

**Dominguez Channel and Greater Los Angeles and Long Beach Harbor Waters
Total Maximum Daily Load (TMDL)**

**Independent Peer Review of the Harbor Toxics TMDL
Hydrodynamic and Bioaccumulation Models**

Project Summary Report

May 2017

Introduction

In July 2016, the Ports of Long Beach and Los Angeles (Ports) initiated the process of selecting a panel of recognized experts to conduct an independent, third-party evaluation of the Hydrodynamic and Bioaccumulation Models that were developed as part of the Harbor Toxics TMDL implementation program. The Ports engaged Amec Foster Wheeler to assist with this effort. Three separate model experts with specialized experience were desired: (1) a hydrodynamic model specialist, (2) a bioaccumulation model specialist, and (3) an expert with the ability to evaluate the linkage between the two models (i.e., “the linked model”) and its application to TMDL-related investigations. This summary report provides an overview of the peer review team’s selection process, the implementation of the review process once the peer review team was selected, and a summary of the project deliverables, including meeting agendas, presentations, notes, and sign-in sheets; comments and responses; and the final review reports prepared by the peer review team. Reports and other supporting information are included on the CD that accompanies this summary report.

Peer Review Team Selection Process

The following process was used to identify the peer reviewers selected to conduct the independent, third-party evaluation of the Harbor Toxics TMDL models:

- The Ports, with the assistance of the Harbor Toxics Working Group¹ (HTWG), and the Port’s TMDL consultant team (Anchor QEA and Everest International Consultants), compiled a list of potential candidates for the peer review team. The candidates identified are well-known experts in the development and evaluation of hydrodynamic and bioaccumulation models. Review candidates for the linked model evaluation were identified based on their overall expertise in watershed studies and their experience on scientific review panels. The list of candidates was forwarded by the Ports to Amec Foster Wheeler, which contacted each of the candidates by e-mail to assess their interest and availability to participate on the peer review panel.
- Following this initial screening process, interested candidates were forwarded additional information on the Harbor Toxics TMDL and models, project scope of work, expected schedules and deliverables, and additional supporting information.

¹ The HTWG is composed of representatives from the Ports, the State Water Resources Control Board, the Los Angeles Regional Water Quality Control Board, and the Southern California Coastal Water Research Project (SCCWRP).

- The final peer review team members were selected based on their expertise, availability, and commitment to complete their review within the timeframe allotted. The peer review team selected was:
 - Weiming Wu, PhD – Clarkson University. Selected to review the Harbor Hydrodynamic Model.
 - John Arnot, PhD – ARC Research. Selected to review the Harbor Bioaccumulation Model.
 - Todd Bridges, PhD – United States (US) Army Corps of Engineers. Selected to evaluate the linked model aspects of the TMDL.

The peer reviewers were financially compensated by the Ports for their participation on the Harbor Toxics TMDL peer review team. Compensation was provided to each through a subconsulting agreement with Amec Foster Wheeler. The peer reviewers were compensated as follows:

- Weiming Wu (Clarkson University) and John Arnot (ARC Research) were compensated for their labor and expenses.
- Todd Bridges (US Army Corps of Engineers) was not compensated for his labor, but his travel and lodging expenses for attending the in-person meeting in Long Beach were paid for directly by Amec Foster Wheeler.

Distribution of Draft Reports

The draft hydrodynamic and bioaccumulation model reports were distributed to the peer reviewers on August 24, 2016. The reviewers were asked to conduct an initial review of the reports in anticipation of the September 28, 2016, kickoff meeting.

Peer Review Process

Kickoff Meeting

A WebEx kickoff meeting was held on September 28, 2016. The meeting was attended by the Ports, model developers (Anchor QEA and Everest Consultants), and peer reviewers. The kickoff meeting included the following elements:

- Introduction of the peer review team members;
- Overview of the Harbor Toxics TMDL (presented by the Ports);
- Overview of the hydrodynamic and bioaccumulation models (presented by Everest Consultants and Anchor QEA, respectively);
- Initial questions from the peer reviewers; and
- Discussion of the scope of work and schedule for the peer review effort.

The reviewers were asked to provide their major draft model report comments by October 24, 2016. The agenda, list of attendees, and meeting presentations are included on the attached CD.

WebEx Meeting to Discuss Major Comments

A second WebEx meeting was held on October 27, 2016, to allow the peer reviewers to complete the following activities:

- Present and discuss major comments on the draft model reports;
- Discuss the models in more detail with the modelers; and
- Discuss next steps and schedules/deliverables.

During this WebEx meeting, the modelers delivered presentations that addressed the peer review team's major comments.

The major comments from the peer reviewers as well as the initial response presentations by the modelers are included on the attached CD.

Formal Comments by the Peer Reviewers

The peer reviewers were requested to submit their formal draft model review comments by November 23, 2016, to allow adequate time for the Ports and modelers to review the formal comments before the December 2016 in-person meeting.

The peer reviewers' formal comments are included on the attached CD.

In-Person Meeting

An in-person meeting was held at the Port of Long Beach Administration Building on December 8, 2016. The meeting agenda and attendance list are attached. Participants in the meeting were the peer reviewers, representatives from the Ports, the model development team, and several members of the HTWG.

The purpose of the meeting was to provide an opportunity for the peer reviewers and modelers to meet in person for detailed discussions of the peer reviewers' comments on the draft model reports, and to address specific issues in a collaborative fashion. The peer reviewers and modelers were instructed by the Ports to come to consensus during the meeting so that final peer review reports could be prepared in a timely manner following meeting adjournment. The peer reviewers were queried at the end of the model discussion and the group consensus was that the linked models are adequate and can be used for their intended purpose. Time was allotted at the end of the meeting for general questions from the HTWG members in attendance.

The meeting agenda, sign-in sheet, peer reviewer comments and modeler responses, and detailed meeting notes are included on the attached CD.

Final Peer Review Reports

The last step in the process was for each of the peer reviewers to submit a final report. Each final report summarized the reviewer's comments on the model reports as well as how these comments were addressed by the model development team.

Peer reviewer final reports are included on the attached CD.

List of Deliverables and Supporting Information

The following project reports and supporting information are included on the attached CD:

1. Peer Review Summary Report
2. Draft Model Reports
 - a. Draft Water Resources Action Plan (WRAP) Model Development Report
 - b. Draft Bioaccumulation Model Report
3. Kickoff Meeting (September 28, 2016)
 - a. Meeting Agenda and Attendees
 - b. Development of a Linked Model of the Greater Los Angeles and Long Beach Harbor Waters for Evaluation of TMDL Compliance and Management Alternatives—Presented by Ports
 - c. Summary of the WRAP Model Development—Presented by Everest Consultants
 - d. Bioaccumulation Model for Greater Los Angeles and Long Beach Harbor Waters—Presented by Anchor QEA
4. WebEx Meeting to Discuss Major Issues (October 27, 2016)
 - a. Hydrodynamic Model Initial Peer Review Comments
 - b. Hydrodynamic Model Initial Comments Presentation—Presented by Everest Consultants
 - c. Bioaccumulation Model Initial Peer Review Comments
 - d. Bioaccumulation Model Initial Comments Presentation—Presented by Anchor QEA
5. Peer Reviewer Formal Comments
 - a. Hydrodynamic Model Formal Comments from Weiming Wu, PhD
 - b. Bioaccumulation Model Formal Comments from Jon Arnot, PhD
 - c. Linked Model Formal Comments from Bridges
6. In-Person Meeting (December 8, 2016)
 - a. Meeting Agenda
 - b. Sign-in Sheet
 - c. Hydrodynamic Model Comments and Responses
 - d. Hydrodynamic Model Response Presentation
 - e. Bioaccumulation Model Comments and Responses
 - f. Bioaccumulation Model Response Presentation
 - g. Linked Model Comments and Responses
 - h. In-Person Peer Review Meeting Minutes
7. Final Peer Reviewer Reports
 - a. Final Harbor Toxics TMDL Hydrodynamic Model Review Report—Prepared by Weiming Wu, PhD
 - b. Final Harbor Toxics TMDL Bioaccumulation Model Review Report—Prepared by Jon Arnot, PhD
 - c. Final Harbor Toxics TMDL Linked Model Review Report—Prepared by Todd Bridges, PhD
 - d. Final Comments on the Harbor Toxics TMDL Linked Models—Prepared by Todd Bridges, PhD
8. Final Model Report
 - a. Final TMDL Hydrodynamic Model Report
 - b. Final TMDL Bioaccumulation Model Report
 - c. TMDL Bioaccumulation Model Report Memorandum