

October 19, 2011

Mr. Arthur Leahy, CEO  
Los Angeles County Metropolitan Transportation Authority  
One Gateway Plaza  
Los Angeles, CA

Dear Mr. Leahy,

As the Independent Review Panel, we have been asked to review two reports for the MTA. One focuses on faults and the other addresses the safety of tunneling, both in the Century City area. We find these reports to be highly professional and technically sound. The conclusions are valid and convincing, based on the high quality data assembled about active faults in the Century City area, the analyses of those data, and the quality and comprehensiveness of the information summarized regarding tunneling.

In particular, we believe the arguments for choosing the station site on Constellation Blvd. over potential sites on Santa Monica Blvd. to be compelling. In fact, it is problematical that a site on Santa Monica Blvd. could be constructed safely, because of the complexity of the fault systems that traverse the area.

The location of active faults must be taken into account when siting subway stations. When a fault slips and produces an earthquake, the associated ground displacements represent an extreme hazard to structures in the fault zone. It is not possible to ensure life safety for a subway station in an active fault zone. Moreover, it is prohibitively difficult and expensive to construct a station that could be returned to functionality in a timely manner. It is also very hazardous to site a subway tunnel within an active fault zone for extensive distances, as required for the Santa Monica station sites. For a subway tunnel, it is best to cross a fault as close to perpendicular as possible to minimize the potential for fault rupture and earthquake damage, to promote rapid restoration of the facility, and to achieve the highest degree of safety for passengers.

The tunneling safety report also provides compelling evidence that tunneling can be performed safely in the Century City area. This evidence includes the recent construction of over 30 miles of tunnel in the Los Angeles basin without any accidents related to explosive or toxic gas infiltration, and tight control on ground movements in projects, such as the Metro Gold Line Eastside Extension (MGLEE), where surface settlements along the entire route were at very small to negligible levels in soils similar to those in Century City. Moreover, there have been no substantiated complaints about noise and vibrations generated during construction and operation of the MGLEE tunnels, and similar measures for noise and vibration control will be adopted during tunneling in the Century City area. The tunnel safety report presents a convincing case for the ability to tunnel safely in gassy ground and provides sound procedures for locating abandoned oil wells.

## 2 MTA Findings

As summarized in the report, there is ample experience and expertise for successful tunneling in seismic areas, including underground construction through active fault zones. With the application of the tunneling methods described in the report, there should be very low to negligible impact on the Beverly Hills High School (BHHS) from tunneling to connect with the Constellation Blvd. station; no ground settlement that could impair the use of buildings and facilities; low levels of ground vibrations and noise, which are unlikely to be perceived by students and staff; effective control of gas; and the detection and remediation of active and abandoned oil wells. The presence of the tunnels will not restrict the use of the BHHS as an emergency evacuation center.

This report summarizes our findings, based on a careful review of the data as well as detailed and candid discussions with Metro staff, project designers, geoscience experts engaged in the fault investigations, and Metro's Tunnel Advisory Panel. We are available to provide further comments should additional clarification or oversight from our panel be requested.

Sincerely,

Lloyd Cluff  
Paul Jennings  
Lucile Jones  
Thomas O'Rourke