

**AMENDMENT TO THE MEMORANDUM OF AGREEMENT  
AMONG  
CITY OF OXNARD, COUNTY OF VENTURA, AND VENTURA COUNTY WATERSHED  
PROTECTION DISTRICT (PARTIES)  
TO PROVIDE EQUAL COST SHARING FOR HARBOR BEACHES OF VENTURA COUNTY  
BACTERIA TMDL SPECIAL STUDIES AND COMPLIANCE ACTIONS**

This Amendment ("MOA Amendment") to the Memorandum of Agreement to Provide Equal Cost Sharing for Harbor Beaches of Ventura County Bacteria Total Maximum Daily Load (TMDL) Special Studies and Compliance Actions ("MOA") is entered into effect on July 1, 2021, among the following entities: City of Oxnard ("City"), County of Ventura ("County"), and Ventura County Watershed Protection District ("District") (collectively referred to as the "Parties" and individually as a "Party").

**RECITALS**

**WHEREAS**, the MOA, attached hereto and incorporated herein by reference, was executed for cost sharing for Harbor Beaches of Ventura County Bacteria Total Maximum Daily Load (TMDL) Special Studies and Compliance Actions, effective January 1, 2018;

**WHEREAS**, the Extension No. 1 to MOA, attached hereto and incorporated herein by reference, extended the term of the MOA to December 31, 2021;

**WHEREAS**, the Parties desire to continue their support for Harbor Beaches of Ventura County Bacteria TMDL Special Studies and Compliance Actions as required by the Harbor Beaches of Ventura County (Kiddie Beach and Hobie Beach) Bacteria TMDL by extending the term of the MOA through December 31, 2022, to fund a Groundwater Special Study at Kiddie and Hobie Beaches per Southern California Coastal Water Research Project's Conceptual Work Plan dated May 18, 2021 (Special Study) provided in Exhibit C; and

**WHEREAS**, the Channel Islands Beach Community Services District (CIBCSO) may wish to join the MOA Amendment to cost share the Special Study.

**NOW, THEREFORE**, in consideration of these recitals and other consideration set forth below, it is mutually agreed by the Parties that:

1. The term of the MOA shall be extended an additional 12 months, ending on a new termination date of December 31, 2022.
2. The Parties agree to actively support the effort of Harbor Beaches of Ventura County Bacteria TMDL Special Studies and Compliance Actions during the term of the MOA Amendment by funding equal contributions of the total cost of the Groundwater Special Study at Kiddie and Hobie Beaches activities in accordance with the proposed budget in Exhibit A.
3. The Parties agree to carry over a balance of \$158,434.38 (one hundred fifty-eight thousand four hundred thirty-four dollars and thirty-eight cents) from the existing MOA

and MOA Extension No.1 to cover a portion of the Fiscal Year (FY) 2021-2022 Contribution, as documented in Exhibit A.

4. Each of the Parties agrees to submit payment in accordance with the proposed payment schedule in Exhibit A, within 90 calendar days of receipt of the invoice from the Lead Agency, to fund special study activities through December 31, 2022.
5. Channel Islands Beach Community Services District (CIBCSD) may become a party to this MOA Amendment by giving notice in the manner provided in Exhibit B, which is attached hereto and incorporated herein by this reference, to all Parties. If CIBCSD elects to become a party to this MOA Amendment, CIBCSD agrees to pay the Lead Agency, County of Ventura, for groundwater special study not exceeding \$20,000.00 (twenty thousand dollars) in Fiscal Year (FY) 2021-2022 as shown in Exhibit A and based on the cost allocation formula and the total estimated cost, attached hereto and made part of the MOA Amendment by this reference. If CIBCSD joins this MOA Amendment after the other Parties have already paid the Lead Agency based on the calculation without CIBCSD, within ninety (90) calendar days of receipt of CIBCSD's payment, the Lead Agency shall submit to each Party a payment for the difference between what that Party actually paid and what that Party owes once CIBCSD is a party to the MOA Amendment.
6. Any notice pursuant to this MOA Amendment shall be made by certified mail or registered letter, return receipt requested, or by overnight courier to all Parties at the following addresses:

**To the Lead Agency —**

Ewelina Mutkowska  
County of Ventura  
800 S Victoria Avenue  
Ventura, California 93009-1610  
Phone: (805) 645-1382

**To the City of Oxnard —**

Jan Hauser  
City of Oxnard  
6001 Perkins Road  
Oxnard, CA 93033  
Phone (805) 271-2205 or (805) 844-5501

**To the Ventura County Watershed  
Protection District —**

Arne Anselm  
VCPWA-Watershed Protection  
800 S Victoria Avenue  
Ventura, California 93009-1610  
Phone: (805) 654-3942

**To the Channel Islands Beach  
Community Services District —**

Pete Martinez  
CIBCSD  
353 Santa Monica Dr  
Oxnard, CA 93035  
Phone: (805) 985-6021

7. All Obligations of the Parties under the MOA shall remain full force and effect unless modified in this MOA Amendment.

**In Witness Whereof**, the Parties have executed this MOA Amendment on the date on the date opposite their respective names.

**SIGNATURE PAGE**

By the authorized signatures below the Parties agree to the MOA Amendment and agree to provide for equal cost sharing for the Groundwater Special Study at Kiddie and Hobie Beaches through December 31, 2022.

**City of Oxnard**

\_\_\_\_\_  
Dan Wilhite, Purchasing Manager

Date: \_\_\_\_\_

**APPROVED AS TO FORM:**

\_\_\_\_\_  
Stephen Fischer, City Attorney

Date: \_\_\_\_\_

**County of Ventura, Ventura County Public Works Agency**

\_\_\_\_\_  
Jeff Pratt, P.E., Director

Date: \_\_\_\_\_

**Ventura County Public Works Agency - Watershed Protection**

\_\_\_\_\_  
Glenn Shephard, P.E., Director

Date: \_\_\_\_\_

### Exhibit A

#### Project Cost

Fiscal Year	Consultant Services Cost	Lead Agency 2% Administration Fee	Total Cost	Cost Per MOA Party (City, County, VCPWA-WP)	Cost Per MOA Party (If CIBCSD Joins MOA Amendment; City, County, VCPWA-WP, CIBCSD*)
2021-2022	\$345,000.00	\$6,900.00	\$351,900.00	\$117,300.00	\$87,975.00
2022-2023	\$20,000.00	\$400.00	\$20,400.00	\$6,800.00	\$5,100.00
<b>Total Groundwater Special Study</b>	<b>\$365,000.00</b>	<b>\$7,300.00</b>	<b>\$372,300.00</b>	<b>\$124,100.00</b>	<b>\$93,075.00</b>

#### Cost Sharing Distribution and Payment Schedule

MOA Party	Total Cost	MOA Balance	Additional Contributions	FY 2021-2022 Contributions	FY 2022-2023 Contributions
County of Ventura	\$124,100.00	\$52,811.46	\$71,288.54	\$64,488.54	\$6,800.00
City of Oxnard	\$124,100.00	\$52,811.46	\$71,288.54	\$64,488.54	\$6,800.00
VCPWA-Watershed Protection	\$124,100.00	\$52,811.46	\$71,288.54	\$64,488.54	\$6,800.00
<b>Total</b>	<b>\$372,300.00</b>	<b>\$158,434.38</b>	<b>\$213,865.62</b>	<b>\$193,465.62</b>	<b>\$20,400.00</b>

#### Cost Sharing Distribution and Payment Schedule (if CIBCSD Joins MOA Amendment)

MOA Party	Total Cost	MOA Balance	Additional Contributions	FY 2021-2022 Contributions	FY 2022-2023 Contributions
County of Ventura	\$117,433.34	\$52,811.46	\$64,621.88	\$57,821.88	\$6,800.00
City of Oxnard	\$117,433.33	\$52,811.46	\$64,621.87	\$57,821.87	\$6,800.00
VCPWA-Watershed Protection	\$117,433.33	\$52,811.46	\$64,621.87	\$57,821.87	\$6,800.00
CIBCSD	\$20,000.00	\$0	\$20,000.00	\$20,000.00	\$0
<b>Total</b>	<b>\$372,300.00</b>	<b>\$158,434.38</b>	<b>\$213,865.62</b>	<b>\$193,465.62</b>	<b>\$20,400.00</b>

**Exhibit B**

**Notice to All Parties of Channel Island Beach Community Services District's Election to  
Join the MOA Amendment**

Date of Notice: \_\_\_\_\_

Pursuant to Section 5 of the MOA Amendment titled "Addendum to the Memorandum of MOA Amendment Among City of Oxnard, County of Ventura, and Ventura County Watershed Protection District (Parties) to provide equal cost sharing for Harbor Beaches of Ventura County Bacteria TMDL Special Studies and Compliance Actions", entered into effect on July 1, 2021 (MOA Amendment), which is incorporated herein by this reference, the Channel Islands Beach Community Services District (CIBCSD) elects to join the MOA Amendment. In joining the MOA Amendment, CIBCSD agrees to all provisions of the MOA Amendment, including all of the benefits and burdens bestowed upon CIBCSD due to the provisions of the MOA Amendment, and CIBCSD asserts that it shall comply with all provisions in the MOA Amendment. Thus, CIBCSD shall become a party to the MOA Amendment such that the term "Party" used therein shall apply to CIBCSD and the term "Parties" used therein shall include CIBCSD.

The date whereby CIBCSD shall join the MOA Amendment, which in any case shall be at least fifteen (15) calendar days after the date of notice listed above, is: \_\_\_\_\_.

To effectuate this election, CIBCSD shall provide this Notice to all other parties to the MOA Amendment in the manner required by Section 6 of the MOA Amendment.

By \_\_\_\_\_

Date: \_\_\_\_\_

APPROVED AS TO FORM AND PROCEDURE:

By \_\_\_\_\_  
Attorney

**Exhibit C**

Conceptual Work Plan for

2021 Groundwater Study at Kiddie and Hobie Beaches, Channel Islands Harbor, California

Prepared by Southern California Coastal Water Research Project  
Dated May 18, 2021

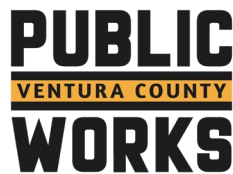
# **2021 Groundwater Study at Kiddie and Hobie Beaches, Channel Islands Harbor, California**

## **Conceptual Work Plan**

Prepared by  
Southern California Coastal Water Research Project



Prepared for  
  
City of Oxnard  
County of Ventura  
Ventura County Public Works Agency - Watershed Protection



May 18, 2021

## Background

During the winter of 2017-2018, SCCWRP performed a study at Kiddie and Hobie Beaches immediately following rainstorms and found moderate to high levels of fecal indicator bacteria (FIB), with water quality exceedances ranging from 10-64% of the samples taken at the beaches and offshore sites. We also measured moderate to high human-associated molecular marker concentrations across storms ( $\log_{10}$  1.5-2.7 gene copies per 100ml) with similar concentrations at beach sites and offshore sites at both beaches. We saw no gradient of bacteria between the shoreline and directly offshore of the beach, nor did we see a gradient across the beach. The high and consistent levels of FIB and human fecal marker concentrations in the water suggested contributions from both local and remote sources. High levels of FIB (73-100% exceedance) and a wide range of human-associated genetic marker concentrations (BD-  $\log_{10}$  2.5 copies per 100ml) observed in the pump station sump at Kiddie Beach suggest the storm drain outfall is likely a point source for FIB and human marker, but due to the relatively small area it serves is unlikely to be the primary source of human marker seen across and offshore of the beaches.

The persistence of FIB and human fecal marker concentrations in the water also suggested contributions from local and remote sources of contamination. Although levels of human marker in the pump station sump at Kiddie Beach suggest the storm drain outfall is a likely point source of human contamination, the concentrations in the sump were not high enough to explain the levels of human marker seen across and offshore of the beaches. Consistent human marker levels in the first samples following rain across the beach may also suggest a common source at these sites, possibly exfiltration of contaminated groundwater or contamination flowing to the ocean from the Upper Harbor.

A source tracking study in the storm drains which discharge to Kiddie and Hobie Beach performed during 2019-2020 found little flow or contamination during dry weather. In wet weather, high FIB concentrations were measured throughout the storm drains. The study also measured widely distributed, but varying detections of microbial human fecal markers and chemical markers associated with sewage contamination. This suggests distributed sources of human fecal contamination, including contaminated groundwater.

This Study Plan updates Task 1 from the Conceptual Work Plan

The main goals of this study are:

- (1) Determine the average load of FIB and human fecal markers being discharged to Kiddie and Hobie Beach during rain storms from the San Nicholas Pump Station and from the street drain at the North end of Hobie Beach.
- (2) Confirm or rule out the presence of human sewage in stormwater conveyances, and in combination with goal 1, provide actionable information to managers as to the location of sources of human fecal contamination in the storm drain system which feeds the pump station.
- (3) Confirm or rule out the presence of human sewage in groundwater hydrologically connected to Kiddie and Hobie Beach to provide further information as to the location of the sources of human fecal contamination to the storm drain system and especially to the pump station vault.



## Approach

The main strategy for the study is to determine FIB and human molecular marker loading from the various discharges into the Harbor. In addition, we will also measure chemical sewage markers as a confirmation of human fecal contamination in the discharges. Together these results will provide a better understanding of the magnitude of human fecal contamination and allow managers to prioritize remediation efforts.

Measuring the FIB and molecular human source tracking marker concentrations, as well as the chemical sewage markers in the discharges will require different approaches for the storm drains and the groundwater. The main discharge to Kiddie and Hobie Beaches is the San Nicholas Pump Station, which discharges large parcels of stormwater very quickly through a largely inaccessible pipe, while the smaller discharge at the northern end of Hobie Beach is completely submerged at high tide. Grab samples will be taken at regular intervals over the first 12 hours of the storm from tributaries in the storm drain system which flow to the pump station to determine if there is a point source of microbial contamination. Grab samples will also be taken over the same intervals from the smaller discharge N of Hobie Beach, while composite samples will be taken from the pump sump. FIB and genetic source tracking marker concentrations, coupled with flow data, will be used to determine loading from the pump station.

For groundwater, the approach will rely on a picket line of groundwater wells between Kiddie and Hobie Beach and the watershed and storm drains discharging to the beach. The wells will be drilled deep enough to account for changing levels over the tidal cycle and to provide sampling access to both the shallow freshwater and deeper saltwater. Grab samples from at least 2 depths in the wells will be taken at regular intervals and the sampling effort will be focused around the 12-hour period starting with the ebbing to low tide finishing with the high tide, to capture the greatest movement of groundwater in the watershed.

Concentrations of total coliforms, *E.coli*, *Enterococcus*, and genetic source tracking markers specific to human contamination will be measured in all samples. Other genetic source tracking markers specific to birds, dogs, or cattle, may be employed to detect non-human sources if necessary. Concentrations of chemical sewage markers from pharmaceutical and personal care products, such as ibuprofen, sucralose, and carbamazepine, will be measured in the discharge samples and groundwater samples.

## Specific Tasks

### Task 1 a-c. Dry and Wet Weather Microbial Source Tracking and Loading in the Discharge to Kidde and Hobie Beach

In Tasks 1a and 1b, FIB, molecular source tracking marker, and chemical sewage marker concentrations and loading from discharges to Kiddie and Hobie Beach will be measured. Three storms will be targeted for the first task of the study, with a minimum storm threshold of  $>0.2$ ". Samples will also be taken from 8 sites in the catchment to determine if there are individual "hot" tributaries that that can be targeted for mitigation (Fig 1).

Flow from the pump-house will be calculated using the pump rate and elapsed pumping time. Concentrations measured in the pump house during the storm will then be used to determine loading. At the smaller discharge to the North of Kidde Beach only the initial load will be calculated. Due to the small size of this drain, it is assumed that after the initial flushing of the drain and associated vault, a negligible amount of additional microbial contamination is added to the harbor. Grab samples will be taken during the first storm to confirm this assumption.

At all sites, grab samples will be collected the day prior to rain. At the pump house time-weighted samples will be composited at regular intervals until the pump discharges into the harbor. At that point, the receptacle will be replaced, and a new composite will begin. Combining the composite concentrations with the pump rate and run times will generate a loading calculation.

Grab samples will be collected at the onset of rain and then every 3 hours during the first 12 hours of rain at the tributary sites and the North harbor drain. At the North harbor drain, this will provide a confirmation that it is not an appreciable source and that the estimate of loading is adequate. In the storm drain tributary sites, these samples will identify legs with high concentrations throughout the main part of the storm as well as determine whether there are areas with consistently high contamination storm-to-storm.

Tasks 1a-c will produce a technical memo on the concentrations of FIB, molecular source tracking markers, and chemical source tracking in the catchment leading to the pump and loading estimates from the pump and the N Hobie Beach drain. Point sources identified in the catchment will be highlighted for management action.

## Task 1 d-f. Dry Weather Microbial Source Tracking in Groundwater at Kidde and Hobie Beach

### Task

In Tasks 1d and 1e, FIB, molecular source tracking marker, and chemical sewage marker concentrations and loading from groundwater hydrologically connected to Kiddie and Hobie Beach. Two spring tide events will be targeted. Groundwater samples will be collected at up to 6 wells (Fig. 2) from two depths which will vary over the tidal cycle.

The wells are spaced to form a picket line that should capture the spatial variability in the groundwater discharging to Kiddie and Hobie Beach (Fig 2). The wells on each end of the line are placed next to the main storm drain near drain 1 and near Drain 9. Two of the remaining wells are placed across Kiddie Beach and two across Hobie Beach in Tasks 1a-b. This should capture the spatial variation in the groundwater connected to the storm drains, the pump station vault, the drain 9 vault, and the beaches.

The groundwater wells will be fitted with a casing that allows groundwater to flow uninhibited through the well. Prior to the sampling events, groundwater depth and salinity will be measured over a spring tide cycle in order to determine the placement of sampling devices. Groundwater samples will be collected during the period starting with the ebbing to low tide, continuing through the flow tide and finishing at the high tide. Samples will be collected every 2 hours during this cycle from two depths at each time point. The depths will be adjusted based on the groundwater depth at each stage of the tidal cycle sampled. This will capture the shallower fresh water and the deeper mixed brackish water, which will be identified by salinity.

Task 1d-f will produce a technical memo on the concentrations of FIB, molecular source tracking markers, and chemical source tracking in the catchment leading to the pump and loading estimates from the pump and the N Hobie Beach drain. Point sources identified in the catchment will be highlighted for management action.

### Analysis Methods

Salinity and water temperature will be measured using a conductivity salinity probe and depth sensor. Total coliforms, *E. coli*, and *Enterococcus* will be measured using IDEXX technology: Colilert-18 and Enterolert. We will use digital PCR (dPCR) to quantify the *Enterococcus* genes and the molecular source tracking markers (Steele et al. 2018).

Chemical sewage markers such as carbamazepine (an anticonvulsant pharmaceutical), sucralose (an artificial sweetener), and ibuprofen (an anti-inflammatory pharmaceutical) will be extracted from the stormwater and measured using the high-performance liquid chromatography/mass spectrometry/mass spectrometry (HPLC MS/MS) approach (as in EPA Method 1694 or similar).

### Summary of Products and Schedule

The following table summarizes the proposed products and deadlines for each task. The schedule assumes work on tasks 1d-f will begin July 2021

Task	Product	Date
Task 1a-c: Kiddie and Hobie Beach	Sampling	December 2019
Discharge Tracking	Laboratory Analysis	April 2020
	Interim memo of Results	August 2020
Task 1d-f: Kiddie and Hobie Beach	Sampling	November 2021
Groundwater study	Laboratory Analysis	February 2021
	Interim memo of Results	June 2022

## Cost Schedule

The following table summarizes the estimated lump sum costs for each task. Line item budgets can also be provided.

<b>Task 1 Kiddie and Hobie Beach Microbial Source Tracking</b>	<b>Total Cost</b>
Task 1a: Kiddie and Hobie Beach Discharge Microbial Source Tracking	\$230,000
Task 1b: Chemical Sewage Marker Confirmation	\$225,000
Task 1c: Data Synthesis and Reporting	\$15,000
Task 1d: Kiddie and Hobie Beach Groundwater Well Microbial Source Tracking and Groundwater analysis	\$195,000
Task 1e: Chemical Sewage Markers in Groundwater Well	\$75,000
Task 1f: Data Synthesis and Reporting	\$25,000
<b>Initial Budget for Task 1</b>	<b>\$470,000</b>
<b>Estimated Budget Spent</b>	<b>-\$240,000</b>
<b>Estimated Budget Remaining</b>	<b>\$230,000</b>
<b>Additional Budget Requested</b>	<b>\$65,000</b>
<b>Total for Expanded Task 1</b>	<b>\$575,000</b>

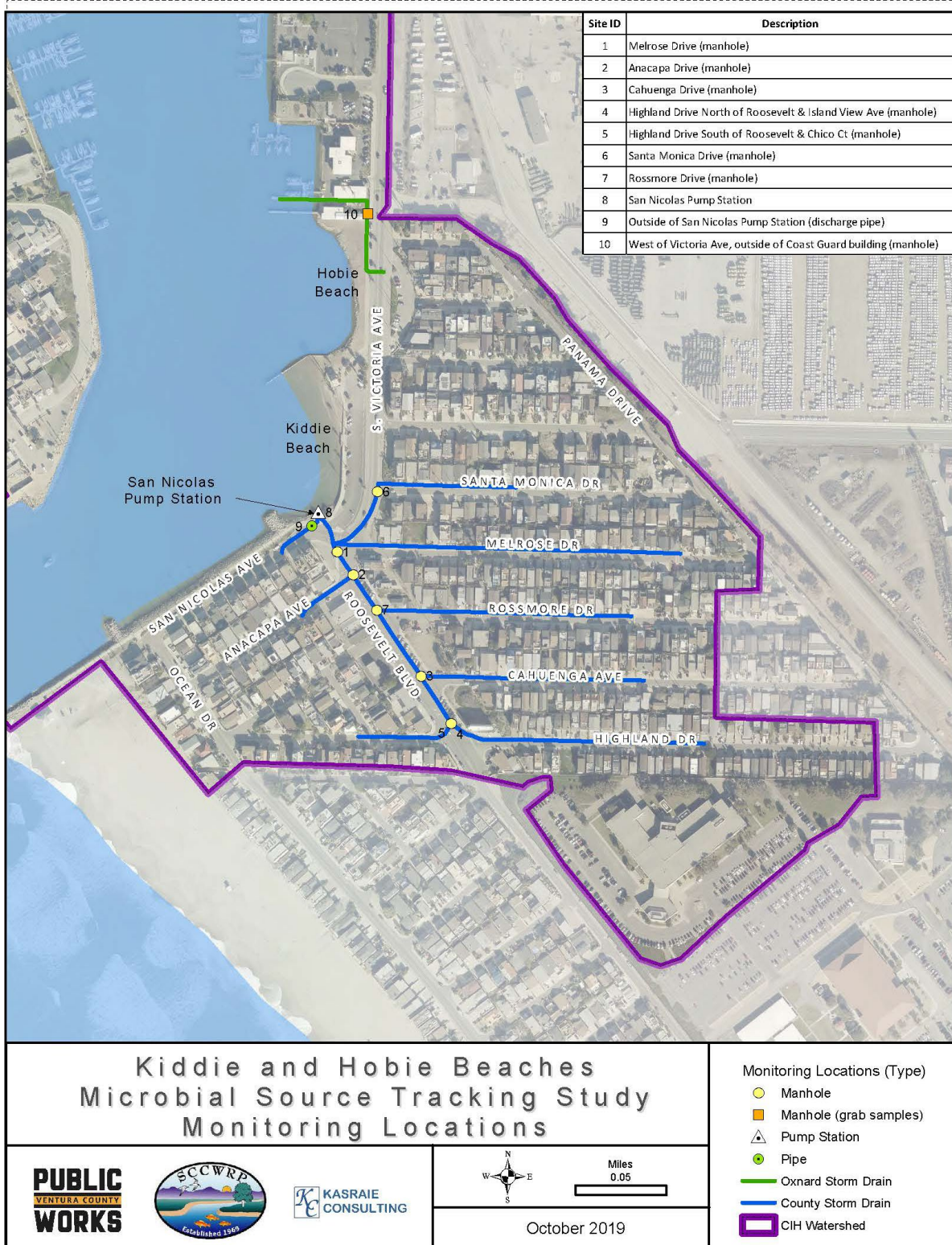


Figure 1. Sampling Locations Selected for Task 1a-c “Kiddie and Hobie Beach Discharge Tracking”



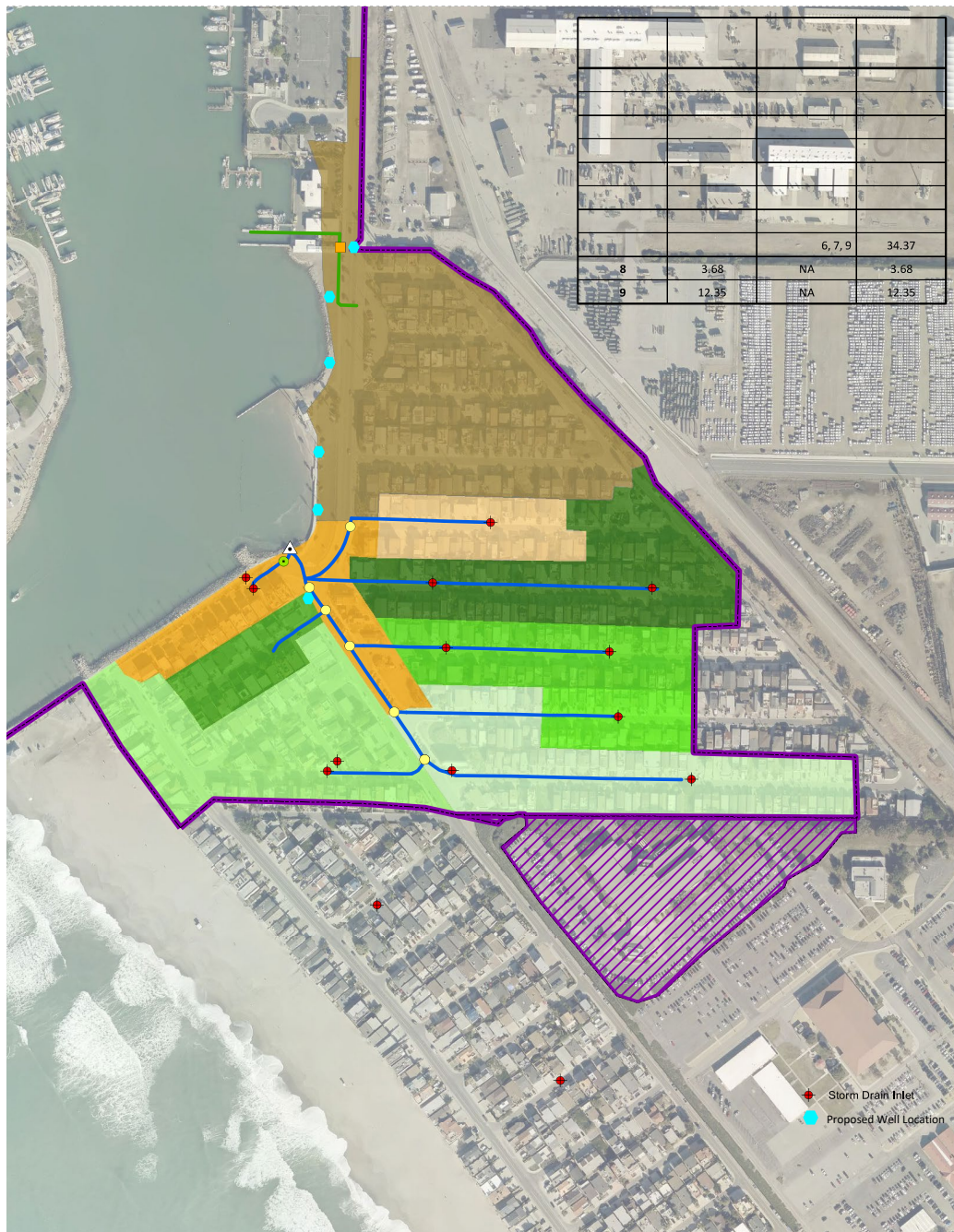


Figure 2. Map of Stormdrains discharging to Kiddie and Hobie Beach with storm drain sampling locations and proposed groundwater well sites.

## References

Cao, Y., M.R. Raith, J.F. Griffith. 2015. Droplet digital PCR for simultaneous quantification of general and human-associated fecal indicators for water quality assessment. *Water Research* 70:337–349

[Griffith, J.F.](#), B.A. Layton, A.B. Boehm, P.A. Holden, J.A. Jay, C. Hagedorn, C.D. McGee, [S.B. Weisberg](#). 2013. [The California Microbial Source Identification Manual: A Tiered Approach to Identifying Fecal Pollution Sources to Beaches](#). Technical Report 804. Southern California Coastal Water Research Project. Costa Mesa, CA.

[Steele, J.A.](#), A.D. Blackwood, [J.F. Griffith](#), R.T. Noble, [K.C. Schiff](#). 2018. [Quantification of pathogens and markers of fecal contamination during storm events along popular surfing beaches in San Diego, California](#). *Water Research* 136:137-149.

SWRCB. 2015. California Ocean Plan. State Water Resources Control Board. Sacramento, CA  
[http://www.swrcb.ca.gov/water\\_issues/programs/ocean/docs/cop2015.pdf](http://www.swrcb.ca.gov/water_issues/programs/ocean/docs/cop2015.pdf)

USEPA 2007. Method 1694: Pharmaceuticals and Personal Care Products in Water, Soil, Sediment, and Biosolids by HPLC/MS/MS USEPA Office of Water. Washington, DC EPA-821-R-08-002