

**REGIONAL WATER QUALITY CONTROL BOARD  
SAN DIEGO REGION**

**EXECUTIVE OFFICER SUMMARY REPORT  
June 12, 2019**

**ITEM 9**

**SUBJECT**

Public Hearing on Tentative Investigative Order: An Investigative Order Directing the City of San Diego, the City of Santee, the City of El Cajon, the City of La Mesa, the County of San Diego, the San Diego County Sanitation District, the Padre Dam Municipal Water District, the Ramona Municipal Water District, San Diego State University, the Metropolitan Transit System, and the California Department of Transportation to Submit Technical and Monitoring Reports to Identify and Quantify the Sources and Transport Pathways of Human Fecal Material to the Lower San Diego River Watershed (Tentative Investigative Order R9-2019-0014). (*Helen Yu and Fisayo Osibodu*)

**STAFF RECOMMENDATION**

Adoption of the Tentative Investigative Order No. R9-2019-0014 (Tentative Investigative Order) is recommended (**Supporting Document No. 1**).

**KEY ISSUES**

1. Results of monitoring conducted by the Southern California Coastal Water Research Project (SCCWRP) during two storm events in the 2016 and 2017 wet seasons at locations in the San Diego River and its tributaries from the mouth of the River to the City of Lakeside in the Lower San Diego River Hydrologic Area (HA 907.1) indicate uniformly high enterococci concentrations and detectable levels of a human-associated fecal source marker HF183 at every station that had flowing water during both sampling events. This segment of the San Diego River and its tributaries is referred to in the Tentative Investigative Order as the Lower San Diego River and/or the Lower San Diego River Watershed (**Supporting Document No. 2**). Pathogen sampling in this San Diego River segment also indicates the presence of norovirus, a common cause of gastrointestinal (GI) illness in humans, in stations sampled across both storms and further confirms the presence of human fecal material in the mainstem of the Lower San Diego River and its tributaries.
2. The Tentative Investigative Order requires ten named public agencies that discharge or potentially discharge human fecal waste material, to investigate and quantify the relative contributions of actual and suspected sources of human fecal material discharges from their respective jurisdictions to the Lower San Diego River Watershed. The primary sources of human fecal waste material appear to be numerous and diverse and potentially include: sanitary sewer overflows from publicly-owned sanitary sewer collection systems; sewage discharges from privately-owned lateral sewer lines; sewage exfiltration<sup>1</sup> from publicly-owned sanitary sewer collection system infrastructure and privately-owned lateral sewer lines, privately-owned on-site wastewater treatment systems; illicit connections and discharges to MS4s; and direct or indirect discharges from homeless encampments.
3. Human fecal waste material can harbor disease-causing pathogens that contribute to poor public health outcomes and economic burdens and threaten recreational beneficial uses in the Lower San Diego River and recreational and shellfish consumption beneficial uses in downstream beach coastal waters. Investigating and quantifying actual and suspected sources

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<sup>1</sup> In the Tentative Order, exfiltration refers to the leakage of sewage wastewater through minute cracks, gaps or breaks in sanitary sewer collection system infrastructure or private laterals to the surrounding environment. For regulatory purposes any sewage exfiltration release from a public sanitary sewer system is defined as a sanitary sewer overflow (SSO) and any sewage exfiltration release from a private lateral is defined as a private lateral sewage discharge (PLSD).

of human fecal material discharges under the Tentative Investigative Order is a necessary prerequisite to strategic remedial planning for the Lower San Diego River Watershed based on fecal pollution levels in receiving waters from human sources. Under this approach, once identified and characterized, human fecal material sources can be prioritized and targeted for remediation/abatement, leading to fewer exceedances of recreational water quality standards and associated public health advisories, and overall improved water quality conditions in the Lower San Diego River Watershed and the downstream beach coastal waters.

4. Information collected under the Tentative Investigative Order may provide a basis for demonstrating the necessity for and scope of potential amendments to the Bacteria Project I Total Maximum Daily Load (TMDL) to adjust load and waste load allocations and/or incorporate alternative water quality metrics, such as the human-associated fecal source marker HF183, to inform compliance and remediation decision making.
5. Information collected under the Tentative Investigative Order can be used by both the San Diego Water Board and the named public agencies to evaluate the effectiveness of and improve as necessary, existing management measures in pollutant control programs and regulatory permits used to prevent or control discharges of human fecal material. Characterization of the multiple sources of human fecal material in the Lower San Diego River Watershed will also provide a basis for increased understanding of potential public health risks in recreational water settings impacted by multiple pollution sources.

## **PRACTICAL VISION**

The Tentative Investigative Order is consistent with the Monitoring and Assessment chapter of the Practical Vision.<sup>2</sup> Identifying and quantifying the relative contributions of suspected point sources and non-point sources of human fecal material in dry and wet weather discharges to the Lower San Diego River Watershed under the Tentative Investigative Order is a necessary prerequisite to the development of a strategy to prioritize, target and abate sources of human fecal material discharges. The development of the Investigative Study Workplan(s) and the Final Investigative Study Report(s) required under the Tentative Investigative Order will also lead to a better understanding of the transport pathways of such discharges and the effectiveness of current management measures in preventing or controlling the discharges.

## **DISCUSSION**

### **Background Information**

As part of the investigations conducted under the Surfer Health Study<sup>3</sup>, wet-weather river flows in the San Diego River Estuary were sampled in the winters of 2014 and 2015, and the results showed elevated concentrations of human pathogenic viruses and bacteria, human fecal waste-specific indicators, and general fecal indicator bacteria. The indicators of human fecal waste material were observed despite the pollutant control programs, measures and discharge prohibitions governing human fecal material discharges required under multiple permits issued by the San Diego Water Board and the State Water Resources Control Board. These findings

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<sup>2</sup> Practical Vision: [https://www.waterboards.ca.gov/sandiego/water\\_issues/programs/practical\\_vision/](https://www.waterboards.ca.gov/sandiego/water_issues/programs/practical_vision/)

<sup>3</sup> Southern California Coastal Water Research Project (SCCWRP), SCCWRP Technical Report 943, *The Surfer Health Study, A Three Year Study Examining Illness Rates Associated with Surfing During Wet Weather*, September 2016, available at [ftp://ftp.sccwrp.org/pub/download/DOCUMENTS/TechnicalReports/943\\_SurferHealthStudy.pdf](ftp://ftp.sccwrp.org/pub/download/DOCUMENTS/TechnicalReports/943_SurferHealthStudy.pdf) (as of September 25, 2018).

triggered an Upstream Microbial Source Tracking Study<sup>4</sup> as a follow-up to investigate the extent and magnitude of human fecal material in the Lower San Diego River Watershed.

In the Upstream Microbial Source Tracking Study which extended from the mouth of the San Diego River to Channel Road in the City of Lakeside, 13 stations located along the mainstem of the San Diego River or at points in major tributaries joining the River, were sampled during two storm events in the 2016 and 2017 wet seasons. The sample results indicated uniformly high enterococci concentrations and detectable levels of a human-associated fecal source marker HF183 at every station that had flowing water during both sampling events. The study indicated wet-weather river flows in the mainstem of the San Diego River caused or contributed to elevated concentrations of enterococci exceeding applicable water quality objectives in the downstream tidally influenced San Diego River Estuary and adjacent beach coastal waters at the mouth of the River. Pathogen sampling indicated the presence of norovirus, a common cause of GI illness in humans, in about 30 percent of the 13 stations sampled across both storms and further confirmed the presence of human fecal material in various segments of the mainstem of the Lower San Diego River. The risk of GI illness in humans after water-contact activities is elevated by the presence of human fecal waste material in the flowing water.

Sources of human waste material in the Lower San Diego River Watershed appear to be diffuse and originate from numerous locations, potentially including, but not limited to, discharges from publicly owned sanitary sewer collection systems and private sewer laterals, faulty septic systems on private property, and discharges attributable to homeless populations. As owners and operators of municipal separate stormwater sewer systems (MS4s) and/or publicly owned sanitary sewer collection systems, and as owners of land on which discharges of waste from homeless encampments may originate, each of the public agencies listed below are suspected of having jurisdiction over areas discharging human fecal waste material into the Lower San Diego River Watershed and pursuant to Water Code 13267 are held responsible for complying with the directives and provisions of the Tentative Investigative Order:

City of San Diego	County of San Diego
City of Santee	City of El Cajon
City of La Mesa	San Diego State University
California Transportation System	Metropolitan Transit System
Padre Dam Municipal Water District	San Diego County Sanitation District

The County of San Diego owns and operates an MS4 in the San Diego River Watershed. Additionally, the San Diego County Department of Environmental Health (DEH) regulates discharges of waste from on-site wastewater treatment systems (OWTS) but does not itself discharge waste so is not held responsible in the Tentative Investigative Order to investigate and quantify contributions of human fecal materials to surface waters within the Lower San Diego River Watershed. However, pursuant to Water Code section 13225, San Diego County's DEH is required to report available information that can inform the investigation to quantify the extent of the contribution, if any, of human fecal material in discharges to the Lower San Diego River Watershed from OWTS.

### **Objectives of the Tentative Order**

The San Diego Water Board developed the Tentative Investigative Order to direct the named public agencies to submit a workplan(s) and a Final Investigative Study Report(s) to identify and

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<sup>4</sup> SCCWRP Technical Report 1002, *Tracking Human Fecal Sources in an Urban Watershed During Wet Weather*, Southern California Coastal Water Research Project, Steele et al., October 2017, available at [ftp://ftp.sccwrp.org/pub/download/DOCUMENTS/TechnicalReports/1002\\_HumanMarkerTracking.pdf](ftp://ftp.sccwrp.org/pub/download/DOCUMENTS/TechnicalReports/1002_HumanMarkerTracking.pdf) (as of October 25, 2018)

quantify relative contributions of actual and suspected sources and transport pathways of human fecal material in dry and wet weather discharges to the Lower San Diego River Watershed. The Tentative Investigative Order approach in targeting high-risk sources of human waste is consistent with the recommended strategies summarized in the San Diego Water Board's REC-1 Triennial Review Project Report<sup>5</sup> and other scientific studies which conclude that controlling human sources of fecal material waste is the most cost-effective method for reducing risk of illness to human health during and following water-contact recreation activities. Data and information required by the Tentative Investigative Order will be considered and may be used by the San Diego Water Board, as well as the named public agencies, to prioritize, target and abate the sources of human fecal material discharges. The information obtained in developing the Final Investigative Study Report(s) required under the Tentative Investigative Order can also be used to evaluate effectiveness of existing management measures in preventing and/or controlling discharges of human fecal material into receiving waters of the Lower San Diego River Watershed, including downstream beach coastal waters.

### **Public Notification and Comments on Tentative Order**

As a preliminary step in developing the Tentative Investigative Order, the San Diego Water Board released an administrative draft of the Tentative Investigative Order on February 23, 2018 and held a workshop with the named public agencies and other interested persons on March 28, 2018. The workshop was well attended and produced useful feedback on the administrative draft. After the workshop, written comments on the administrative draft were provided by the majority of the public agencies. The San Diego Water Board evaluated the comments received during this informal review process and prepared a revised Tentative Investigative Order for formal public review and comment. The Tentative Investigative Order and Notice of Public Hearing were released on May 21, 2018 for a 30-day public review and comment period. The public comment period concluded on June 20, 2018. Comment letters received are provided in **Supporting Document Nos. 3.a through 3.j**. The Responses to Comments Report (**Supporting Document No. 4**) includes detailed responses to the significant comments received on the Tentative Investigative Order and any actions taken to modify the Order. The final Revised Tentative Investigative Order (**Supporting Document No. 1**) displays the substantive changes made in response to comments after the March 21, 2018 public release in red-underline for added text and ~~red-strikeout~~ for deleted text.<sup>6</sup>

The following is a summary of the more significant comments and the responses to those comments:

1. *The named public agencies requested additional time and clarification of the due dates for preparation and submittal of the Investigative Study Work Plan and the Final Investigative Study Report.*

The San Diego Water Board modified Directive 1 of the Tentative Investigative Order to clearly require submittal of the Investigative Study Work Plan no later than 180 days after the effective date of the Investigative Order, unless permission for a later date is granted by the San Diego Water Board Executive Officer. Directive 3 of the Tentative Investigative Order was modified to clearly require submittal of the Final Investigative Study Report on the results of the investigation, no later than 48 months after the effective date of the Investigative Order.

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<sup>5</sup>2014 Triennial Review Project Summary Evaluation of Contact Water Recreation (REC-1) Water Quality Objectives and Methods for Quantifying Exceedances, Michelle Santillan, San Diego Water Board, July 2018 available on the San Diego Water Board website at [https://www.waterboards.ca.gov/sandiego/water\\_issues/programs/basin\\_plan/docs/issue3/SDWB\\_REC1\\_Recommendations\\_Staff%20Report.pdf](https://www.waterboards.ca.gov/sandiego/water_issues/programs/basin_plan/docs/issue3/SDWB_REC1_Recommendations_Staff%20Report.pdf) (as of July 31, 2018)

<sup>6</sup> Other changes made to improve the organization and formatting of the Investigative Order or to correct typographical errors are not shown in red underline/strikeout to facilitate review of the Tentative Order.

- Individual named public agencies asserted that the Tentative Investigative Order requires investigation of suspected sources or pathways of human fecal material discharges outside of their jurisdictional control.*

The San Diego Water Board modified Directive 1 of the Tentative Investigative Order to clarify that a Responsible Party must comply with the requirements of the Tentative Order to the fullest extent of their legal authorities. Directive 1 provides that a Responsible Party is not required to investigate suspected sources or pathways of human fecal material discharges to the extent it lacks legal authority and cannot reasonably obtain legal authority (such as access to private property) to conduct the required investigations.

- The named public agencies are concerned that homeless encampments, one of the suspected human fecal material discharge sources identified in the Tentative Investigative Order, is a significant social-economic issue that is not easily solved by the named public agencies alone.*

The San Diego Water Board acknowledges that homelessness is a complex socio-economic issue whose causes and effects do not have a simple remedy. The Tentative Investigative Order concludes in Finding 17 and 47 that numerous homeless encampments are located on public lands or within public rights-of-way or similar areas on lands owned or controlled by public entities that are also identified as MS4 dischargers in the Order. It is reasonable to suspect that discharges of human fecal waste material from homeless encampments in many instances originate from lands owned or controlled by these entities and that the waste is discharged directly or indirectly to receiving waters within these jurisdictions. The Tentative Investigative Order requires the named public entities to investigate and quantify fecal material discharges from homeless encampments. The Tentative Investigative Order does not require the named public entities to undertake activities to abate discharges from nor to remove homeless encampments. In order to consider development of a strategy to abate human fecal material waste discharges, the San Diego Water Board must first require responsible dischargers to gather the necessary information to identify and quantify sources of human fecal material discharges including homeless encampments. Source identification and quantification of human fecal material discharges are the primary objectives of the Tentative Investigative Order.

- The City of Santee and the City of San Diego requested Finding 46 be removed as the San Diego River is a water of the U.S. and is not part of the MS4. As such, direct fecal material discharges to the San Diego River from homeless encampments are not discharges to the MS4 and are not subject to MS4 permit requirements.*

The Tentative Investigative Order is authorized for issuance under Water Code Section 13267, which broadly authorizes the regional water quality control boards to require persons who discharge, have discharged, or are "suspected of having discharged or discharging" waste that could affect water quality, to furnish technical or monitoring program reports. It is also authorized as to most dischargers under Water Code section 13383. The San Diego Water Board has renumbered Finding 46 of the Tentative Order as Findings 17 and 47 and revised them to establish that public entity owners and operators of MS4s also have police powers and the ability to exercise land use authorities over public open space where homeless encampments may be situated near or adjacent to the Lower San Diego River or its tributaries. It is reasonable to conclude that direct or indirect human fecal material discharges to receiving waters may originate from homeless encampments on land within a public agency's jurisdiction. This provides an additional basis for requiring public agencies that also own or operate MS4s to comply with the directives of this Tentative Order.

5. *Padre Dam Municipal Water District (MWD), Southern California Alliance of POTWs, California Association of Sanitation Agencies, and Ramona MWD asserted that sewer system exfiltration is not likely to occur in wet weather and so is not a significant contributor to illness among surfers observed in wet weather.*

Exfiltration refers to the leakage of sewage wastewater through minute cracks, gaps or breaks in sanitary sewer collection system infrastructure or private laterals to the surrounding environment. The Tentative Investigative Order does not conclude that exfiltration from sanitary sewer systems is the primary source of human fecal material in the Lower San Diego River Watershed, nor does it conclude that exfiltration is the cause of increased illness rates observed during the Surfer Health Study. The Tentative Investigative Order does require named public agencies that discharge, or have the potential to discharge, human fecal material to the Lower San Diego River Watershed to identify and quantify whether and to what extent their discharges are sources of human fecal material to the watershed.

The San Diego Water Board understands that exfiltration sewage leakage from collection system pipes may be more likely to occur in dry weather conditions. However, the effects of sewage exfiltration are not limited to dry weather. Residual human fecal material pollutants, remaining in the pipe bedding materials and nearby soil as a result of continuous sewage leakage in dry weather, may be spread and carried by storm water seepage and rising groundwater to nearby storm drains and receiving waters during and/or following storm events. The Tentative Investigative Order requires that all known or suspected human fecal material discharge and transportation pathways be thoroughly evaluated in order to appropriately establish a conceptual watershed model to quantify the potential contribution from sewage exfiltration.

6. *Padre Dam MWD asserted that it is inappropriate to require it to study the treated wastewater discharge from Ray Stoyer Water Reclamation Facility (WRF) because the discharge is already regulated by the San Diego Water Board NPDES permit (Order No. R9-2015-0002) which requires monitoring of fecal indicator bacteria in treated effluent and receiving waters to demonstrate effectiveness of the treatment process.*

In the Upstream Microbial Source Tracking Study, the human-associated fecal source marker HF183 was detected in quantifiable concentrations in wet weather water flows in Sycamore Creek downstream of where the Ray Stoyer WRF discharge enters the creek from Santee Lakes. Santee Lakes, part of the Facility's treatment system, are frequently used by local residents for recreational activities, including fishing, RV parking, and boat paddling and provide habitat for various wildlife. As treated effluent passes through Santee Lakes, occasional exceedances of *E. coli* concentrations slightly above water quality objectives have been documented at the discharge point where Santee Lakes overflow to Sycamore Creek, suggesting fecal sources other than treated effluent may have been released to Sycamore Creek.

Treatment processes such as those employed by Padre Dam MWD, including tertiary treatment followed by disinfection, should result in inactivation and removal of most human pathogenic viruses and bacteria in the effluent to levels that are protective of human health. Scientific research indicates that the risk-based water quality threshold of HF183 for treated effluent is much greater than for untreated sewage. The treated discharge from Ray Stoyer WRF is compliant with its permit requirements with respect to coliform bacteria effluent limitations and is not expected to cause or contribute to impairment of recreational beneficial uses in Sycamore Creek or the downstream Lower San Diego River. However, the discharge may still contribute to background signals of HF183 observed in Sycamore Creek. Quantifying the levels of background signals of HF183 coming from the Ray Stoyer WRF discharge, will

assist in identifying and quantifying untreated sewage and human fecal waste material in downstream waters. The Ray Stoyer WRF has not monitored for HF 183 to date.

Considering the lower health risk of disinfected tertiary effluent compared with that of raw sewage, and past monitoring reports demonstrating that the treated effluent discharge from the Ray Stoyer WRF to Santee Lakes is compliant with bacteria effluent limitations, the Tentative Investigative Order provides in Finding No. 38 that Padre Dam MWD can conclude the investigation of the Ray Stoyer WRF discharge by characterizing the HF183 levels in the treated effluent and determining the mass contribution of HF183 based on discharge volume information.

7. *The Ramona Municipal Water District (MWD) requested it be removed as a Discharger from the Tentative Investigative Order.*

The San Diego Water Board removed Ramona MWD as a Responsible Party in the Tentative Investigative Order. Ramona MWD's landscape irrigation discharges are upstream of the San Vicente Reservoir and are likely hydrologically disconnected from, and unlikely to contribute flow or human fecal material to, the Lower San Diego River Watershed. The San Diego Water Board also removed the Julian Water Pollution Control Facility (WPCF) as a discharge source from the Tentative Investigative Order because the Julian WPCF landscape irrigation discharge is upstream of the El Capitan Reservoir and is likely hydrologically disconnected from, and unlikely to contribute flow or human fecal material to, the Lower San Diego River Watershed.

**Public Notice**

The Tentative Investigative Order was noticed and released for public review and comment on May 21, 2018, with comments due June 20, 2018. On May 31, 2019 notice of the rescheduled public hearing for the June 12, 2019 Board Meeting was emailed to all interested parties and posted on the San Diego Water Board website. Notice of the June public hearing on the Tentative Investigative Order was also provided in the Meeting Notice and Agenda for the June 12, 2019 Board meeting and posted on the San Diego Water Board website.

**SUPPORTING DOCUMENTS**

1. Revised Tentative Investigative Order No. R9-2019-0014
2. Location Map of Lower San Diego River
3. Comment Letters
  - a. California Association of Sanitation Agencies (CASA) and Southern California Alliance of POTWs (SCAP)
  - b. California Department of Transportation (Caltrans)
  - c. City of El Cajon
  - d. City of La Mesa
  - e. City of San Diego
  - f. City of Santee
  - g. County of San Diego
  - h. Metropolitan Transit System
  - i. Padre Dam Municipal Water District
  - j. Ramona Municipal Water District
4. Response to Comments Report
5. Public Hearing Notice dated May 31, 2019.