

**Appendix N**

**Outfall Source Tracking**  
**Work Plan and Results**

Below is the Work Plan developed to conduct source tracking to fulfill the Measurable Goal under BMP 2-2.d which reads: “In each of the indicated years perform source tracking on the two highest priority pollutants of concern on a minimum of one outfall, and report on findings and actions taken in the Annual Reports for each of the indicated years.”

### **Work Plan for Source Tracking of Outfall(s) (BMP 2-2.d)**

1. Obtain laboratory analytical cost information to determine how many E. Coli analyses can be performed within the amount budgeted for this BMP (\$2,500 total budget to include MRWPCA labor, lab work, and associated costs).
2. Clarify manhole numbering nomenclature in City of Monterey’s storm drainage system maps for use in selecting and designating sampling locations.
3. Conduct an advance walk-through of the area where source-tracking will be performed to see if there is any flow and if there will be any access problems at the potential sampling locations.
4. Set-up discrete bottle sampler at the confluence manhole to see what time(s) of day the peak orthophosphate concentrations occur.
5. Use Monterey Bay Sanctuary Foundation’s orthophosphate meter to do grab samples and follow upstream in real-time to try to find sources of orthophosphate.
6. Take samples for possible E. Coli analyses at each orthophosphate sampling location.
7. Determine which E. Coli samples to analyze and perform analyses.
8. Write report summarizing the findings, conclusions, and recommendations from this work.

The following is a description of the source tracking work that was done and the results of that work.

### **Preliminary Sampling**

On May 5, 2008, staff members from NOAA and MRWPCA assembled at Prescott Ave at Cannery Row Street in Monterey, California to conduct the preliminary sampling of the storm water that was present in the storm drain system. This sampling entailed installing a portable ISCO 2700 wastewater sampler with discreet bottle set up into the storm water vault located under the street on Cannery Row Street. This vault is the point where several storm water tributaries come together before exiting the vault and heading toward the main storm water outfall that discharges directly onto the small beach area below the Steinbeck Plaza courtyard. The sampler was programmed to pick up a sample every 15 minutes and place 4 of these samples into each of the 24 plastic bottles. At the time of sampler installation there was a small amount of continuous flow entering the storm vault which formed a natural pool at the bottom of the exit pipe. The pick up probe was placed in this pool which ensured that good samples would be taken as the water would be changed out on an ongoing basis due to the incoming flow. The water present in the pool was a milky color and it was noted that there was a considerable amount of trash items in the bottom of the pipe.

After 24 hours of sampling, the ISCO sampler was pulled out and each bottle was tested on site by the NOAA staff members for phosphate (PO<sub>4</sub>) using a portable analyzer. The purpose of this preliminary sampling was to try and determine if there was a specific time of day that experienced an increase in phosphate due to detrimental activities taking place that affected the storm water quality. The results did not show any trends but did show several high readings that were spaced within periods of low or lower readings. The two high readings occurred at the 0145 to 0245 and 0845 to 0945 time blocks on May 6, 2008. The following table contains all of the preliminary sample readings:

BOTTLE #	SAMPLE DATE/TIME BLOCK	PORTABLE METER #	PO <sub>4</sub> (MG/L)	COMMENTS
1	5/5/08 0945-1045	2	0.68	Meter 1 = 0.54 mg/l
2	5/5/08 1045-1145	1	0.45	
3	5/5/08 1145-1245	2	1.46	
4	5/5/08 1245-1345	1	1.55	
5	5/5/08 1345-1445	2	0.78	
6	5/5/08 1445-1545	1	1.13	
7	5/5/08 1545-1645	2	1.10	
8	5/5/08 1645-1745	1	1.09	
9	5/5/08 1745-1845	2	0.98	
10	5/5/08 1845-1945	1	0.99	
11	5/5/08 1945-2045	2	0.75	
12	5/5/08 2045-2145	1	1.22	Half full of sludge
13	5/5/08 2145-2245	2	1.13	
14	5/5/08 2245-2345	1	0.94	
15	5/5/08 2345-0045	2	0.96	
16	5/6/08 0045-0145	1	1.94	
17	5/6/08 0145-0245	2	2.69	Out of range/blinking
18	5/6/08 0245-0345	1	1.10	
19	5/6/08 0345-0445	2	2.27	
20	5/6/08 0445-0545	1	1.24	
21	5/6/08 0545-0645	1	1.16	
22	5/6/08 0645-0745	1	1.19	
23	5/6/08 0745-0845	1	0.84	
24	5/6/08 0845-0945	1	2.75	Out of range/blinking

### **Pollutant Source Tracking**

Based on the findings from this preliminary sampling, it was decided to conduct the actual pollutant tracking in the morning hours. On May 14, 2008, staff members from NOAA and MRWPCA assembled at Prescott Ave at Cannery Row Street to begin the tracking. Three different tributaries that flow into the main storm water vault that was sampled during the preliminary sampling event were sampled for both phosphate (PO<sub>4</sub>) using the portable meter and coliform using a standard collection procedure and a Colilert 24 media with a Quantitray

method. Using this coliform analytical method, results were available for both total coliform and E. coli at 1 to 10 and 1 to 100 dilutions.

Twelve actual sample sites were chosen based on available water in the storm drain system, the proximity to certain business areas and the ability of a sample site to bracket in different sections of the three tributaries being studied.

The results from the on site phosphate analysis and the coliform analysis results are listed in the table below:

SAMPLE #	TIME	LOCATION*	PO4 (MG/L)	COLIFORM (MPN) 1:10 / 1:100	E.COLI (MPN) 1:10 / 1:100
1	0720	A04-C31 (MANHOLE) PRESCOTT @ CANNERY ROW	0.83	>24,196 / 198,630	780 / 970
2	0745	A04-C26 (GRATE) PRESCOTT @ WAVE	0.77	>24,196 / 155,310	767 / 200
3	0805	A04-C23 (GRATE) PRESCOTT @ FOAM	0.55	>24,196 / 46,110	31 / 100
4	0815	A04-04 (STANDING WATER) PRESCOTT @ FOAM	2.53**	>24,196 / 111,990	63 / 100
5	0830	A03-EC2 (GRATE) PRESCOTT @ LIGHTHOUSE	0.51	19,863 / 11,450	10 / <100
6	0900	A03-STMH25 (MANHOLE) PRESCOTT @ HAWTHORNE	0.50	12,997 / 10,170	10 / <100
7	0930	A04-STMH4 (MANHOLE) CANNERY ROW	1.19	>24,196 / 98,040	30 / <100
8	0945	A04-STMH5 (MANHOLE) CANNERY ROW	0.54	>24,196 / >241,960	12,033 / 10,120
9	1000	A04-STMH7 (MANHOLE) CANNERY ROW @ HOFFMAN	1.97	>24,196 / >241,960	52 / 200
10	1015	A04-C16 (GRATE) WAVE @ HOFFMAN	0.92	12,033 / 10,140	20 / <100
11	1030	A04-C10 (GRATE) WAVE	0.95	292 / 310	<10 / <100
12	1045	A04-C11 (GRATE) WAVE	2.75**	>24,196 / 111,990	10 / <100

**Notes:** \* Numbers correspond to the City of Monterey's Storm Drain System Map

\*\* Indicates Out of Range data

## Conclusions

The results obtained from this pollutant tracking project showed that there appeared to be three sites that were impacting water quality in the storm drain system. The pollutants being released

did not appear to have a major impact on the water tested down stream of these sites, but rather caused an immediate acute spike in readings. The following three possible contributors to these constituents were identified through the source tracking, as follows:

(1) Casa De Amigos Animal Hotel and (2) the adjacent Monterey Animal Hospital both located on Foam Ave near the corner of Prescott Ave. Outdoor pet washing and disinfecting of the animal husbandry area at these facilities appears to be impacting the storm drain system by runoff from these processes being allowed to flow into the curb gutter where it flows down slope and forms a standing pool. It eventually makes its way into a curbside grate and flows down slope to the final discharge pipe on the beach near the Steinbeck Plaza. The City of Monterey has knowledge of these businesses from previous spot checks that they conducted of the area.

(3) Willy's Smokehouse Restaurant located on the corner of Wave Street and Prescott Ave. Washing of the dumpster areas and tallow storage area was witnessed while sampling in this area and the flow was seen flowing off of the property and into the curb side drain. The staff member from Willy's that was conducting this washing was spoken to on site and seemed to acknowledge that what he was doing was a problem, but that he had to do what the facility manager had ordered him to do. He suggested that the manager be made aware of any concerns or requirements.

Efforts to determine whether or not these were the actual sources of these pollutants are still in progress. The investigative work conducted to date indicates that neither the Monterey Animal Hospital nor the Case de Amigos Animal Hotel are the sources of these pollutants. Initial investigative findings also indicate that Willy's Smokehouse is unlikely to be a source of these pollutants, although that investigation is still in progress. However, other sources are now being investigated as a result of having conducted this source tracking.

The results of this ongoing investigation will be reported on in the Year 3 Annual Report. When sources of these pollutants have been verified, the City of Monterey will work with the involved business owners to keep these pollutants out of their discharges to the storm drainage system.