

City of San Diego
Storm Water Program
Rose Creek Watershed Opportunities Project
Report for October 1, 2004 – December 31, 2004
(Submitted on December 17, 2004)

Project Status

Work conducted from October 1, 2004 through December 31, 2004 for the Rose Creek Watershed Opportunities Project was the evaluation of the Dry Weather Monitoring data of urban runoff in the storm drain system. Field visual observations, field screening and analytical samples were collected and analyzed at six of the seven designated sites. One analytical site was not tested because there was no water present. At the remaining 17 sites visual observation and field screening tests were performed, when water was either flowing or ponded. Urban runoff does not have numeric limits. Trigger levels for some constituent have been developed by statistical analysis to allow us confidence on which constituent levels need further investigation. All data is enclosed in the Excel spreadsheet, Attachment 1. A summary of the results is discussed below.

Visual Observations

Visual observations were collected at all sites. These observations include observed land use, conveyance system type, construction, weather, tide, tide height, last rain, odor, color, clarity, floatables, deposits, vegetation, biology, flow, flow rate, contact with the receiving water, evidence of overland flow, and if a photograph was taken. The blank Dry Weather Monitoring Program's Visual Observation Sheet is enclosed for your reference (Attachment 2). This form provides background information for the investigation of pollutants sources. All of this information for each site is provided in Attachment 1.

Field Screening Results

Field screening is completed on all sites where water was present. This task includes the documentation of visual observations and utilizing field test kits or meters to screen for specific conductance, turbidity, pH, phosphorous, phosphate, nitrate, and ammonia. All information for each site is provided in Attachment 1. A summary of each constituent is discussed below.

Specific conductance is a measurement of the amount of salts in the water. Elevated levels of specific conductance may be indicative of an illicit connection to the storm drain system. High values may indicate total dissolved solids from groundwater infiltration,

mineral dissolution, drought, or seawater intrusion into the storm drain system. Low values may indicate excessive drinking water discharges, waterline flushing or discharges from over irrigation. A strong knowledge of area's background conditions is important in determining whether or not an illicit discharge investigation is required. Of the 17 samples tested, this constituent had a range of 0.8 – 6.7. The average concentration was 2.2. There is no trigger level for this constituent and best professional judgment is used to investigate leveled levels.

Turbidity is a measure of water clarity. High turbidity may indicate illicit connections or discharges from industrial, construction, or other sources. It may also be elevated as a result of decomposing vegetation. This constituent had a range of 2.7-67.0. The average concentration was 20.7. There is no trigger level for this constituent and best professional judgment is used to investigate leveled levels.

pH is measurement of ions in the water and should range from 6 to 9. Values below 6 and above 9 are good indicators of illicit connections or discharges to the storm drain system from industrial, or other, sources. This constituent had a range of 7.4-9.2. The average concentration was 8.1. The trigger level for this constituent is below 6 and above 9. One exceedance of 9.2 was documented.

Phosphorous contributes to algal blooms and degrades water quality. It may have a natural source, or may indicate sewage, over fertilization, or other types of contamination. This constituent had a range of 0.4-1.2. The average concentration was 1.5. The trigger level for this constituent is 2 milligrams per liter (mg/L).

Phosphate is another chemical measurement of organic compounds that contribute to algal blooms. Again, the presence of this compound is indicative of sewage, over fertilization, or other types of contamination. This constituent had a range of 0.52-3.94. The average concentration was 0.8. The trigger level for this constituent is 6 mg/L.

Nitrate testing may indicate illicit discharges of industrial waste, sewage, or over fertilization. It may also be present naturally. High levels of Nitrate may result in algal blooms, causing depletion of oxygen in water, and degraded water quality. This constituent had a range of 0.07-2.61. The average concentration was 0.6 mg/L. The trigger level for this constituent is 10.0 mg/L.

Ammonia is a strong indicator of sewage contamination, over fertilization practices, and illegal industrial discharges. Ammonia becomes more toxic to aquatic organisms with higher pH and temperatures. This constituent had a range of 0.092-1.159. The average concentration was 0.5 mg/L. The trigger level for this constituent is 1.0 mg/L. Three exceedances of the trigger were documented.

Analytical Analyses

All analytical sites had samples collected and analyzed at Metropolitan Wastewater Department's certified laboratories. These samples were analyzed for eleven constituents at six of the seven designated sites. One site was not tested because there was no water present. Each constituent is discussed below:

Total hardness is an analytical measurement of the calcium and magnesium ions in the water that affects the amount of dissolved metals. This measurement is required of the City of San Diego; however, the data provided is for receiving waters and not the storm drain system where these samples were collected. This constituent had a range of 510-5700. The average concentration was 2357. There is no trigger level for this constituent.

Diazinon and Chlorpyrifos pesticides measurements were not detected at the six sites. The observed land uses for the watershed are residential, commercial and industrial.

Surfactants (MBAS) measurements ranged from 0.06mg/L to 0.15 mg/L with an average of 0.09 mg/L. The trigger level for this constituent is 1.0 mg/L and no samples exceeded the trigger level. The sample with the highest level was collected at site that had ponded water and had both residential and commercial land uses were observed draining to it. The collection of samples from ponded water typically results in elevated levels of constituents due to the evaporation of water that concentrates the constituents.

Oil & grease measurements were 1.43mg/L and 10.9 mg/L. The trigger level for this constituent is 15 mg/L and no samples exceeded the trigger level. The sample with the highest level was collected at site that had ponded water and had both residential and commercial land uses were observed draining to it. The collection of samples from ponded water typically results in elevated levels of constituents due to the evaporation of water that concentrates the constituent.

Dissolved cadmium measurements ranged from 5.28 ug/L to 661 ug/L with an average of 112.24 ug/L. There is no trigger level for this constituent in the storm drain system. The sample with the highest level was collected at site that had both residential and commercial land uses were observed draining to it.

Dissolved copper measurements ranged from 16.6 ug/L to 59.2 ug/L with an average of 35.8 ug/L. There is no trigger level for this constituent in the storm drain system. The sample with the highest level was collected at site that had flowing water and had both residential and commercial land uses were observed draining to it

Dissolved lead measurements ranged from 22.4 ug/L to 138 ug/L with an average of 71.2 ug/L. There is no trigger level for this constituent in the storm drain system. The sample with the highest level was collected at same site that had elevated copper levels.

Dissolved zinc measurements ranged from 21.4 ug/L to 551 ug/L with an average of 134.3 ug/L. There is no trigger level for this constituent in the storm drain system. The

sample with the highest level was collected at site that had ponded water and had both residential and commercial land uses were observed draining to it. The collection of samples from ponded water typically results in elevated levels of constituents due to the evaporation of water that concentrates the constituent.

Total Coliform measurements ranged from 5,000 MPN/100mL to 130,000 MPN/100mL with an average of 41,666 MPN/100mL. The trigger level for this constituent is >50,000 MPN/100mL. Two samples exceeded the trigger, one in ponded water and one in flowing water. Both sites have both residential and commercial land uses draining to them.

Fecal Coliform measurements ranged from 210 MPN/100mL to 2300 MPN/100mL with an average of 806 MPN/100mL. The trigger level for this constituent is >20,000 MPN/100mL and no samples exceeded the trigger level. The sample with the highest level was collected at site that had low water flow and both residential and commercial land uses draining to it.

Enterococcus bacteria measurements ranged from 100 MPN/100mL to 5,800 MPN/100mL with an average of 128 MPN/100mL. The trigger level for this constituent is >10,000 MPN/100mL and no samples exceeded the trigger level. The sample with the highest level was collected at site that had ponded water and both residential and commercial land uses draining to it. The collection of samples from ponded water typically results in elevated levels of the constituent due to the evaporation of water.

Another way to evaluate the analytical results is by site. The following discussion reviews all constituents including the field screening and visual observations for each of the six analytical sites that were tested.

DW058 is located at Nobel Drive and Genesee Avenue. The sample site is storm drain outlet made of concrete. The observed land uses for this site are both residential and commercial. The weather was overcast and no rain had occurred within the previous 72 hours. The water had a musty odor; trash, bubbles/foam and sheen were noted. The vegetation was normal and insects and algae were documented to be present. Water was flowing at a rate of 0.39 and evidence of irrigation runoff. The field screening data indicated that nutrients were present and that pH is on the upper range of acceptability. The analytical results found that there were low levels of surfactants and pesticides were not detected. Metals were found and there is no trigger level for these constituents in the storm drain system.

DW103 is located north of Morena Drive at Ariane Drive. The sample site is storm drain outlet made of concrete. The observed land uses for this site are both residential and industrial. The weather was partly cloudy and no rain had occurred within the previous 72 hours. The water had a musty odor and trash was present. The vegetation was normal and insects and algae were documented to be present. Water was flowing at a rate of 5 gallons per minute and there was evidence of urban runoff. The field screening results

indicated that ammonia and nitrates were below the trigger levels. The analytical data found there were low levels of surfactants and pesticides were not detected. Metals were found and there is no trigger level for these constituents in the storm drain system.

DW261 is located in the canyon below the 5200 block of Biltmore Street. The sample site is storm drain outlet made of concrete. The observed land uses for this site are both residential and industrial. The weather was partly cloudy and no rain had occurred within the previous 72 hours. The water had a chemical/oily odor. There was trash, an oily sheen and an oily deposit present. The vegetation was excessive and insects and algae were documented to be present. Water was ponded or stagnant and there was evidence of urban runoff. The field screening data indicated that turbidity was elevated and Total Dissolved Solids was 5000, which corresponds with the visual observations. The analytical results found that there were low levels of surfactants. Pesticides were not detected. Metals were found and there is no trigger level for these constituents in the storm drain system.

DW263 is located in the canyon below the trail at Regents Road and Highway 52. The sample site is storm drain outlet made of concrete. The observed land use for this site is residential. The weather was overcast and no rain had occurred within the previous 72 hours. The water had a musty odor and trash was present. The vegetation was excessive and algae were documented to be present. Water was ponded and there was no evidence of urban runoff. The field screening data found that all constituents were below the trigger levels. The analytical results found there was an elevated level of Total Coliform and low levels of surfactants. Pesticides were not detected. Metals were found and there is no trigger level for these constituents in the storm drain system.

DW273 is located upstream of the rail road trestle on Santa Fe Street. The sample site is storm drain outlet made of concrete. The observed land uses for this site are residential, commercial and industrial. The weather was overcast and no rain had occurred within the previous 72 hours. The trash, bubbles and foam were present. The vegetation was excessive and insects and algae were documented to be present. Water was flowing at a rate of 6.2 gallons per minute and there was no evidence of urban runoff. The field screening data found that all constituents were below the trigger levels. The analytical results indicated there was an elevated level of Total Coliform and low levels of surfactants. Pesticides were not detected. Metals were found and there is no trigger level for these constituents in the storm drain system.

DW277 is located under the Highway 52 and Interstate 5 interchange. The sample site is at the end of an open, concrete channel. The observed land uses for this site are residential, commercial and industrial. The weather was overcast and no rain had occurred within the previous 72 hours. The bubbles and foam were present. The vegetation was normal and insects and algae were documented to be present. Water was flowing at a rate of 187 gallons per minute and there was evidence of urban runoff. The field screening data found that all constituents were found below the trigger levels. The analytical results found there were low levels of surfactants. Pesticides were not detected.

Metals were found and there is no trigger level for these constituents in the storm drain system.

DW278 is located in Marion Bear Park near the comfort station south of Clairemont Mesa Blvd. The sample site is an open, natural channel. The observed land uses for this site are residential, commercial and industrial. The weather was sunny and no rain had occurred within the previous 72 hours. There was no water present to collect samples for analyzes or field screening.

Summary

The evaluation of the storm drain system's dry weather monitoring data indicates that there are sporadic elevated measurements of constituents. Metals were measured and currently there is no numeric limit within the storm drain system. Pesticides were not detected. The field screening data indicated that ammonia (3) and pH (1) had measurements that exceeded the trigger levels that require additional investigation. The analytical results show that Total Coliform had two exceedances that also require further investigation.