PORTLAND WATER BUREAU
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Bull Run TREATMENT PROJECTS

Technical Memorandum

Subject:	Pre-Construction Ambient Sound Level Measurements for the Facility Pipeline Finished Water Intertie Project
Project #s:	**PWB:** W02563 **Jacobs:** D3460500
Date:	January 25, 2023

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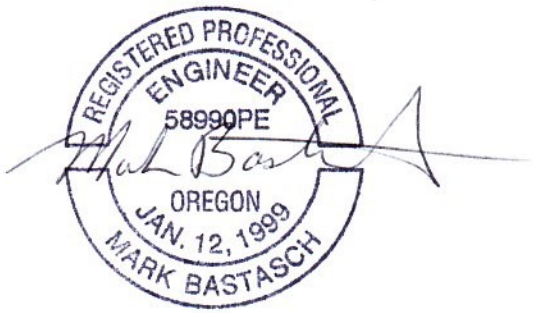

EXPIRES: DEC. 31, 2023

Exhibit A.175

Jacobs

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1.0 Introduction

This technical memorandum documents the results of the pre-construction 24-hour sound survey requested by Multnomah County Land Use Planning Division, for the Facility Pipeline Finished Water Intertie (project) as a part of the completeness letter for Case #T3-2022-16220). The project is located approximately 1,900 feet east of the intersection of SE Altman Road and SE Lusted Road in Multnomah County and is part of a proposed new set of pipelines conveying raw water and finished water to and from a new filtration facility. An *Acoustical Analysis of the Facility Pipeline Finished Water Intertie*, dated August 2, 2022, was provided to Multnomah County as part of the land use application. This technical memorandum builds on the concepts in that Acoustical Analysis, such as the 1.1 Fundamentals of Acoustics and 2.0 Multnomah County Noise Regulations. The two reports should be read together.

2.0 Results of 24-hour Sound Level Measurements

As requested by Multnomah County, a 24-hour sound level survey was initiated at approximately 8:00 a.m. on November 19, 2022, at a monitoring location within 50 feet of the proposed project location. Photographs of the monitoring location and equipment deployed at the location are included as Figures 2-1 through Figure 2-3.

Larson Davis 831 and 01dB DUO, Type 1 precision sound level meters, were used for this survey. Sound level meters were factory calibrated within the past 12-months and field calibrated at the beginning and end of this survey with a Larson Davis CAL200 calibrator. The Larson Davis 831 utilized the manufacturers environmental protection shroud and the 7” ACO Model WS7-80T windscreen while the 01dB DUO utilized the manufacturers stainless steel outdoor nose cone and windscreen, DMK01. The sound level meters were housed in weatherproof enclosures and the microphones were mounted on tripods at an approximate height of 5 feet. Weather conditions were monitored simultaneously with a Vaisala WXT520 which integrates with the 01dB DUO. No precipitation occurred during the monitoring period while the winds were variable.

Figure 2-1. Noise Monitoring Location Looking North (Monitoring Station to Left of Vehicle)

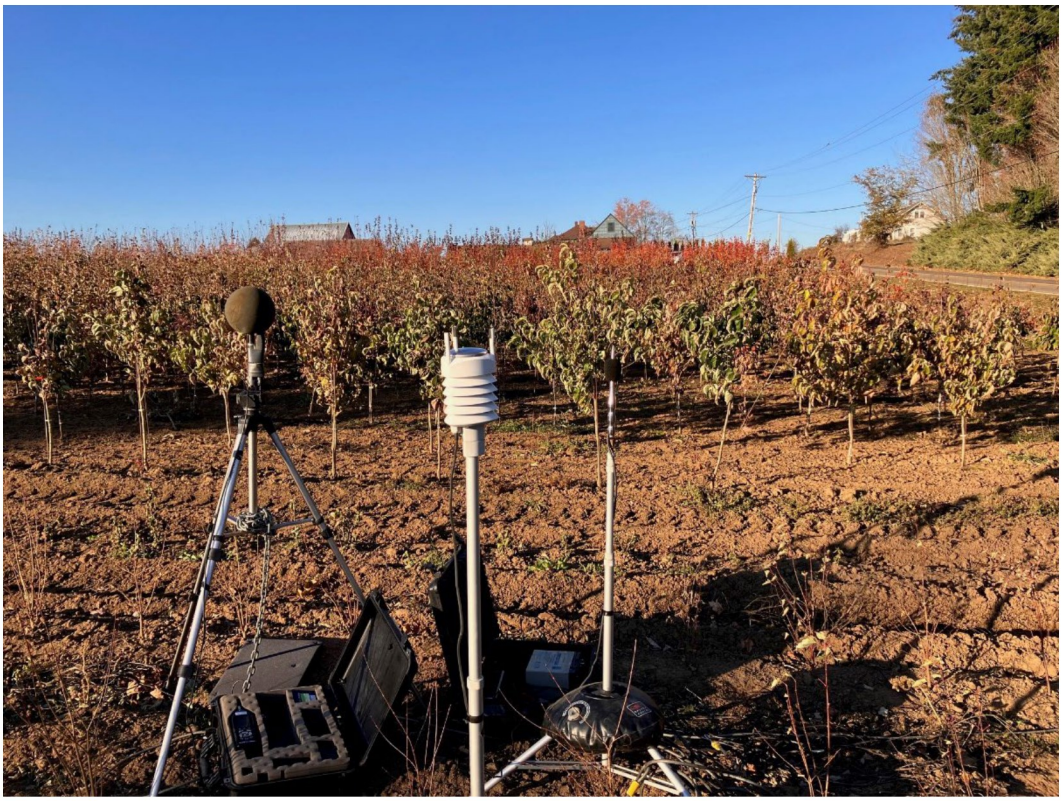

Figure 2-2. Noise Monitoring Equipment Looking West (SE Lusted Road is to the Right)

Figure 2-3. Noise Monitoring Equipment Looking Northeast (SE Lusted Road in Background)

The sound level meters were programmed to log broadband A-weighted (dBA) parameters, including the L_{eq}, L_1, L_{10}, L_{50}, and L_{90}. The Larson Davis 831 hourly statistical sound level metrics are presented in Table 2-1 for the entire monitoring period. The 01 dB Duo 10-minute sound level metrics levels are summarized in Table 2-2 for periods when the measured windspeed was less than 9 mph. Figure 2-4 presents the 10-minute interval sound level metrics and concurrent windspeed. The L_1 and L_{10} represent the sound level exceeded 1 and 10 percent of the measurement interval (36 seconds and 6 minutes, respectively, for 1-hour intervals recorded by the Larson Davis 831 and 6 seconds and 1 minute for 10-minute intervals reported by the 01dB DUO). These metrics are representative of the short-term event sound level such as when vehicles are passing by. The L_{50} and L_{90} are the median and the sound level exceeded 90 percent of the measurement interval, respectively. The L_{90} is representative of the sound level when periodic or intermittent sources are absent during the measurement interval (e.g., the periods when there are no vehicles passing by).

Table 2-1. Summary of Hourly Sound Pressure Level Measurements (dBA)

Date	Time	Leq	L1	L10	L50	L90	Average Windspeed (mph)
2022-11-18	08:00:00	57	69	61	45	37	3
2022-11-18	09:00:00	58	70	61	48	40	7

Table 2-1. Summary of Hourly Sound Pressure Level Measurements (dBA)

Date	Time	Leq	L1	L10	L50	L90	Average Windspeed (mph)
2022-11-18	10:00:00	59	69	62	53	47	9
2022-11-18	11:00:00	58	69	62	51	46	8
2022-11-18	12:00:00	58	69	62	52	48	8
2022-11-18	13:00:00	59	70	62	52	48	8
2022-11-18	14:00:00	59	70	63	52	48	7
2022-11-18	15:00:00	59	70	63	52	48	7
2022-11-18	16:00:00	59	69	63	52	47	7
2022-11-18	17:00:00	56	67	61	47	43	6
2022-11-18	18:00:00	57	68	59	52	46	9
2022-11-18	19:00:00	56	67	59	52	49	9
2022-11-18	20:00:00	53	66	55	49	46	8
2022-11-18	21:00:00	54	65	54	48	46	8
2022-11-18	22:00:00	54	65	57	50	48	9
2022-11-18	23:00:00	56	65	59	52	49	12
2022-11-19	00:00:00	52	62	55	48	44	10
2022-11-19	01:00:00	49	59	50	45	41	7
2022-11-19	02:00:00	53	63	55	50	47	9
2022-11-19	03:00:00	52	62	54	49	46	9
2022-11-19	04:00:00	54	63	56	52	49	9
2022-11-19	05:00:00	55	65	56	52	49	9
2022-11-19	06:00:00	57	67	59	52	49	9
2022-11-19	07:00:00	57	67	58	52	49	10
2022-11-19	08:00:00	58	68	60	54	52	9

Table 2-2. Summary of 10-minute Sound Pressure Levels Measurement [min-max (median)], dBA

	Leq	L1	L10	L50	L90
Daytime (7 a.m. – 10 p.m.)	50 – 62 (**59**)	54 – 74 (**70**)	51 – 66 (**62**)	39 – 57 (**51**)	36 – 51 (**47**)
Nighttime (10 p.m. – 7 a.m.)	46 – 54 (**49**)	51 – 65 (**57**)	48 – 55 (**51**)	43 – 51 (**47**)	39 – 48 (**45**)

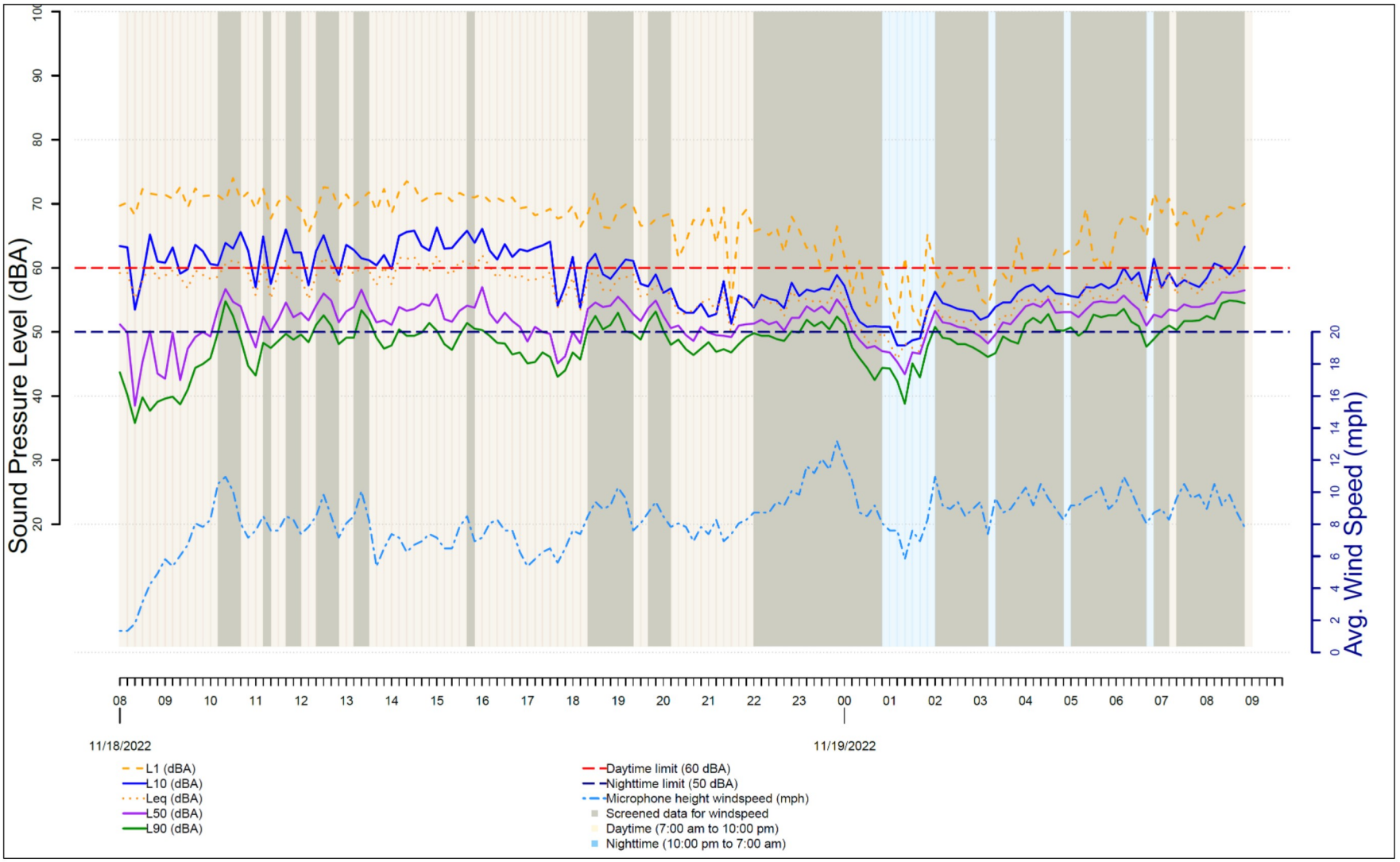

Figure 2-4. 10-minute Interval Sound Level Metrics and Concurrent Windspeed

3.0 Conclusions

Ambient sound levels were monitored continuously for a period of 25 hours. Sound levels were found to vary during the day and nighttime hours and to be influenced by traffic and agricultural activities along SE Lusted Road as well as wind conditions. When traffic, wind, and agricultural activities were minimal, the hourly background sound levels ranged between approximately 37 and 41 dBA (Table 2-1, lowest hourly L90's). Vehicle pass-by sound levels were approximately 70 dBA and hourly average L_{eq} sound levels during the monitoring period typically exceeded 50 dBA. As described further in the accompanying report, *Acoustical Analysis of the Facility Pipeline Finished Water Intertie*, dated August 2, 2022, the proposed Intertie complies with the Multnomah County noise standards.