pump station, storm drain lines to pump station, force main, and new outfall to the Pacific Ocean - approximate*

project cost \$6,000,000.

Total Category 1 Project Costs: \$18,100,000

Category 2 Improvements - These projects are needed to address ongoing drainage issues that are considered less severe than the Category 1 improvements would experience (i.e., areas where there is a lower potential for property damage compared to the Category 1 improvements). These projects include:

- *Edgemar Avenue – Upsize existing storm drain line and adding new storm drain lines on Manor Drive, Edgemar Avenue and Avalon Drive - approximate project cost \$5,000,000*

Total Category 2 Project Costs: \$5,000,000

Category 3 Improvements - Category 3 includes projects to address model simulated flooding under the 50-year design storm that have not historically been observed by City staff, nuisance drainage as well as other projects to extend storm drain infrastructure to unserved areas. These projects include:

- *Maderia Drive – Upsize existing storm drain line from 21” to 30” for capacity - approximate project cost \$500,000*
- *Lauren Avenue – Install new 15” storm drain line on Lauren Avenue - approximate project cost \$1,200,000*
- *Rockaway Beach Avenue – Install new 15” storm line on Rockaway Beach Avenue and outfall to creek - approximate project cost \$700,000*

Total Category 3 Project Costs: \$2,400,000

Other steps that will be taken to complete the 2022 SDMP will include identifying funding options, such as grants or low interest loans, to ensure that projects can transition to the construction phase; and complete the final 2022 SDMP Report, tentatively scheduled for completion in November 2022.

ALTERNATIVE ACTION:

There are no alternative actions at this time.

RELATION TO CITY COUNCIL GOALS AND WORK PLAN:

The 2022 Storm Drainage Master Plan is consistent with the following Council adopted Goals:

- **Stewardship of City Infrastructure:** includes repairing/replacing outdated city facilities such as city hall, the libraries, fire stations, etc., improving streets, and responding to impacts of sea level rise. The 2022 Stormwater Drainage Master Plan will recommend areas in the City for improving stormwater drainage infrastructure network while taking into account the effects of sea level rise.

FISCAL IMPACT:

There is no fiscal impact as a direct result of this study session. Council approval of the Final 2022 Storm Drainage Master Plan would be presented at a later date for consideration.

ORIGINATED BY:

Public Works

ATTACHMENT LIST: