

# Council Briefing for June 18, 2012: Low Level Road / Port Metro Vancouver Rail Yard Expansion Project

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**Purpose:** To provide Mayor and Councillors, prior to June 18, 2012 Council Meeting, with noise study analysis, highlights of a recent decision by the Canadian Transportation Agency, and the experience of another community's port expansion experience. Also included are recommendations to protect residents from potential port / rail expansion consequences and the projected 30-50% growth in port activities in the years to come.

North Van Urban Forum (NVUF) represents and advocates for transparency in this project. NVUF acknowledges that the Low Level Road / Port Metro Vancouver Rail Yard Expansion project has benefits for the Community, but it will bring potential negative consequences that we believe proper planning can mitigate.

NVUF has outstanding concerns regarding the project which are critical to the health of the Lower Lonsdale and Pier Community. These include the impacts of longer trains, the addition of more powerful locomotives that will be used closer to residences, changes to rail operations, and the potential for idling locomotives to become a significant source of rail noise for the community.

**If the Low Level Road Project is approved on June 18, 2012, NVUF proposes that the following amendments be added to protect residents and the City of North Vancouver:**

- **Amendment #1:** The City request PMV to perform a new noise study in order to establish a valid noise baseline before any construction begins on this project. The PMV noise study must adhere to criteria set out by the City. The City finance a peer review of the new noise study by an acoustic consultant not engaged by PMV in order to avoid a conflict of interest.
  
- **Justification:**
  - The current noise study performed by BKL Acoustics does not provide a sufficient baseline for future comparison as many core concerns have been simply ruled out of scope and are not included in the report.
  - A new and valid baseline is critical for comparison to future noise levels so that impacts of the project and future rail expansion, including the addition of 2 new rail tracks, can be assessed and determine if noise mitigation measures are working.
  - Study must use Canadian Guidelines: [Proximity Guidelines and Best Practices](#).
  - Study baselines to include additional data points (at the Western End of the project) in the 100 and 200 blocks of East Esplanade, and 300 block of East Esplanade / Low Level Road as no data has been collected, and therefore there is no basis for comparison to future noise levels.

- Study must use a metric where distinct noise events are high-lighted; and not a metric where noise is averaged over a period of time so that the impact of these events is discounted.
  - Study must include the impact of 2 additional rail tracks, longer trains, and idling locomotives in within its scope.
- **Amendment #2:** City request that PMV, as part of its commitment to reduce emissions, requires CN Rail to partner with it in achieving this goal, and commit to the use of idle reduction technology for all of its locomotives in service on the North Shore. Examples include [SmartStart](#) or [Kim HotStart](#) in order to reduce emission and diesel particulate matter while simultaneously eliminating many resident concerns regarding noise and vibration from idling locomotives. This commitment needs to be made on a year-round basis so that locomotives are not left idling in the winter months during colder temperatures.
- **Justification:**
    - This request will serve 2 purposes in reducing the amount of time that locomotives idle and in reducing diesel emissions which negatively affect air quality.
    - This request is consistent with PMV and CN's publicly stated commitments to the environment
      - See PMV's commitment to [Investing in Air Quality](#).
      - See CN Rail's commitment as a good corporate citizen in its [Environment Key Initiatives](#) and CN Rail's [Environmental Policy](#).
    - CN will recoup its investment in this technology in fuel savings in a relatively short period of time.
    - The [World Health Organization](#) has recently elevated the status of diesel engine exhaust from a "probable carcinogen" to classifying diesel engine exhaust as "carcinogenic to humans".
      - See WHO's [Press Release](#) on June 12, 2012 where they state that those most at risk are workers who are exposed to diesel engine exhaust on a regular basis and that "diesel engine exhaust causes lung cancer in humans."
      - Investments in idle reduction technology are needed to protect residents and workers.
    - Locomotives that idle for long periods of time consume large amounts of fuel. This affects CN Rail's customers who may be currently paying surcharges for fuel. Reducing idling will reduce fuel consumption and benefit CN Rail's customers.
    - This change is a **win-win-win-win-win-win** for PMV, CN Rail, CN Rail's customers, all Port employees, the City, and the community.

- **Amendment #3:** City staff and Waterfront Industrial Noise Control Committee (WINCC) develop an ongoing system of noise monitoring; especially in light of the anticipated growth of port activities in the range of 30 - 50 %.
  
- **Justification:**
  - It should meet on a regular basis with Port Metro Vancouver, and all tenants (particularly CN Rail) to discuss progress on noise and emission reductions as is consistent with [Port Metro Vancouver](#) and [CN Rail](#) (see Focused Fuel Conservation) declared environmental objectives.
  - Be analogous in structure and operation to committees monitoring noise at the Vancouver International Airport.
  - Provide a dispute resolution process for residents and port tenants.
  
- **Amendment #4:** Establish a contact mechanism (i.e. phone number) for the community to contact CN Rail for resolution of excessive noise problems. The phone number must provide live access to a CN Rail representative who can affect immediate action to remedy a situation.
  
- **Justification:**
  - This request is in anticipation of locomotives left to idle for hours on end such that the community is subject to excessive noise and diesel emissions with no respite possible until regular business hours resume.
  - CN Rail only provides a single phone number (1-888-888-5909) and an email address ([contact@cn.ca](mailto:contact@cn.ca)) that is monitored during regular business hours EST, and there is no direct access on evenings or weekends.
  - As many rail noise complaints occur outside of regular business hours during Eastern Standard Time, this limited access makes it difficult for residents to reach someone at CN Rail who can assist in rail noise complaints and help reduce unnecessary diesel emissions.
  - The community does have the WINCC noise phone number (604-986-6473), and email address ([noise@cnv.org](mailto:noise@cnv.org)). Again, these access mechanisms are only monitored during regular business hours PST.

**Inclusion of these amendments in the approval of the project should provide a basis from which to protect the health and quality of life for local residents of North Vancouver.**

## Noise Impact Assessment and Peer Review - Concerns

We have identified many concerns with the May 2012 [Noise Impact Assessment and Peer Review](#).

### Noise Impact Assessment by BKL Acoustics

The major concerns with the Noise Impact Assessment performed by BKL Acoustics include:

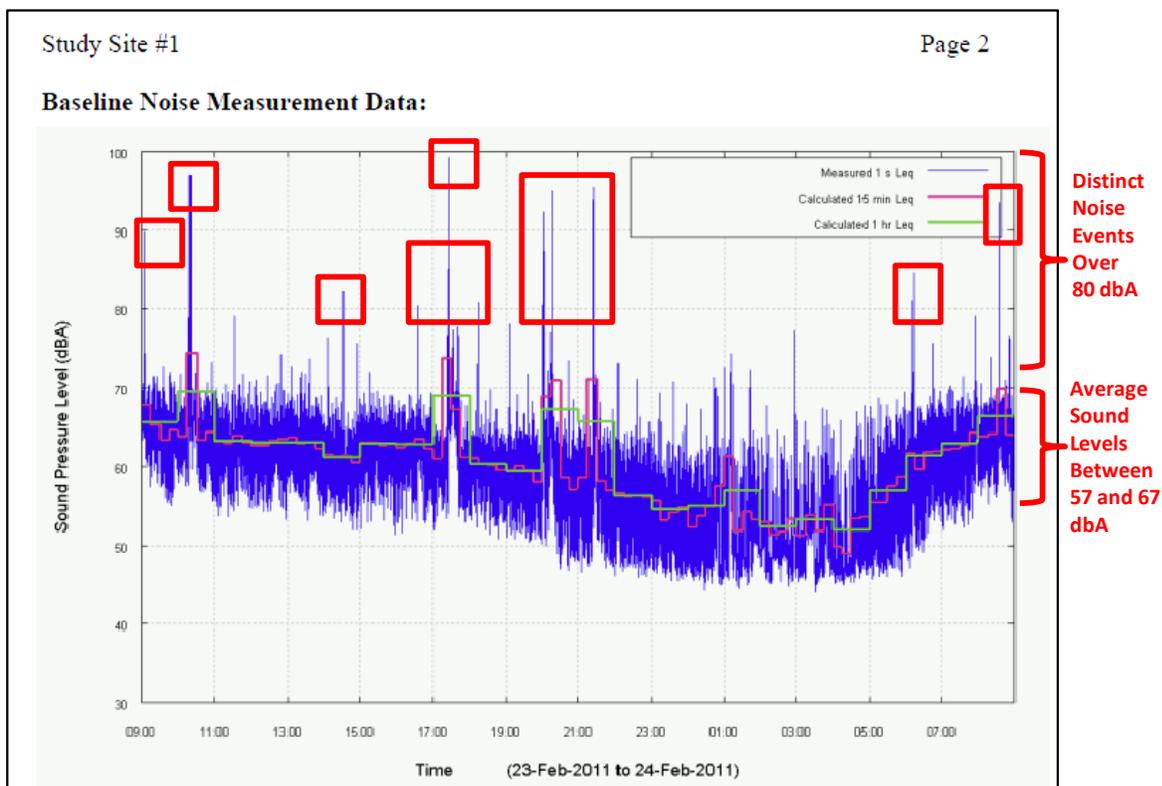
- The US Federal Transit Administration’s publication Transit Noise and Vibration Impact Assessment was used as a reference for the [Noise Impact Assessment and Peer Review](#). See page 2 of the PDF.
  - This guideline is to be used explicitly for mass transit (i.e. passenger) trains only and is an American standard. See page 15 of the PDF [FTA Transit Noise and Vibration Impact Assessment](#).
  - Section 8.1.3 of the USA FTA report warns of the application of its own report for freight rail. See page 160 of the PDF [FTA Transit Noise and Vibration Impact Assessment](#) where the report states that it has been used to “assess vibration from freight trains since no specific impact criteria exist for freight railroads. **However, the significantly greater length, weight, and axle loads of freight trains make it problematic to use these impact criteria for freight trains.**”
- The BKL study dismisses the use of [Proximity Guidelines and Best Practices](#) which are endorsed by the Railway Association of Canada (RAC) and the Federation of Canadian Municipalities.
  - These guidelines do provide recommended noise criteria, and specific sound level limits.
  - The Canadian standards are more current (i.e. issued in August 2007) than the USA FTA standards that were issued in 2006, and are more tailored to freight rail.
  - Their purpose is to address issues that arise from the development and expansion of both railways and municipalities.
  - CN Rail is a member of the RAC and participated in the development of these guidelines.
- In the study, single discrete noise events are averaged out over a period of time. This metric discounts the significance of a noise event so that it can be concluded that there is no noise problem.
  - The study uses 2 metrics: (1) Leq which stands for "equivalent sound level" and (2) Ldn which stands for “day-night equivalent sound level”.
  - The study states that the “Average Ldn levels ranged from 64 dbA to 75 dbA across all sites.” See page 18 of the PDF [Noise Impact Assessment and Peer Review](#).
  - The study shows a graph from the US FTA report that suggests that noise in the range of 65 dbA to 75 dbA would have a “low impact” on residents in the assessment locations.
  - **The conclusion here is that the average noise levels are acceptable and the noise would not be disruptive to residents.** See page 22 of the PDF [Noise Impact Assessment & Peer Review](#).
  - However, Appendix A – Acoustic Terminology states that “If a continuous **sound has an abrupt change in level of 3 dB it will generally be noticed** while the same change in level over an extended period of time will probably go unnoticed.” See page 36 of the PDF [Noise Impact Assessment and Peer Review](#).
  - **BKL Acoustics state (in the appendix details) that their methodology is invalid yet they use it anyway through the report.**

## BKL Site Measurement Example

In Appendix C – Site Descriptions, at Site #1, 403 Alder Street, it states: “The average measured day night equivalent noise level (Ldn) was 67 dBA. The average daytime (07:00 to 21:00) Leq was 66 dBA, and the average night-time (21:00 to 07:00) Leq was 57 dBA.”

**The above statement appears to indicate that noise is not a problem.**

- However, in Appendix C, there are graphs which clearly show that there are many distinct noise events that approach 80 dbA, others that approach 90 dbA, and several that approach 100 dbA. See page 45 of the PDF [Noise Impact Assessment and Peer Review](#).
- These distinct noise events would certainly be enough to awake someone from sleep. However, if there are averaged out over time, then the events become insignificant.
- The graph below is from Site #1, 403 Alder Street for data collected between Feb 23 - 24, 2011.
- The pink and green lines show the average sound over a period of time.
- The red boxes show distinct sound events that exceed 80 dbA, 90 dbA, and approach 100 dbA.
- **These distinct noise events would certainly be disruptive to a person's sleep and quality of life.**



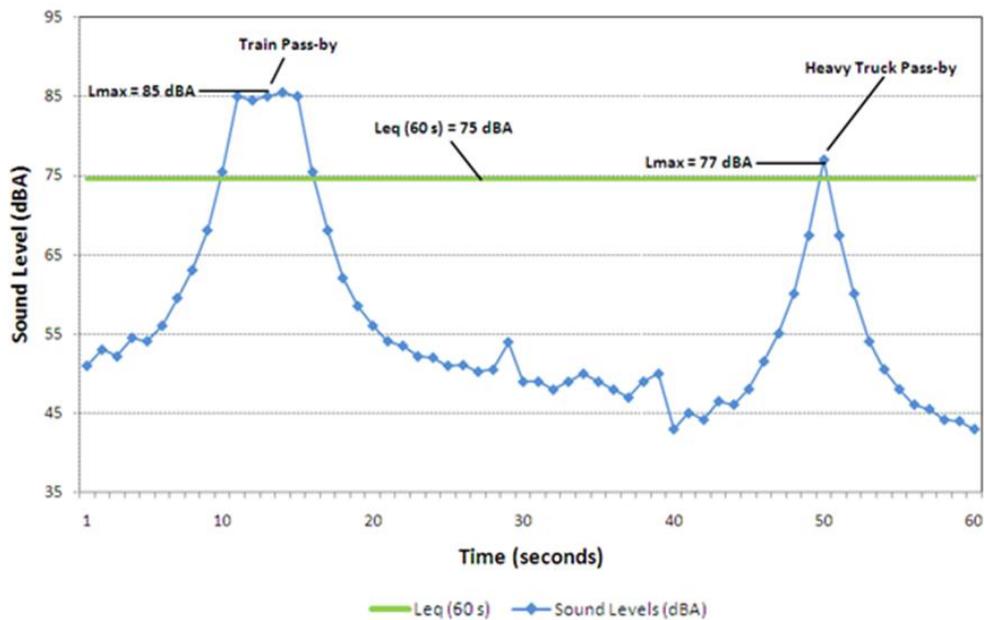
## An Alternative and Complementary Metric: Lmax

A metric that was not used by the BKL Acoustics study is Lmax. Lmax can be described very simply as the maximum noise level for a single-event noise.

The [Canadian Transportation Agency - Sound Basics](#) web page explains the difference between Lmax and Leq metrics:

"The vast majority of noise standards are based on sound levels using energy equivalent sound exposure levels, in A-weighted decibels (Leq values in dBA), over a defined time period. For example Leq (24 h) is the sound exposure level over the entire 24-hour day. Some standards have a single-event noise descriptor based on the maximum noise level (Lmax). The Leq and Lmax sound level concepts are illustrated in Figure 1. The graph shows a single locomotive pass-by and a heavy truck pass-by, over a 60 second period."

**Figure 1:** Example Leq and Lmax: Leq and Lmax Concepts



Simply put, the green line shows the average sound (Leq) over a 60 second period. The blue line shows single-event noises. The single-event maximum noise in this case is a train pass-by that generates a noise of 85 dbA. The Leq metric discounts the significance of the loud sound caused by the train.

**In our opinion, the noise study should include the Lmax metric as a complement to the Leq and Ldn metrics. A simple count of the number of single-event noises (and their noise level in dbA) that exceeds a reasonable level of sound emanating from port and rail activities would be more helpful in measuring the current and future levels of sound.**

## Peer Review by Wakefield Acoustics

The key points with the Peer Review performed by Wakefield Acoustics include:

- Significant items are left out of scope of the project and/or study. See page 5 of the PDF [Noise Impact Assessment and Peer Review](#).
  - “The specific noise sources and noise control questions raised and discussed during the public information process, some of which are not within the scope of the Low Level Road Project, include:
    - Material and shape of noise walls to go on top of retaining wall;
    - Reflection of traffic and train noise from retaining walls;
    - Noise associated with new stoplight and grade at eastern end of project;
    - Idling locomotive noise;
    - Rail car shunting noise; and,
    - Grain elevator mechanical system noise.”
  - Wakefield does not provide any recommendations to include idling locomotive noise in the study except to state that "This issue is outside the scope of the project and would require the cooperation of railway companies to address. There may be some relief from this noise in future, **since it is understood that newer technology locomotives may not need to idle when not in use.**" See page 7 of the PDF [Noise Impact Assessment and Peer Review](#).
  - This statement underscores our recommendation to utilize idle-reduction technology year round.
- Wakefield highlights the concern that citizens have over distinct noise events:
  - “The public information process conducted by PMV from March to May of 2012 has shown that the concerns of area residents are not limited to the effects of the project on their overall daily noise exposures. People more often focus on the degree to which noise from a particular source, such as road traffic or idling locomotives, will be affected by the project." See page 5 of the PDF [Noise Impact Assessment and Peer Review](#).
  - The above statement seems to suggest that distinct noise events are not relevant. Wakefield does not provide any recommendations regarding this statement as it would contradict the BKL Acoustics report.
- Port Metro Vancouver engaged BKL Acoustics to perform the noise study, and engaged Wakefield Acoustics to perform a peer review of the study. See page 2 of the PDF [Noise Impact Assessment and Peer Review](#).
  - Is it not a conflict of interest for Wakefield Acoustics to perform a peer review of the BKL report?
  - We feel this relationship does not allow Wakefield Acoustics to provide a candid review of the BKL report and draw conclusions and recommendations.

## Canadian Transportation Agency Decision No. 220-R-2012

On June 12, 2012 the Canadian Transportation Agency issued a decision regarding a complaint filed by a group of citizens in Marysville, Ontario against CN Rail. In [Decision No. 220-R-2012](#), the CTA ruled in favour of the citizens and not CN Rail.

### Complaint

The citizens' complaint is that the noise and vibration from current and future railway operations, due to expansion of rail facilities, caused changes in crew change locations resulting in idling locomotives. These changes result in increased levels of noise that they considered to be unreasonable.

### Issue

The core issue of this complaint is whether CN Rail / VIA Rail are "meeting their obligations under section 95.1 of the CTA" ... "by causing only such noise and vibration as is reasonable?" See Decision clause [4].

### CTA Conclusion

The CTA found that CN Rail / VIA Rail are in "breach of their obligations under section 95.1 of the CTA to cause only such noise and vibration as is reasonable. Therefore, the Agency will order mitigation measures." See Decision clause [5].

### CTA Order to Install a Noise Wall

The CTA ordered CN Rail / VIA Rail "to implement a noise barrier (a berm or berm/noise wall combination) along the south side of the railway tracks to achieve a minimum reduction in the noise levels, arising from the proposed crew change activities at mileage 218.30 of the Kingston Subdivision, of at least 5 dBA for dwellings immediately south of the proposed berm within a 160 metre radius of the idling locomotives." See Decision clause [53].

### Follow-up Monitoring is Required by the Order

The CTA further mandated that CN Rail / VIA Rail demonstrate that the noise wall is effective in reducing noise levels. See Decision clause [54].

In order to monitor the effectiveness of the noise wall, the CTA also required:

- "within three months from the date of this Decision, prepare and submit to the Agency the design of a barrier, which will meet the performance reduction as stated above;
- complete the construction of the barrier, in accordance with the design, as soon as possible thereafter; and,
- no later than six months following construction of the barrier, submit a report to the Agency, prepared by an independent acoustical consultant, which demonstrates through modelling or measurement that the performance reduction, as stated above, has been met." See Decision clause [54].

## CTA's Discussion of Noise Report

CN Rail / VIA Rail commissioned a noise report for this project. The CTA disagreed with several key points of this noise report:

- The CTA recognized that "noisy short-term events" are disruptive to residents and that these events should not be averaged out over time so that the noise is discounted. See Decision clause [39]:

[39] "Although the Report claims that, in general, a change of up to 3 dB is considered imperceptible and not expected to be readily noticeable, the Agency is of the opinion that human perception cannot be broadly generalized **nor should the effects of a noisy short-term event be diminished by basing the analysis on an average over 8 hours.**"

- The CTA recognized that idling locomotives are disruptive to residents. See Decision clause [40]:

[40] "Noise levels spike for 20 to 30 minutes, and idling locomotive noise is, at certain times, well above the ambient level, especially at night. Furthermore, the Agency agrees with the Group that noise at night can be more disturbing than noise during the day."

- The CTA further recognizes that idling locomotives are disruptive in clause [41] of the Decision:

[41] "Based on the anecdotal evidence submitted by the Group on the nature, duration, frequency of noise and impact on the Group, as well as the Respondents' own admission that the community near Shannonville has concerns with the existing idling noise, the Agency finds as a fact that the idling noise caused by the changing of crews is causing substantial interference for some members of the Group at the existing location."

## Relevance to PMV's Port and Rail Expansion Project

The CTA decision on this complaint is relevant to the Low Level Road / Port Metro Vancouver Rail Yard Expansion Project for the following reasons:

- The CTA recognizes that railway expansion and changes to rail operations can impact a community. In this case, train whistles were eliminated by closing at-grade crossings. This enabled the railway to build longer trains which created a new noise problem of idling locomotives.
- The CTA recognized that the noise study commissioned by the railway used a technique to average short-term noisy events over a long period of time. This had the effect of discounting the effect of the noise. In this regard, the noise report commissioned by the railway was flawed.
- The CTA recognized that the changes to railway operations caused unreasonable noise to the community and ordered the railway to build a noise wall to mitigate the noise.

The CTA recognized that the railway needed to be accountable to the community, and ordered the railway to provide tangible evidence to prove that the noise wall was effective in reducing noise. **The CTA imposed a deadline of 6 months and asked that an independent acoustical consultant be engaged for this measurement.**

## Relevant Experience of West Panorama Ridge Ratepayers Association with respect to Expansion of the Deltaport

The residents in [West Panorama Ridge](#) experienced an expansion of the Deltaport Third Berth Expansion in 2005. They have experienced rail noise that significantly impacted their quality of life. This group of residents actively attempted to engage the Port to resolve these issues.

Their experience is well-documented in their response to the results and analysis of a noise study performed by BKL Consultants. See [West Panorama Ridge Ratepayers Association: Response and Comments on Application to EAO Under the BC Environmental Assessment Act](#).

### Highlights of Comments on BKL Consultants Noise Study

The following are excerpts from the above PDF file:

- "We believe the BLK analysis minimizes the impact of the measured train noise, and the predicted noise levels, especially as it relates to sleep disturbance." See page 2 of the PDF.
- "We are not acoustic engineers, but we believe that the use of Leq, Ldn and LRdn understate the magnitude of the problem faced by residents of North Delta and West and East Panorama Ridge. These units measure cumulative sound levels over a given time period. For Leq (1 hour), this number calculates the cumulative sound energy received during an hour. For sounds that occur frequently over a reasonably large percentage of the hour, this method of calculation would seem appropriate; e.g. using Leq to measure noise generated by Port operations or idling locomotives." See page 3 of the PDF.
- **"For noise, especially very loud noise that occurs infrequently and/or has a very short duration, this method of assessing the impact of that noise over a long period minimizes the impact of that noise,** even if nighttime and tonal penalties are added." See page 3 of the PDF.
- **"The problem is that these very loud noises represent only a small fraction of the total time and the total sound energy in the hour period. The result is their impact is highly discounted through the calculation of Leq."** See page 3 of the PDF.
- "In reading the reference material supplied by BKL, there is debate over using averaging techniques like Leq versus looking at sound maximum levels generated by loud but short duration noise, especially as this noise relates to disturbance of sleep." See page 3 of the PDF.

## Highlights of Comments on Port Expansion

The community's experience with port expansion over the past 35 years is provided on pages 5-6 of the PDF. The following are direct quotes from these pages.

- "Even before the BC Rail line was constructed, our community had opposed the rail line and its associated noise and requested remediation. We have copies of petitions dated August 1969 expressing the community's opposition to the proposed rail line."
- "We have a written record over the past 35 years of the community expressing its concern over the impact of the rail operations and asking for remediation."
- "We have been especially active over the last ten years as the Port expanded yet again regarding these issues."
- "Yet despite a consistent history of community opposition, the rail line was installed, and the port at Roberts Bank was expanded again and again, each time with a respective increase in rail traffic and associated noise."
- "Each time the community raised its voice and it was ignored."
- "To now say that the Port of Vancouver only has an obligation to address incremental noise not only ignores the thirty-five years of effort by our community to mitigate this serious problem and the stressful environment in which we now find ourselves, but also the moral, civic and, some say, legal responsibility to resolve an intolerable situation which they have created and now intend to make worse."

## Community Effort

The community documents their efforts on page 6 of the PDF.

- "We are expending this effort to try to solve a problem that we did not create but impacts our home values and quality of life immensely."
- "It is ironic that a volunteer organization is left to solve a problem caused by a large corporate entity like the Port."
- "The Port can bring significant political, and perhaps some financial resources to bear to solve a problem that is ultimately caused by trains serving a Port of Vancouver facility."

## Conclusions

The residents conclude their response on page 7 of the PDF:

- "We ask the Port of Vancouver to direct the Noise Committee to establish a plan that sets definitive targets for noise levels in the Panorama Ridge area, and commits to a remediation plan to achieve these targets within a reasonable time frame."
- "We believe these noise levels should be based on the established levels required to maintain sleep, **not on averages that tend to minimize short duration, but high intensity disruptions.** Existing sound levels generated by existing rail operations must be considered in this plan."
- "The WPRRA supports the economic development of British Columbia and recognizes the role the port at Roberts Bank plays. We ask the Port of Vancouver to consider the severe price in the form of quality of life and home values we the residents of Panorama Ridge and North Delta currently pay for on-going Port activities."
- "We ask that the Port be a "good neighbour" and a responsible corporate citizen by implementing our recommendations."

## Relevance to PMV's Port and Rail Expansion Project

The experience of the West Panorama Ridge community with port expansion bears striking resemblance to the experience of North Vancouver and PMV's Port and Rail Expansion Project. Specifically,

- The BKL Acoustics noise study commissioned by PMV suffers the same flaws and NVUF have come to the same conclusions as the West Panorama Ridge residents.
- Their community has endured 35 years of port expansion, and states that its voice has been ignored through each expansion. North Vancouver has similar concerns with port and rail operations (i.e. idling locomotives) that span back many years and remain unresolved.
- Their community is trying to solve a problem that they did not create. North Vancouver has the opportunity to prevent this problem from occurring.
- Their community has outlined recommendations to assist in solving problems that they did not create. North Vancouver Urban Forum is providing recommendations to avoid a similar compounding of existing concerns.
- Their community supports the economic development of B.C. but asks that the Port and railway be good corporate citizens. We ask the same of the Port and the railway.