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Title: Additional Noise Monitoring Results
Project: BP Cherry Point Cogeneration
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Introduction

At the request of Whatcom County some additional environmental noise level monitoring was performed in the vicinity of the BP Cherry Point project site. The general purpose of the survey was to document existing sound levels for possible comparison to measurements at the same locations in the future. The locations were selected by the County and represent potential noise receptor locations in and around the community of Birch Bay north of the project site. An additional point near the Puget Power facility immediately adjacent to the western boundary of the BP refinery was also measured as a control position to monitor any prominent noises that might occur during the survey from either the Puget Power plant or the refinery itself. This memo briefly summarizes the survey results and also includes some additional monitor data gathered in the same area during an earlier survey in April of 2003.

Measurement Methodology

Continuously recording noise monitors were set up at the positions shown in Graphic 1 to measure environmental noise in consecutive 15 minute increments over a period of several days and nights. The specific locations, start and end times, and other information is summarized in the following table.

Table 1 *Monitor Locations and Measurement Times*

Location	Start Time / Date	End Time / Date	Comments
8026 Birch Bay Dr. (Unit 253, 2 nd Flr. Balcony)	10:00 a.m. 7/9/03	7:00 a.m. 7/11/03	
4825 Alderson Road (near corner of shed in rear)	11:51 a.m. 7/9/03	11:45 a.m. 7/15/03	Measured by Jim Thompson (Whatcom County) using County equipment
Arnie Road (1300 ft. E. of Blaine Rd.)	10:00 a.m. 7/9/03	7:00 a.m. 7/11/03	
Jackson Rd. (E. side of road across from Puget Power gas metering station)	10:00 a.m. 7/9/03	7:00 a.m. 7/11/03	
8009 Comox Rd. (Birch Bay Village)	5:00 p.m. 4/8/03	5:00 a.m. 4/11/03	Measured during earlier April survey

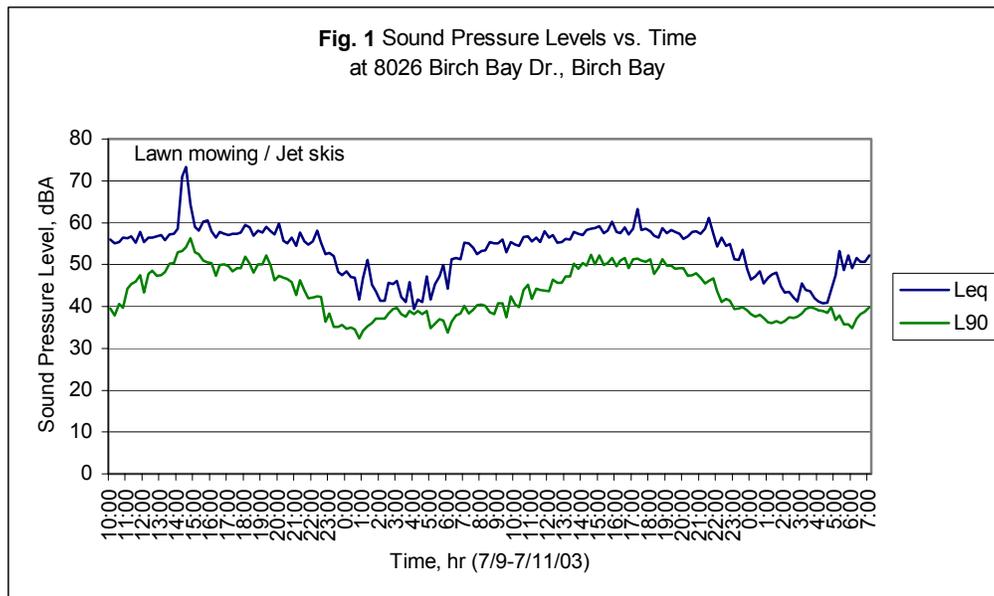
ANSI Type 2 Rion NL-06 sound level meters were used at each of the locations. The instruments were housed in weather-proof cases fitted with an external microphone boom. Each microphone was fitted with a windscreen with an integral moisture barrier. The instruments were calibrated before and after the survey and showed no significant drift (<0.1 dB). The weather during the survey was clear with a slight breeze from the south and mild temperatures in 70's.

Measurement Results

In general, the objective of any ambient sound level survey is to determine (as well as such a quantity can be determined within a practical timeframe) the minimum background sound level that is consistently present at each sensitive receptor and available to obscure or mask possible noise from a new source. If a new source is significantly louder than this consistent background level it will be perceptible and possibly disturbing, whereas if the source level is close to or below the background its noise will not be audible. Quantitatively, a new source that causes the total sound level to increase by 5 dBA is generally perceptible to most people with careful listening. When smaller cumulative increases occur or when the new source level is below the background the new source cannot be distinguished.

For all practical purposes, the most conservative measure of background noise is the L90 statistical level - or the sound level that is exceeded 90% of the sampling period. This quantity characterizes the true background level that occurs in the lulls between common sporadic events such as cars passing by or dogs barking. Essentially by definition, intermittent events like these do not occur on a continuous or consistent basis and are therefore not always present to mask a new and potentially disturbing noise source. Instead, the L90 quantifies the quiet periods between sporadic noises.

A number of statistical and other levels were recorded over each 15 minute period but the L90 and the average sound level (Leq) are of the most interest. The plots below illustrate these levels recorded at each receptor.



The prominent peak around 2:30 p.m. on the first day was due to a nearby law mower, jet skis in the bay or to a combination of the two. The average L90 level of the entire period is 43.3 dBA.

Unfortunately, level vs. time data were not recorded at the Alderson Road location; however, the overall average L90 was measured at 42.5 dBA over a every extensive 6 day/5 night period. Because both this and the previous location are similarly situated in the community of Birch Bay it is not surprising that the average sound levels at both positions are almost the same.

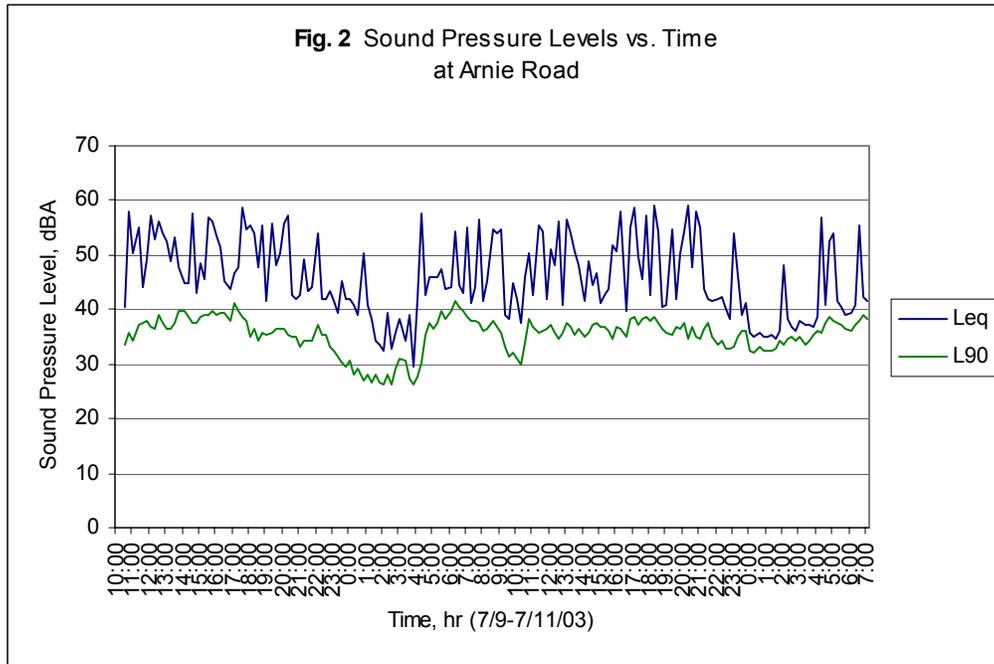
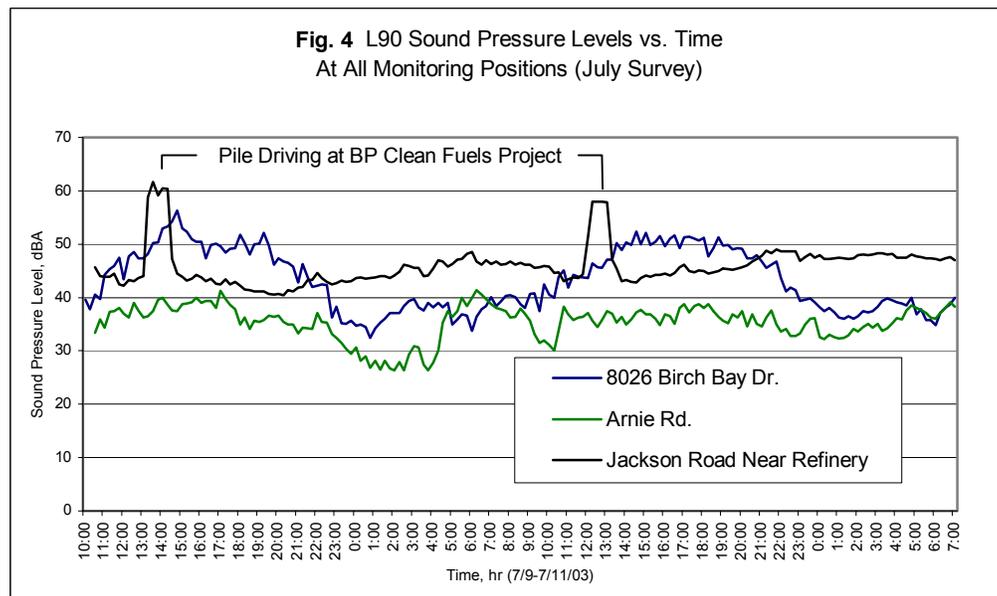
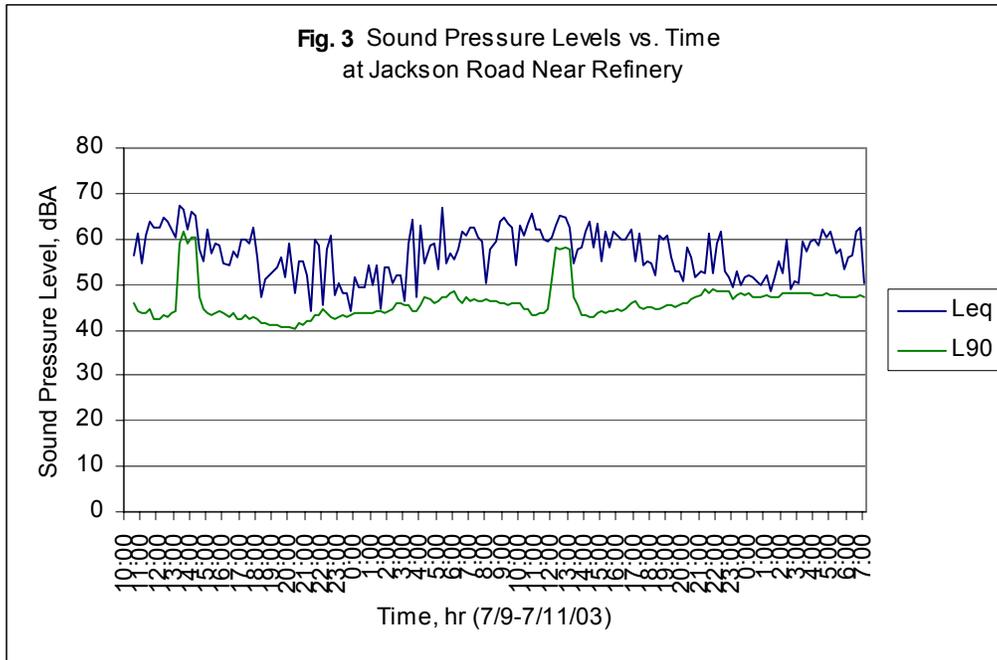
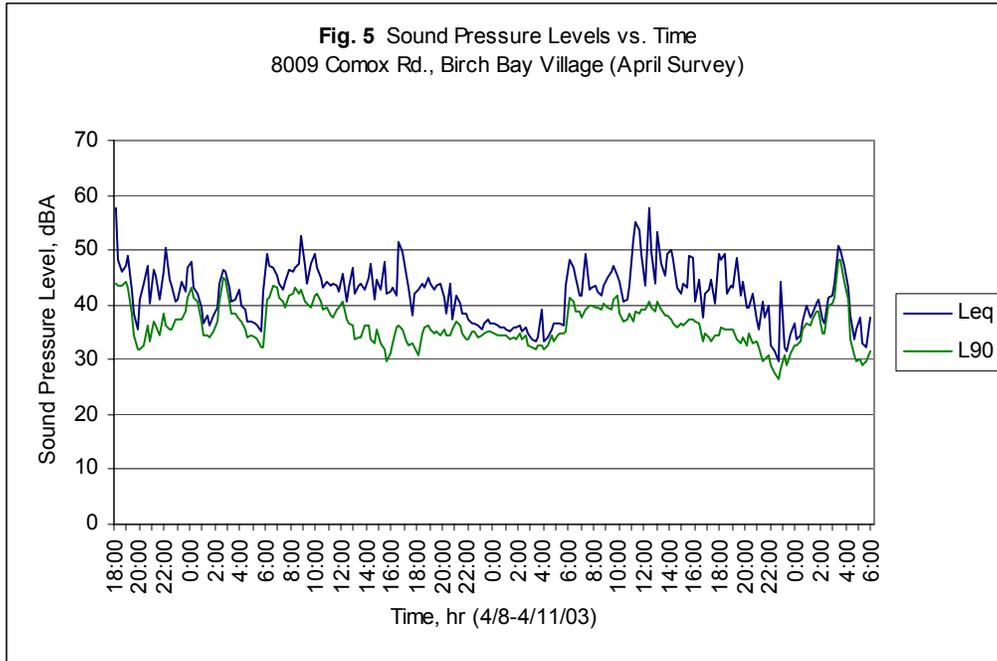


Figure 2 shows the levels measured at the relatively rural Arnie Road location. Sound levels in this area are largely driven by far off, indistinguishable noise sources punctuated by occasional local traffic (illustrated by the numerous spikes in the Leq level). The L90 background is nearly constant at an average value of 35.4 dBA.

Sound levels at the control position on Jackson Road between the refinery and the Puget Power facility are shown in Figure 3 on the following page. This position was established to document any significant noises that might arise from either of these facilities during the survey for comparison to the concurrent sound levels being measured in the community. The gas turbines at the Puget Power plant did not operate during the survey but some pile driving associated with the construction of the BP clean fuels facility (within the refinery) did occur for a short time around 1 p.m. on both afternoons. This noise was below the regulatory 70 dBA limit for noise levels in the industrial zone (although, as short-term construction noise, it was not subject to the regulation). It is significant that the piling noise had no discernable influence on the background sound levels measured in Birch Bay and at Arnie Road. See Figure 4 -- a consolidated plot that shows the L90 levels measured at the three positions where level vs. time data were recorded.



Finally, Figure 5 presents the sound levels measured on Comox Road in the Birch Bay Village development (see Graphic 1) during the April survey. The average L90 over this 60 hour measurement period was 36.4 dBA.



Cumulative Noise Levels

The existing plant noise model was used to determine the expected sound levels due to the operation of the BP cogeneration plant at the residential receptor points surveyed. The Jackson Road location was adopted as a control position only and is not a potentially sensitive receptor. Based on the measured background levels the cumulative increases in Table 2 are anticipated.

Table 2 *Expected Cumulative Noise Levels at Birch Bay Area Receptors (Rounded to nearest dB)*

Location	Expected Plant Noise Level, dBA	Existing L90 Background Level, dBA	Expected New Cumulative Sound Level, L90, dBA	Expected Cumulative Impact Relative to Pre-existing L90 Background, dBA
8026 Birch Bay Dr	30	43	43	0
4825 Alderson Rd.	34	43	44	1
Arnie Rd.	34	35	38	3
8009 Comox Rd.	26	37	37	0

Since all the cumulative increases are less than 5 dBA, no adverse impact is expected during full load operation.