



**South Orange County Wastewater Authority  
34156 Del Obispo Street  
Dana Point, CA 92629**

**SOP  
Biological Resources Damage Assessment  
For  
Treated and Untreated Wastewater Spills**

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Prepared by



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**1.0 INTRODUCTION**

South Orange County Wastewater Authority (SOCWA) owns and operates facilities under four NPDES permits issued by the Regional Water Quality Control Board (RWQCB) San Diego Region: R9-2012-0012 and R9-2012-0013 for facilities utilizing the San Juan Creek and Aliso Creek ocean outfalls, respectively. The NPDES permits require reporting of any overflow, spill, release, discharge or diversion of untreated or partially treated wastewater. Overflows include:

- Overflows or releases of untreated or partially treated wastewater that reach waters of the United States;
- Overflows or releases of untreated or partially treated wastewater that do not reach waters of the United States; and
- Wastewater backups into buildings and on private property that are caused by blockages or flow conditions within the publicly/federally-owned portion of a sanitary sewer system.

Spills are reported to the California Office of Emergency Services, RWQCB San Diego Region, and the Orange County Health Department via the California Integrated Water Quality System (CIWQS) electronic reporting system. If the spill reaches a drainage with biological resources the RWQCB, in cooperation with the California Department of Fish and Wildlife (CDFW), may request that a Biological Resources Damage Assessment be prepared to document impacts to biological resources.

The purpose of this Standard Operating Procedure (SOP) is to provide SOCWA with guidance for conducting a Biological Resources Damage Assessment whenever a spill from a SOCWA owned or operated facility has reached a drainage with biological resources.

**2.0 FACILITIES AND POTENTIAL IMPACT AREAS FOR BIOLOGICAL RESOURCES<sup>1</sup>**

SOCWA's service area encompasses the Aliso Creek and San Juan Creek watersheds, and includes the following facilities that could be the source of reportable spills. SOCWA facilities, potential spill materials, and potential watershed impact areas are summarized in Table 1, below.

The location of SOCWA facilities and ease of spills to impact biological resources is highly variable. Least likely to impact biological resources are those facilities that not adjacent to biological resources or are isolated in some way from those resources, such as the Jay B. Latham (JBL) Treatment Plant. JBL is isolated from San Juan Creek by the flood control berm and the surrounding area is highly urbanized with little or poor quality habitat and limited biological resources. In addition, San Juan Creek is concrete lined, offering little in the way of habitat or non-marine biological resources that could be damaged by a spill. The Regional Treatment Plant (RTP) and the Coastal Treatment Plant (CTP), in contrast, are surrounded by

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<sup>1</sup> SOCWA Strategic Plan 2015

and adjacent to biological resources with few barriers preventing direct flow of spills that could impact these resources. Similar comparisons can be made for the linear facilities: the San Clemente Land Outfall is primarily located in urban areas, whereas the CTP Sludge Force Main and Effluent Transmission Main (Reach B/C/D) are almost entirely located within and adjacent to high quality biological habitat. Table 1 provides a summary of the likely spill material and the watershed potentially impacted by spills from each SOCWA facility.

**Table 1. SOCWA Facilities, Potential Spill Materials, and Potential Watershed Areas Impacted**

<b>SOCWA Facility</b>	<b>Spill Material</b>	<b>Watershed Impacted</b>
<b>San Juan Creek Watershed</b>		
Jay B. Latham Treatment Plant (JBL)	Raw sewage, treated and partially treated wastewater	San Juan Creek
3A Treatment Plant	Raw sewage, treated and partially treated wastewater	Oso Creek
3A Effluent Transmission Main	Treated wastewater	Oso Creek, San Juan Creek
San Clemente Land Outfall	Treated wastewater	San Juan Creek
San Juan Creek Ocean Outfall (Landside)	Treated wastewater	San Juan Creek
<b>Aliso Creek Watershed</b>		
Regional Treatment Plant (RTP)	Raw sewage, treated and partially treated wastewater	Sulphur Creek, Sulphur Reservoir, Aliso Creek
Coastal Treatment Plant (CTP)	Raw sewage, treated and partially treated wastewater	Aliso Creek
Effluent Transmission Main (Reach B/C/D)	Treated wastewater	Aliso Creek
Effluent Transmission Main (Reach E)	Treated wastewater	Sulphur Creek, Sulphur Reservoir, Aliso Creek
North Coast Interceptor (NCI)	Raw sewage	Aliso Creek
Aliso Creek Ocean Outfall (Landside)	Treated wastewater	Aliso Creek
CTP Sludge Force Main (to RTP)	Sludge	Aliso Creek, Sulphur Creek, Sulphur Reservoir

**3.0 IMPACT ASSESSMENT METHODS**

There are no specific guidance documents or established protocols for conducting an assessment of damage to biological resources resulting from a sewage or treated wastewater spill to a drainage. As noted above, the RWQCB or CDFW may request that a Biological Resources Damage Assessment be prepared and their request may include specific parameters that should be included in the assessment and report. Any delay in conducting the field assessment following a reported spill may not clearly identify the impact area or fully capture the potential biological impacts of the spill. Therefore, the following impact assessment methods outlined below are intended to provide SOCWA with a methodology that can be immediately implemented to collect useful data for assessing potential damage to biological resources while awaiting direction from the RWQCB or CDFW.

### **3.1 Delineation of Potential Impact Area**

A reconnaissance survey should be conducted as soon as possible after discovery of the spill to locate the probable extent of the impact area and select impacted drainage locations or habitat types for detailed study. Based on the description and volume of material released to the impacted drainage, the reconnaissance survey should include examination of the bank, riparian vegetation, and water interface for signs of impact indicators (collected debris, vegetation or soil impacted by the release) and presence of visible pollutants, odors, or other indications of impacts. The reconnaissance survey needs to:

- Delineate the maximum area and downstream extent of the suspected impact area.
- Identify sample sites within the impact area that are representative of the habitats and vegetation in the impact area.
- Identify one or more control sites (usually upstream of the spill site) that have not been impacted and may be used for comparison with the suspected impact area.
- Relative conditions of the impact area at the time of the survey for comparison with the conditions noted at the time of the release (i.e., rainfall, stream flow, etc.).

The number of impact sample sites for detailed study is variable, depending on the drainage area/length impacted and types of habitat impacted. Three impact sample sites plus one control site would likely be the minimum needed to provide a reasonable estimate of the potential impacts.

### **3.2 Background Data Collection**

Damage assessment to biological resources from a spill needs to consider both impacts to vegetation communities (habitat) as well as to protected or sensitive plant and animal species. Once the extent of the spill has been determined by the reconnaissance survey it is very important to complete a rapid review of available information on the impact area to determine what sensitive biological resources may be present and need special attention during the site surveys. Knowledge of the protected and sensitive biological resources of the impact area will help focus the site surveys and will provide important supporting information for any conclusions or recommendations included in the damage assessment report.

Sensitive plants include those listed, or candidates for listing, by the U.S. Fish and Wildlife Service (USFWS) and CDFW, species considered sensitive by the California Native Plant Society (CNPS), and species of local interest. Sensitive wildlife species include those species listed as endangered or threatened, candidates for listing by USFWS or CDFW, and species of special concern to USFWS or CDFW.

### **3.3 Site Inspection Methods**

Spills from SOCWA facilities that enter drainage systems are likely to be either very obvious, in the case of spilled raw sewage or sludge, or difficult to detect, as in the case of spilled treated or partially treated wastewater. Determination of damage to biological resources from a spill is likewise highly dependent on the type or concentration of spilled material as well as the type and condition of the receiving waters. Spills to standing water or slow flowing streams may have very different consequences than spills that occur during heavy rainfall or high stream flow conditions. Site inspection methods will need to be adjusted to the specific spill and environmental conditions. Following a consistent data collection checklist at each sample or control site will help to provide comparable information useful for assessing potential damage.

Depending on the drainage characteristics and ease with which the spill can be detected, the sample and control sites may consist of a transect or plot within which the observations can be made. Transects may be “top of bank” from one side of the stream to the other. Plots may be a length of stream (20 m, for example) from the wetted surface up to the top of bank. In either case transects or plots should be selected to be representative of the vegetation within the spill impact area.

Table 2, below, provides a list of suggested data points that may be used to develop and describe the characteristics of the sample and control locations (see Appendix A for sample field data sheet). Direct observations of spill constituents and associated damage is possible and should be noted, but it is also important to record receiving water characteristics, presence or absence of sensitive species, animal behavior, and similar data points that may be useful in determining or describing spill damage to biological resources.

Gross estimation of pollutants
Visible pollutants
Unusual Odor
Organic matter
Surface film or foam
Water clarity
Algae growth/bloom
Other indications of residual spill
Vegetation
Estimated percent coverage of rooted plants
Vegetative class
Vegetative type
Species composition
Discoloration or stress
Substrate
Estimated percent composition of stream substrate type (sand, gravel, cobble)
Flow
Stream flow, if available
Estimated flow
Channel
Bank to bank width
Wetted channel width
Average stream channel depth
Animals (Use a uniform observation time at each site, 10 minutes for example)
Insects
Fish
Reptiles, Amphibians
Birds
Mammals
Species observed; Activity observed
Mortality
Human Development or Influence (concrete channels, construction activity, etc.)
Photographs

**3.4 Special Conditions**

Sulphur Reservoir is an OCParks facility used for recreational fishing where fish caught in the reservoir are allowed to be kept and consumed. The proximity of the reservoir to SOCWA facilities indicates there is a potential for contamination of the reservoir by spills from the RTP, or from breaks or leaks from the CTP sludge force main or the RTP effluent pipeline. Whenever spills are detected that have entered the drainage system leading to the reservoir, water quality samples, including coliform counts, should be collected of the spilled water and receiving water upstream and downstream of the spill site. Water samples should also be collected in the reservoir following the spill and as long as necessary to support any conclusions regarding the safety of fish being consumed.

**4.0 BIOLOGICAL RESOURCE DAMAGE ASSESSMENT REPORT OUTLINE**

The Biological Damage Assessment Report may be a file report to document the spill event, or it may be requested by the RWQCB and/or the CDFW to support the CIWQS Online SSO Database documentation. In either case, Table 3 provides a suggested outline for the Biological Damage Assessment Report:

<b>Table 3</b>	
<b>SAMPLE TABLE OF CONTENTS</b>	
<b>1.0</b>	<b>INTRODUCTION</b>
1.1	Regulations and Reporting Requirements
1.2	Spill Incident Characteristics and Stream Flow Data
<b>2.0</b>	<b>SETTING OF RECEIVING DRAINAGE</b>
2.1	Vegetation Communities
2.2	Sensitive Plant Species
2.3	Sensitive Wildlife Species
<b>3.0</b>	<b>IMPACT ASSESSMENT METHODS</b>
3.1	Delineation of Potential Impact Area
3.2	Site Inspection Methods
<b>4.0</b>	<b>FINDINGS</b>
4.1	Visible Spill Signs
4.2	Vegetation
4.3	Sensitive Plants
4.4	Sensitive Wildlife
<b>5.0</b>	<b>DISCUSSION OF IMPACTS</b>
<b>6.0</b>	<b>RECOMMENDATIONS</b>
<b>7.0</b>	<b>REFERENCES CITED</b>
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Figure 2.	Study Area
Figure 3.	Impact Assessment Locations
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Table 1.	TBD
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Appendix A.	Water Quality Data
Appendix B.	Site Photos

## Appendix A Sample Field Data Sheet

Site ID \_\_\_\_\_ Time \_\_\_\_\_ Date \_\_\_\_\_ Observer \_\_\_\_\_

Gross estimation of pollutants	Present	Notes
Visible pollutants		
Unusual Odor		
Organic matter		
Surface film		
Water clarity		
Algae growth/bloom		
Other indications of residual spill		
<b>Drainage Description</b>		
Dry when observed		
Marsh, pond, still water		
Flowing water		
<b>Vegetation</b>		
Ground cover: bare, leaf litter, grasses, etc.		
Estimated % coverage of rooted plants		
Vegetative type(s)		
Species composition		
Discoloration or stress		
<b>Substrate</b>		
Est. % substrate type (sand, gravel, cobble)		
<b>Stream Flow</b>		
Measured stream flow, if available		
Estimated flow		
<b>Channel</b>		
Bank to bank width at high water mark		
Wetted channel width		
Average stream channel depth		
Human Development or Influence		
<b>Animals</b>		
Insects		
Fish		
Reptiles, Amphibians		
Birds		
Mammals		
Species observed (attach list)		
Activity observed (Note 1)		
Mortality		
<b>Photographs</b>		

Notes: 1. Use a uniform observation time at each site, 10 minutes for example