



TAPPAN ZEE BRIDGE/I-287  
ENVIRONMENTAL REVIEW

**New York State Department of Transportation  
Metropolitan Transportation Authority Metro-North Railroad  
New York State Thruway Authority**

**Meeting Minutes**

***Stakeholders' Advisory Working Groups (SAWGs)  
Environmental SAWG Meeting #4***

***Tappan Zee Bridge/I-287 Corridor  
Environmental Review***

---



October 18, 2007

**Meeting Title:** Stakeholders' Advisory Working Groups (SAWGs)  
Environmental SAWG Meeting #4

**Meeting Purpose:** Exchange of information

**Location Date:** Power Authority, White Plains, NY.  
October 18, 2007

**Agenda:**

Item 1. Introduction	(Page 2)
Item 2. Presentation	(Page 2)
Item 3. Questions and comments	(Page 3)

**Attendees:**

**Name**

Hon. Tom Abinanti  
Sherry Alperstein  
Rick Beckerman  
Renee Cohen  
Richard Fagan  
Melanie Golden  
Melissa Guardaro  
Klaus Jacob  
Roberta Lane  
Hon. Bruce Levine  
John Lipscomb  
Richard May  
Josh Moreinis  
Gregory Price  
Marysue Robbins  
Gabby Rosenfeld  
Irene Ross  
Stephen Safran  
Joan Schroeder  
Marion Shaw  
Leslie Snyder  
Andrew Stewart  
Kathleen Sullivan

Members of the agencies and consultant team.

*Agenda Item 1*

*Introduction and welcome to Stakeholders' Advisory Working Groups by Joe Pasanello and Paul Plotczyk*

**Introductory Presentation**

John Szeligowski of Earth Tech (environmental consultant) introduced Dr. Mark Moese, who will present ecological aspects of the Hudson River sampling program at an upcoming SAWG, and Dr. Frank Nitsche of Lamont Doherty Earth Observatory (LDEO), who has provided input to the team on geophysical matters.

The first presentation focused on the goals of the study's Hudson River sampling program and the manner in which the overall program, including in-river data acquisition, has been structured to meet these goals. Based on considerable input from federal and state regulatory agencies, the program has been focused on establishing habitat conditions extant along the current bridge alignment and also along potential alignments of a new bridge. Habitat conditions relevant to the rehabilitation alternative are addressed by sampling in the vicinity of the existing bridge.

Based on discussions with NY State Department of Environmental Conservation (NYSDEC), it was determined that ecological conditions throughout the length of the larger Hudson River have either largely been established or are being evaluated by programs conducted under the auspices of NYSDEC, National Oceanic and Atmospheric Administration (NOAA), and utility companies, among others. The goal of the Tappan Zee program, according to these agencies, should be to determine if there is a unique habitat in the vicinity of the existing bridge that could be impacted by potential construction activities. In addition, program should identify habitat conditions along potential new bridge alignments.

Thus, as described in detail during the SAWG, the river sampling program developed for the Tappan Zee study principally involves sampling and analyses along the existing and potential new bridge alignments. The data will be used directly and in conjunction with various analytical tools, including mathematical models, to estimate the short- and long-term impacts of the project.

The November SAWG will describe the ecological components of the Hudson River program.

Robert Forstner, PE, an environmental and geotechnical engineer, made a presentation on the geophysical and hydrodynamic aspects of the program.

*Agenda Item 2*

*Presentation*

*Agenda Item 3*  
*Questions and Comments*

Question: A question was asked concerning air and noise analysis.

Response: A future SAWG will address issues related to air quality and nose emissions.

Question: Is the study team familiar with the United Water project to build a water intake in the Hudson River at the north end of Rockland County?

Response: The study team has not yet seen designs for that system. However, it is not likely that either project would impact the other.

**Geophysical and Hydrodynamic Presentation**

*Bathymetric Surveys*

The presentation began with a discussion of the bathymetric work that has already been accomplished near the Tappan Zee Bridge. Two types of surveys, near-field and far-field, were undertaken. The near-field survey was conducted with highly precise equipment called multi-beam echo-sounders that provides a detailed image, or map, of the river bottom; features such as wave forms, bottom debris, and scour marks can be observed in these multi-beam maps. Far-field survey work had as its principal purpose developing input to a river hydrodynamic model. The far-field program was conducted with somewhat lower resolution equipment. At the completion of the presentation, SAWG participants were shown large-format bathymetric maps. Several questions were asked related to bathymetry.

Question: What would be the cause of sediment removal downstream of the causeway piers?

Response: The likely cause was an increase in water velocity through the piers resulting in a shearing of the bottom material and transport of it somewhat downstream. This left a noticeable depression where the sediments were scoured.

Question: A number of questions were asked concerning features shown on the maps. Most of the questions related to pile clusters and the bridge fendering system.

Response: In one case a possible wreck could explain the mapping results.

Question: Why is there an apparent steep river bottom slope near the eastern river shoreline?

Response: It was surmised that the underlying rock profile could explain the information shown on the bathymetric maps in that area.

Question: What was the timeline of the entire investigation?

Response: It was noted that the bathymetric survey occurred over a two-week period in April 2006, the acoustic surveys occurred over several days in May 2006, sediment sampling was conducted for ten days in September and October 2006, and the hydrodynamic study occurred during a ten-day period in April 2007.

### *Acoustic Surveys*

The presentation then focused on the acoustic survey and X-ray fluorescence work conducted by Lamont Doherty Earth Observatory. The objective of that effort was to establish the extent and depth of industrial-era sediment deposition in the vicinity of the Tappan Zee Bridge. The assumption behind the program is that the river sediments most likely to be contaminated are those that have been recently deposited (i.e., deposited during the industrial era). Using a combination of survey techniques including sub-bottom profiling, side-scan sonar imaging and X-ray fluorescence, estimates were made of the distribution and depth of recent deposits in the bridge vicinity. At the completion of the formal presentation, large maps illustrating results of the acoustic survey effort were displayed, and meeting participants were afforded an opportunity to ask questions.

Question: Several questions were asked concerning what appeared to be unusual distributions of recent deposits.

Response: Some of the deposits are in areas where dredging has occurred (near Tarrytown asphalt plant site) and along the alignments of submarine cables.

Question: Why are the recent deposits along the eastern shoreline deeper than those along the western shoreline?

Response: Several explanations are possible, including discharges entering the Hudson from small tributaries along the eastern shoreline, and the several wharf-like projections on the eastern side of the Hudson, including park areas and marinas in Tarrytown and the General Motors site in Sleepy Hollow.

Question: What accounts for the large depositional area on the west side of the Hudson River in the bridge vicinity?

Response: The shape of the depositional area here is partly the result of the manner in which the study area boundaries were developed. The depth of recent deposits in this area averages less than one foot. The pattern of deposits in this area may, in part, be influenced by the presence of Piermont Pier, which is beyond the study limits.

Question: Why did the study focus on recent or industrial-era deposits?

Response: Recent deposits are the most likely to be contaminated and could present a risk to the ecosystem should they be resuspended by project construction activity.

### *Sediment Sampling*

The next part of the presentation concerned the sampling program undertaken to characterize river sediments in the bridge vicinity. Thirty-eight sediment cores were obtained and divided into one-foot samples for laboratory analysis (total of 157 samples). The laboratory analysis was conducted for geotechnical properties and contamination properties (metals and organics). Laboratory analysis results were presented for heavy metal levels in the samples. The metals analysis results, when compared to other data available for Hudson River sediments, indicate that sediments in the bridge vicinity are similar to those found in other river reaches.

Question: Why were organic data not presented?

Response: The organic data is undergoing quality review and will be available for presentation at a future SAWG.

Question: What are the potential sources of mercury in the sediments?

Response: While the Tappan Zee Bridge sampling program is not designed to identify contaminant sources, the former Marathon Battery site, Croton Landfill, and General Motors sites were mentioned as possible point sources. One participant suggested that air emissions from coal burning may explain background levels of mercury found throughout the water shed. It was noted that the Environmental Protection Agency (USEPA) has now implemented a “mercury rule” for new coal-burning power plants.

Question: Could geotechnical data obtained from the sediment cores assist in the evaluation of the bridge foundations?

Response: It was noted that geotechnical data was collected as part of the geophysical program primarily to aid in understanding and refining the results of chemical analyses and that this data will appear in the environmental impact statement. A separate geotechnical investigation, designed specifically to gather data for design of the potential replacement bridge foundations, is not included in the current presentation.

### *Hydrodynamic Surveys*

The final topic discussed at this SAWG was the hydrodynamic survey program conducted this past spring. The program consisted of several elements:

- Salt front investigation
- Acoustic Doppler current profiling

- Dye tracer study
- Water quality and tide stage measurements

The purpose of this program was to provide input on river behavior to a hydrodynamic model that is being developed to predict dispersion of sediments resuspended by potential construction activity. Several results of the hydrodynamic investigations were presented during the meeting, including salt front distribution patterns and flow patterns in the river as monitored by the acoustic Doppler current profilers (ADCP) instrumentation.

Question: At what tide stage was the salt front survey conducted?

Response: The study was conducted at ebb tide to minimize interferences that could potentially be caused by the survey vessel. John Lipscomb stated that there are years of data collected by LDEO on the salt front and that that information should be incorporated into our program. It also was mentioned that there is a tremendous variation in the movement of the salt front. The study team recognizes the substantial natural variability in the salt front and is in the process of reviewing available river data.

Question: Was the salt front survey conducted down the river channel?

Response: The survey was conducted along the main channel from north of Bear Mountain to south of the Tappan Zee Bridge.

Question: What time of year was the study conducted? How will the data be used?

Response: The hydrodynamic field work occurred during April 2007. The results of the survey effort will be used to calibrate a mathematical model that is being developed to help estimate certain of the impacts of rehabilitating the existing constructing a new or bridge.