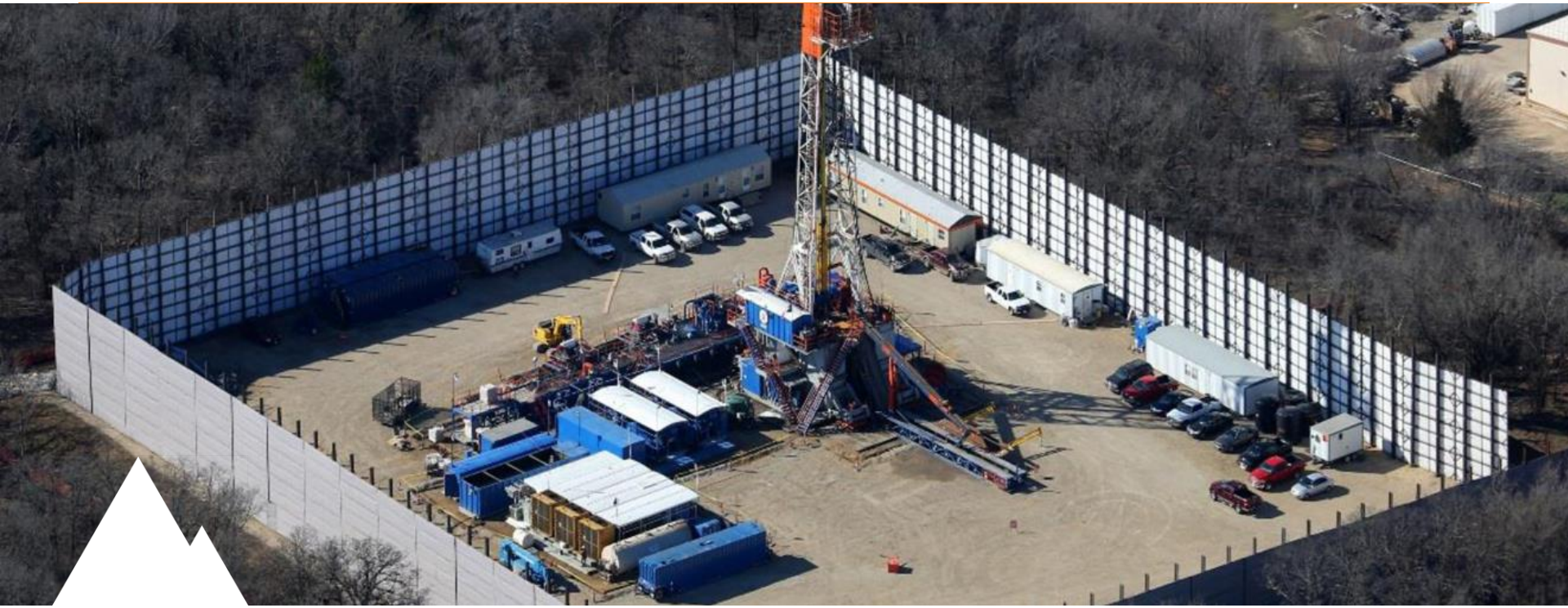

Noise Management

November 24, 2016

Noise Management Plans: Overview

- What:
  - The Noise Management Plans (NMPs) include measures to control sound levels at homes during construction, considering sound sources and activities such as tunnel construction, heavy equipment usage, pile driving and back-up alarms.
- When:
  - All phases of the Project, from planning, through construction and reclamation and operations
- Additional Information:
  - NEB Condition 80 (Facilities Construction Noise Management)
  - NEB Condition 86 (Burnaby Tunnel Noise Management)

Noise Management Plan: Mitigation

- Burnaby Tunnel at Westridge Marine Terminal:
  - Administrative Controls: scheduling, compliance with guidelines, notifications and contractor behaviour/education
  - Best Practices: site speed limits, drive through material/delivery management, placement of stationary equipment, placement of materials as barriers, good maintenance practices
  - Engineered Controls: alternative backup alarms, temporary barriers or shrouds, noise suppression equipment, alternative pile driving methods or shrouds for impact driving

Noise Management Plan: Mitigation

- Engineered noise control planning is iterative with construction planning
- Noise models are used to test potential controls for effectiveness
- Completed initial estimates of noise and have to review practical types of controls with construction team
- Included full Westridge Marine Terminal and Burnaby Terminal site activity (cumulative approach)

Noise Management Plan: Mitigation

- Key tunnel related activities for control
  - Drilling for tunnel entrance: barriers/noise suppression equipment
  - Compressors: enclosures/barriers
  - Dump trucks and heavy equipment: noise suppression equipment, avoid engine retarder brakes, minimize ‘bangs/clangs’
  - Material movement out of the tunnel: barriers
  - Backup alarms: alternates for night work
- Monitoring will be conducted to verify effectiveness of control

Noise Management Plan: Mitigation

- Key Westridge related activities for control:
  - Pile driving (marine and land): maximize use of vibratory methods, shrouds to be used for marine impact pile driving, use temporary barriers where needed for land based operations
  - Earth moving: noise suppression equipment, avoid engine retarder brakes, minimize ‘bangs/clangs’
  - Backup alarms: alternates for night work
- Monitoring will be conducted to verify effectiveness of control

Noise Management Plan: Mitigation

- Key Burnaby Terminal related activities for control:
  - Pile driving (marine and land): maximize use of vibratory methods, shrouds to be used for marine impact pile driving, use temporary barriers where needed for land based operations
  - Earth moving: noise suppression equipment, avoid engine retarder brakes, minimize ‘bangs/clangs’
  - Backup alarms: alternates for night work
- Monitoring will be conducted to verify effectiveness of control

Sample Engineered Noise Controls

Images for illustrative purposes only