City of Santa Barbara
Parks and Recreation Department

Memorandum

DATE: April 20, 2022

TO: Creeks Restoration/Water Quality Improvement Program
Citizen Advisory Committee

FROM: Jill Murray, Water Quality Research Analyst

SUBJECT: **SOUTHERN COASTAL SANTA BARBARA CREEKS BIOASSESSMENT PROGRAM AND 2021 REPORT**

COMMITTEE DIRECTION – FOR DISCUSSION

That the Committee receive an update on the Santa Barbara Streams and Estuaries Bioassessment Program and a summary of the 2021 report.

DISCUSSION

The Creeks Advisory Committee last received a presentation on the Santa Barbara Creeks and Estuaries Bioassessment Program in May 2019. Sampling and reporting took place without pause in 2020 and 2021. Annual bioassessment reports are made available online (www.sbcreeks.com) and results are summarized in Creeks Division Water Quality Monitoring and Research Reports, also available on the Creeks Division website. The Committee has approved Annual Water Quality Research and Monitoring Plans, which have included a bioassessment component, for the past several years. At this meeting, the Committee will receive a summary of the 2021 report, with a focus on the long term variability of benthic communities and the response to restoration projects. Attached is the Executive Summary of the 2021 Bioassessment Report, prepared by the consultant, Ecology Consultants, Inc.

Bioassessment is the study of the biological community in a body of water to help evaluate the health of the habitat, including water quality. The Creeks Division Research and Monitoring Program uses bioassessment to compare the condition of different creek locations, track water quality changes over time, and follow progress of creek restoration projects. Bioassessment is also used to help understand impacts of development, climate variation, and wildfire on water quality and habitat conditions in Santa Barbara creeks.

Bioassessment can be considered the third tier of analysis for understanding water quality concerns. The first tier, water-quality sampling, measures concentrations of

specific chemicals that are known to harm or benefit aquatic organisms. The second tier, toxicity testing, measures the response of a laboratory test organism (juvenile fish, invertebrates, and/or freshwater algae) to creek water samples, thereby summing the impacts of all toxic chemicals that may be present at the time of sampling. The third tier, bioassessment, quantifies the community of benthic macroinvertebrate (BMI) organisms present in the creek to determine if water quality is impaired. Bioassessment effectively integrates the effect of potential contaminants over a long period of time. Pristine sites are known to have high numbers of sensitive organisms, such as mayflies, whereas impaired sites have a higher number of organisms, such as midges, that are known to be more tolerant of pollutants.

Since 2002, the Creeks Division has utilized the services of Ecology Consultants, Inc. to conduct the field sampling, laboratory analysis, and statistical calculations required to complete bioassessment monitoring. The results are used by the consultant to generate an Index of Biological Integrity to simplify comparisons among locations and time points. Several creek sites have been monitored every year since 2001 (the County of Santa Barbara funded the 2001 study), whereas other sites have been tested for a subset of years in response to specific research questions. For the past ten years, results from the City and County studies have been combined in one report for the South Coast. Estuarine sites were added in 2011 in order to assess the Mission Lagoon and Laguna Channel Restoration Project area.

Budget

The Creeks Division contracted with Ecology Consultants, Inc. to complete sampling and analysis at 12 creek sites and eight estuary sites in May 2021, for a total cost of $26,000. Sufficient funds exist in the Water Quality Lab Sampling account to complete the contract.

cc: Cameron Benson, Creeks Division Manager
Jill E. Zachary, Parks and Recreation Director