

# **Balboa Reservoir Project Noise and Vibration Technical Analysis**

## **ESA's Scope of Work for SEIR**

### **2018-007883ENV**

Noise and vibration impacts will be evaluated in the Subsequent EIR (SEIR) for the Balboa Reservoir project that will analyze construction-generated noise and vibration, as well as operational noise from both stationary sources (i.e., mechanical equipment) and increases in vehicle traffic. Two residential density options will be quantitatively analyzed: the Base Project Option would include 1,100 dwelling units and 1,300 parking spaces, while a City Policy Option would include 1,550 dwelling units and 650 parking spaces.

The project also includes three potential variants. These include Variant 1 which would relocate the 750-space underground parking garage to an above-ground location, Variant 2 which would shift South Street to SFPUC's 80-foot-wide strip of land along the southern edge of the site and relocate the 750-space underground parking garage to the north side of the site, and Variant 3 which would remove the pedestrian and bike access at San Ramon Way. None of the variants include changes to the land use totals or construction methods as compared to the proposed project. As such, these variants are anticipated to result in similar construction and operations as the proposed project (with the exception of Variant 1, which would require less excavation for the relocated parking garage, and therefore less construction activity). Because the variants would not result in a change in the number of units or square feet of development and their associated vehicle trip generation, there is no reason to believe that any one of the variants would substantially alter the traffic noise analysis for either of the density scenarios. Therefore, ESA will conduct a qualitative noise and vibration analysis for the variants.

ESA understands the Planning Department will not require a stand-alone Noise Study. The scope of work below is based on the preparation of a noise section for the SEIR and an accompanying technical appendix that will present supporting calculations and assumption detail. As discussed below, separate tasks are identified for: (1) an initial consultation with the Planning Department to establish noise monitoring locations to be assessed in the existing project setting and specify roadway segments to be analyzed in the impact analysis; and (2) to present preliminary results of predicted noise-related impacts prior to submittal of the Administrative Draft SEIR-1.

#### ***Issues:***

**Construction Noise and Vibration.** Construction activities, including excavation and grading, and building construction, generate both noise and vibration that can affect nearby sensitive receptors (primarily residents). An asphalt recycling facility to recycle the pavement will be set up on site during construction and will be analyzed as non-impact equipment. Sensitive receptors proximate to the project site include single-family residential housing abutting the project site to the west, multi-family residential uses abutting the project site to the south, and Riordan High School to the north. The preliminary geotechnical report indicates that conventional spread footings will be sufficient as foundations. Consequently, pile driving is not an anticipated method of construction.

The Initial Study for the Balboa Park Station Area Plan identified a less-than-significant impact with respect to construction-related noise and construction noise impacts and therefore were not further assessed in the Area Plan FEIR. Potential for construction-related vibration impacts were not assessed in either the Initial Study or the Area Plan FEIR, and will be addressed in the Balboa Reservoir Project SEIR. Construction is anticipated to occur in three main sequential phases over the course of 6 years. The

initial phase (Phase 0) would include grading, excavation, and construction of site infrastructure over 12 months. Vertical construction would follow for Phases 1 and 2, each lasting approximately 24 to 30 months. Construction noise during Phase 2 could impact on-site residents that occupy residential areas completed during Phase 1.

Construction-period vibration can also adversely affect adjacent and nearby buildings, particularly older masonry structures, which tend to be fragile and thus relatively more susceptible to vibration impacts. Vibration impacts can be of concern for historical resources. The analysis will specify whether or not there are older masonry, historic structures close enough to the project site to be affected by construction-period vibration.

**Operational Noise.** Operational traffic noise increases on local roadways and from the proposed public parking garage, and stationary source noise from mechanical equipment and loading areas would all have the potential to increase local noise levels.

The Area Plan FEIR found that future residents in the Balboa Reservoir subarea would be subject to noise levels between 60 and 70 dBA depending on proximity to Phelan Avenue (now known as Frida Kahlo Way) and the future Lee Avenue extension and identified Mitigation Measure N-1 to require a detailed evaluation of noise reduction requirements to be made and needed noise reduction requirements incorporated into the design before new residential construction proceeds. The Area Plan EIR determined that noise impacts on future residences would be less than significant with mitigation. The Area Plan FEIR also includes Mitigation Measure N-2 to require project sponsors to complete a vibration analysis for any residential or vibration-sensitive land uses proposed within critical distances of existing or planned BART or Muni facilities. The Area Plan EIR found that the Balboa Reservoir subarea is located more than 350 feet from Muni light rail facilities (and thus outside of the critical distances identified), and vibration effects would be less than significant.

### ***Tasks:***

- Arrange a preliminary consultation with Environmental Planning staff to propose and obtain approval on monitoring locations to establish the existing noise background for the proposed project. This meeting/consultation will also establish roadways to be analyzed for assessing localized transportation-related noise increases in the project vicinity.
- One meeting with Environmental Planning staff to present preliminary results of quantified impacts two weeks prior to submittal of the Administrative Draft SEIR-1.

### **Setting**

- Describe Area Plan FEIR noise setting.
- Describe noise impacts assessed in the Area Plan FEIR, significance conclusions, and mitigation measures.
- Provide a brief introduction to acoustical terms and methodologies.
- Discuss relevant noise policies, regulations and standards in the City's General Plan and Police Code.
- Identify noise sensitive receptors in the vicinity of the project. Describe the existing noise environment at and around the project site by collecting two long-term (48-hour) noise measurements on the subject parcel. Additionally, up to four short-term noise measurements will be collected at the

nearby sensitive land uses in Westwood Park, at Archbishop Riordan High School, and at City College. The noise monitoring locations will be approved by EP prior to initiation of monitoring activities.

- Describe other existing noise sources in the project area including traffic on the Interstate 280 freeway and activities at the Riordan High School athletic fields.

#### Construction Impacts

- Assess construction-related noise levels from non-impact equipment based on compliance with standards contained in Section 2907(a) of the Police Code as well as in terms of the overall increase over ambient noise levels, based on operation of the two noisiest pieces of typical construction equipment projected by the project sponsor to be used in demolition, excavation, and construction. (A detailed equipment list will be required for use in the Health Risk Assessment to be prepared as part of the project's Air Quality analysis, and that same equipment list will be relied upon in the construction noise analysis.) For impact equipment, as well as for non-impact equipment, the analysis will also compare estimated construction noise levels against Federal Transportation Administration (FTA) daytime noise standards of 90 dBA for residential uses. The analysis will apply FTA's general assessment methodology, analyzing simultaneous operations of the two noisiest pieces of equipment. In addition to comparison to FTA noise standards, construction noise levels will be assessed based on whether ambient noise levels at nearby receptors would increase by 10 dBA or more. If construction is proposed to occur at night, nighttime construction noise will be assessed based on its potential to result in sleep disturbance at nearby residential uses (increase interior noise levels above 45 dBA or result in strongly perceptible levels of vibration as defined in Caltrans or FTA guidance documents). In addition to the quantitative metrics analyzed, for any construction noise in excess of these metrics, the analysis will also consider other qualitative factors such as frequency and duration of the noise event. If significant impacts are identified, mitigation measures will be identified and the effectiveness of those mitigation measures to reduce impacts to less than significant levels will be assessed.
- Assess construction-related vibration levels from standard construction equipment based on proximity to structures (both historic, if any, and non-historic) and vibration exposure standards developed by the FTA which were also identified in the EIR for the Balboa Park Station Area Plan.
- Qualitatively assess the potential for construction noise and vibration from other cumulative projects in the area to combine with construction noise and vibration of the proposed project based on the same noise and vibrations standards discussed above for the proposed project.
- Identify other practical, feasible project noise control measures for noise impacts identified for the project, if warranted. Evaluate whether mitigation measures would reduce the impacts below a level of significance and identify the parties who would be responsible for implementing each mitigation measure.

#### Operational Impacts

- Assess potential operational noise impacts of mechanical equipment, including back-up generators, to the extent equipment specifications are available from the project sponsor. If equipment information is not available, analysis will be based on a reasonable specification of equipment that would serve the proposed buildings. For backup diesel generators, this is tentatively assumed to be two generators for the Base Project Option and up to six generators for the City Policy Option, consistent with the scope for the air quality analysis. Stationary noise sources will be evaluated against the limits in the noise ordinance (at property plane and nearest residential receptor).

- Calculate the change in street noise levels resulting from the increase in vehicle trip generation resulting from the project based on trip generation and distribution estimates provided by the transportation consultant.<sup>1</sup> This would include trips generated by new residential, childcare, and retail uses. The Traffic Noise Prediction model of the FHWA will be used to determine any increases in street noise for up to eight street segments projected to be used to access the project site.
- Calculate the cumulative change in roadside noise levels based on cumulative trip distribution estimates in the transportation analysis Cumulative Scenario.
- With respect to noise exposure of proposed residential uses, the analysis will cite the following considerations, as appropriate, to reach a finding of significance:
  - The findings of the California Supreme Court in *California Building Industry Association v. Bay Area Air Quality Management District* case whereby CEQA does not generally require lead agencies to consider how existing environmental conditions might impact a project's users or residents unless the proposed project would exacerbate the existing noise environment. If the project would result in significant noise impacts, the analysis will assess those impacts on the proposed uses taking into consideration regulatory requirements for noise insulation in new construction, as discussed below.
  - The requirements of San Francisco's current Section 1207.6.2 of the building Code and Section 1207.4 of the State Building Code which states that interior noise levels attributable to exterior sources shall not exceed 45 dB in any habitable room.
  - Long-term noise measurements collected for the project site.
- Identify other practical, feasible project measures for noise impacts identified for the project, if warranted. Evaluate whether mitigation measures would reduce the impacts below a level of significance and identify the parties who would be responsible for implementing each measure.

#### Noise Technical Appendix

ESA will prepare a Technical Noise Appendix for inclusion in the SEIR. It is anticipated that the appendix will include the following content:

- A list of assumed construction phases and the equipment assumed for each phase, consistent with the air quality analysis.
- A figure indicating the areas of construction phasing, assumed locations of operational stationary noise sources, and locations of noise-sensitive receptors.
- Printouts of input assumptions and predicted output noise levels from the Roadway Noise Construction Model for each phase of construction.
- Printouts of vibration propagation calculation sheets for construction equipment showing equations and reference vibration levels and their sources.
- Printouts of roadway noise inputs showing, volumes, fleet mix, and speed assumptions and resultant noise levels as calculated by the FHWA model.

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<sup>1</sup> The Planning Department will not require a stand-alone Transportation Impact Study (TIS) for this project. Kittelson will prepare a combined TIS/Transportation and Circulation section of the SEIR.

- Printouts of noise propagation calculation sheets for operational stationary noise sources showing equations and reference noise levels and their sources.