Ullrich Water Treatment Plant
Community Meeting

November 15, 2023

Agenda

- Welcome
- Operations Update
- Sound Study Update
- Questions and Answers
- Conclusion

Opening Comments

Charles Celauro, Assistant Director of Engineering Services

Operations Update

Stephanie Sue, PE

Plant Overview

- One of three City of Austin drinking water plants
- Built in 1968
- Upgraded in 2006 from 100 MGD capacity to current capacity
- 167 MGD capacity
- Provides water to residents and wholesale customers predominately in South Austin including the community of West Lake Hills

Basin Cleaning Update

- Annual activity to maintain basins and water treatment capabilities
- Required due to calcium carbonate accumulation that is inherent to treatment process
- All basins have been cleaned since 2021
- Basin 7 cleaned in Fall 2023

Wildfire Mitigation Plans

- Downed trees and limbs will be cleared on the Rocky River Rd buffer lot and have been completed on land near West Lake Hills City Hall
- Additional measures, such as Shaded Fuel Breaks, will not be implemented based on neighbor feedback

Sound Modeling Summary

Bryan Barnett, PE

Overview

- Hired Engineering Consultants, Kennedy Jenks & CSTI
- Recorded ambient sound and vibration data – Nov. 17-21, 2022
  - Measured Nighttime Sounds => Comparable to 2007 Nelson Data Collection
  - New: Continuously Measured Ambient Daytime Sounds
  - New: Measured Specific noises, such as basin cleaning equipment
  - New: Measured ground vibrations
- Completed Sound Modeling to develop mitigation techniques

Background – Kathy Fretwell, P.E.

Kennedy Jenks

- Professional Engineer, Vice President
- 29 Years Experience in Water & Wastewater Engineering
  - Design and Construction of Water and Wastewater Treatment Plants
  - Pump Stations
  - Small & Large Diameter Pipelines

Background – Arno Bommer

- Graduate of MIT
- Working in acoustics since 1982
- Board certified by the Institute of Noise Control Engineering (INCE/USA)
- Awarded the Laymon N. Miller Award for Excellence in Acoustical Consulting by INCE/USA and NCAC in 2022

Modeling Overview

- Created 3-D computer sound model for both normal and intermittent operations of Ullrich Facility

- Use model to assess the effectiveness of different noise treatments such as noise barriers and sound absorption

- Report of noise modeling analysis and potential noise treatments is being presented today

Ullrich Water Treatment Plant

2023 Noise Modeling

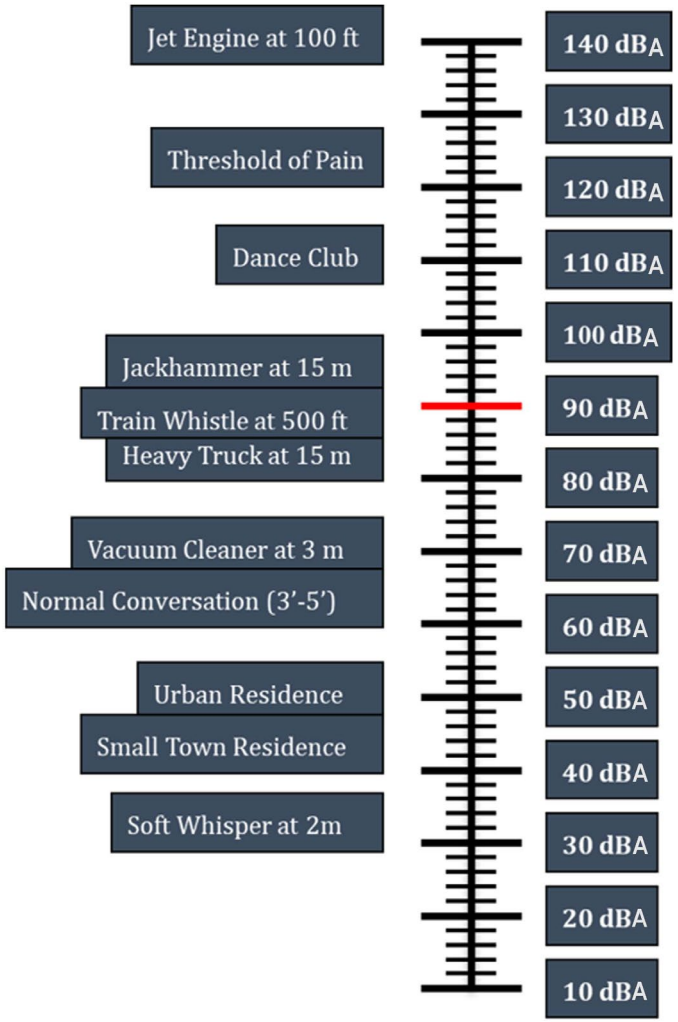
Kennedy Jenks

Primary Objectives of Noise Modeling

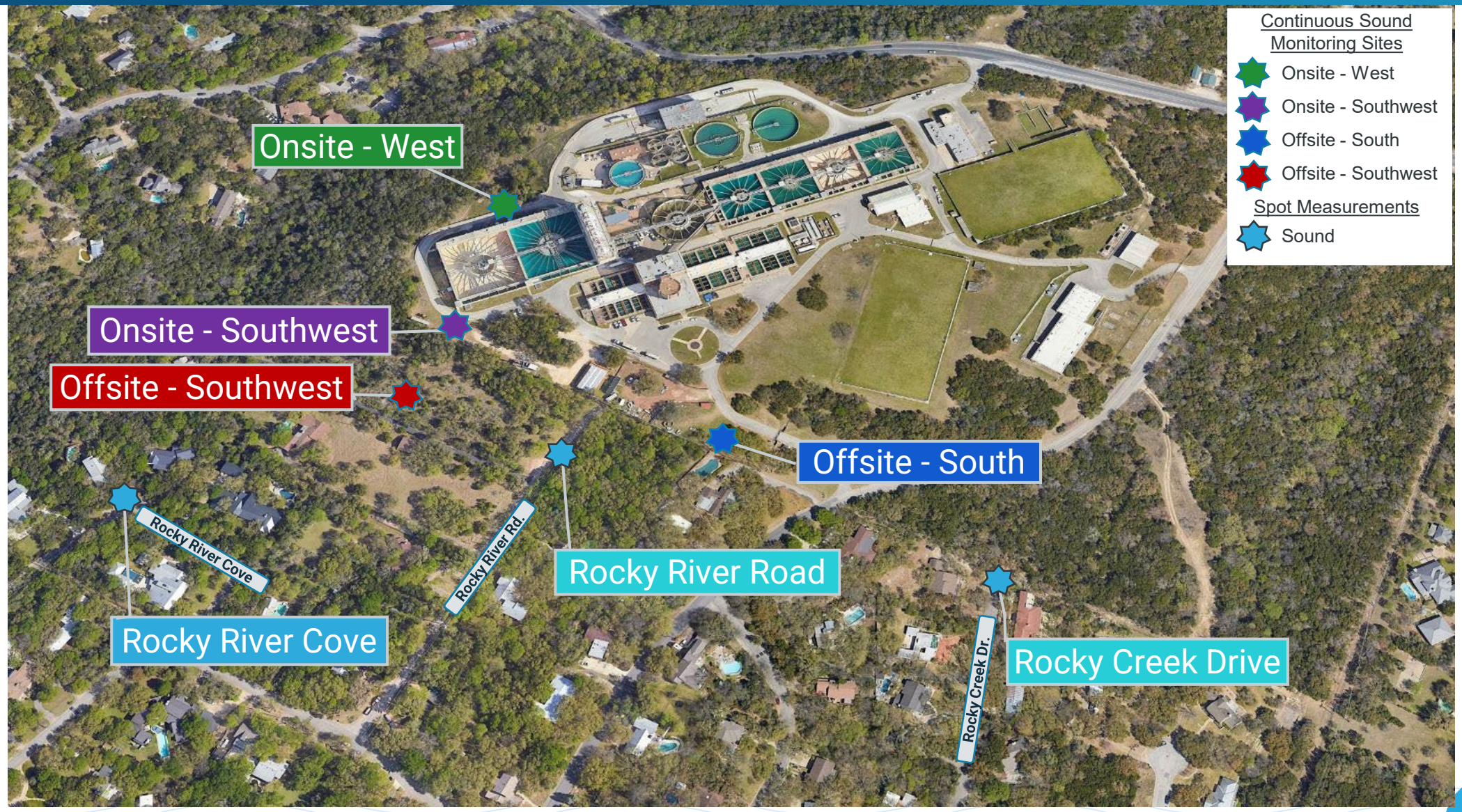
- Utilize Noise Data Collection Results to Evaluate Mitigation Measures
- Analyze Alternatives
- Evaluate Costs of Alternatives
- Recommend Alternatives for Additional Evaluation

Ways to Describe Sound

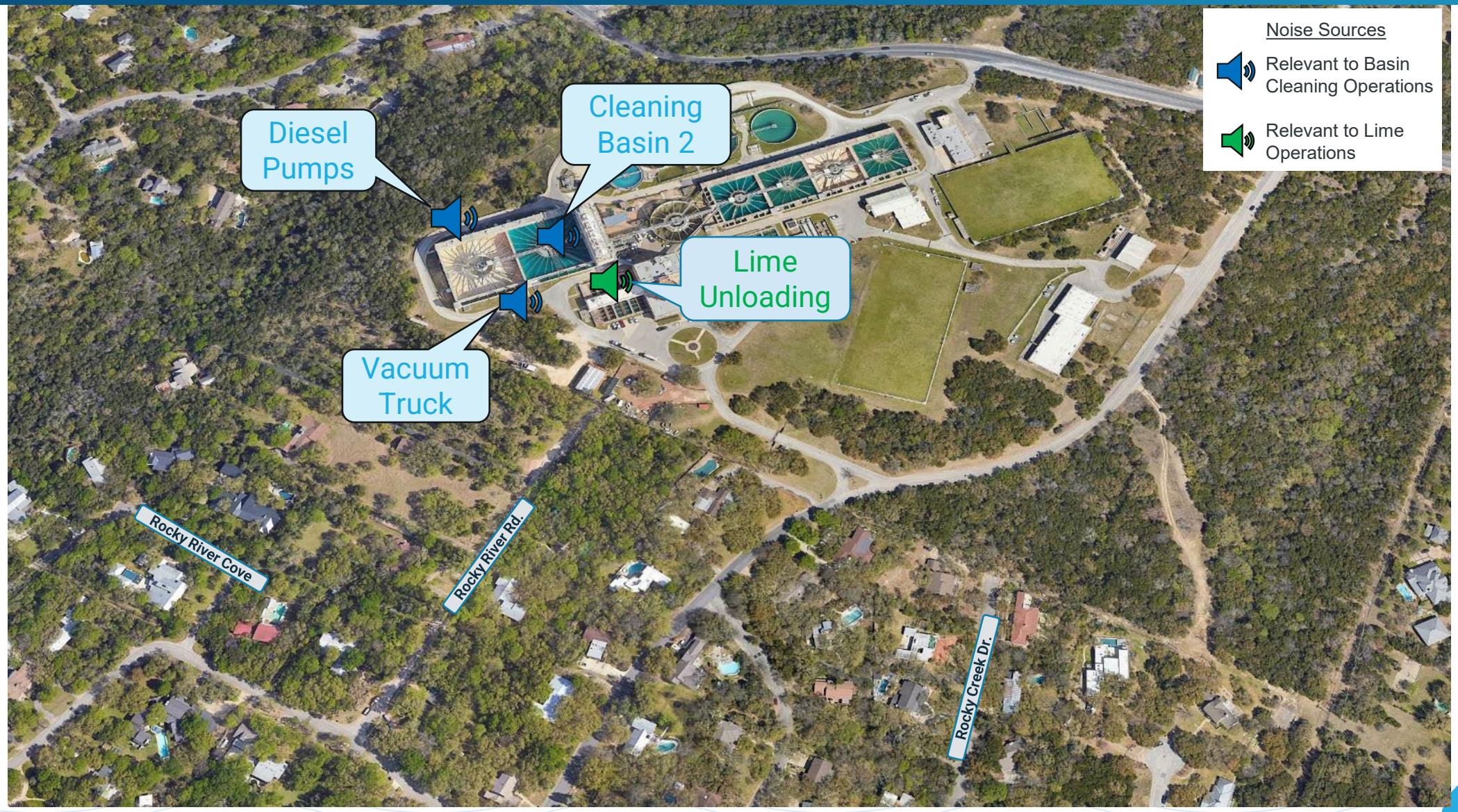
- **Frequency** – Measured in Hz (cycles per second). Sounds at different frequencies are often grouped together in octave bands.
- **Loudness**
  - **Level** (Amplitude or volume) – Measured in decibels (dB)
  - **dBA** (A-weighted sound level) – Single-number rating of "loudness" at all frequencies combined.
  - **dBC** (C-weighting sound level) – used less often, more emphasis on low frequencies.
- **Variations in frequency and level over time** – Quantified in several ways including:
  - **Lmax** (maximum during sample)
  - **Lmin** (minimum during sample)
  - **Leq** (equivalent sound level – a type of average)
  - **LOSHA/TWA** (time-weighted average)



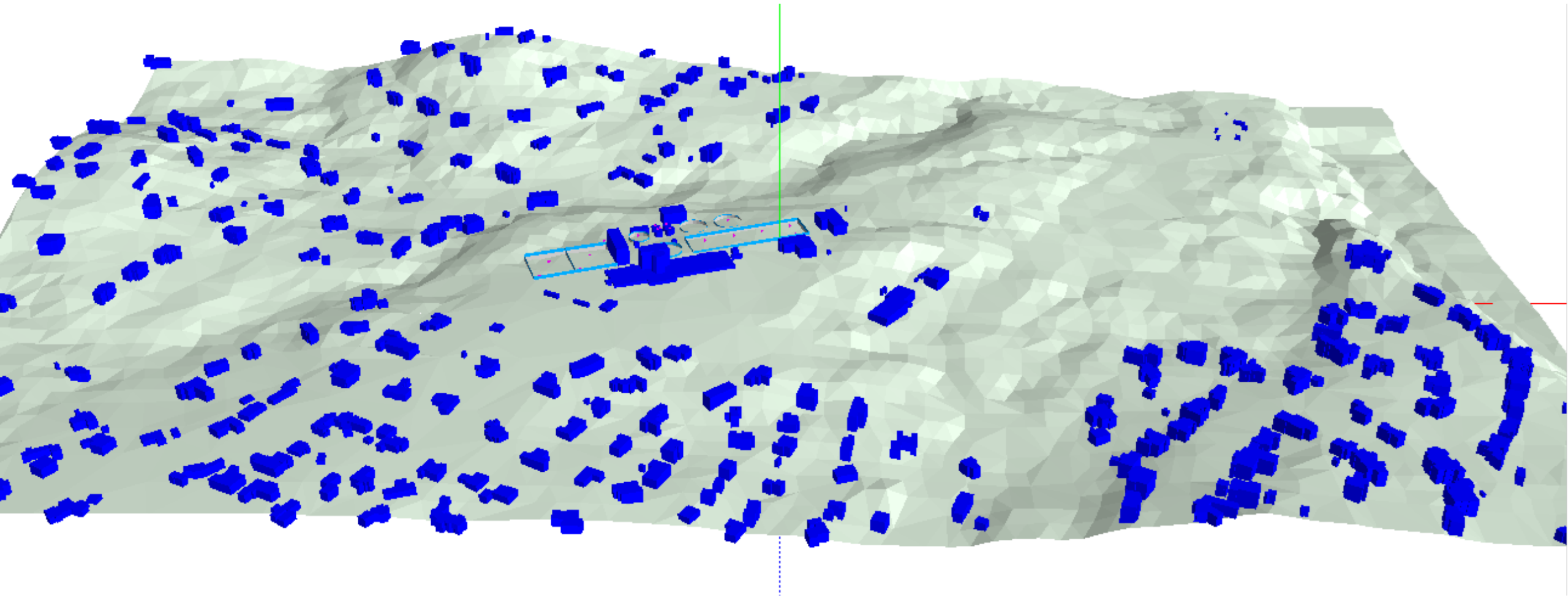
Map of Main Measurement Positions in 2022 Sound Study



Main Noise Sources as Measured in 2022 Sound Study

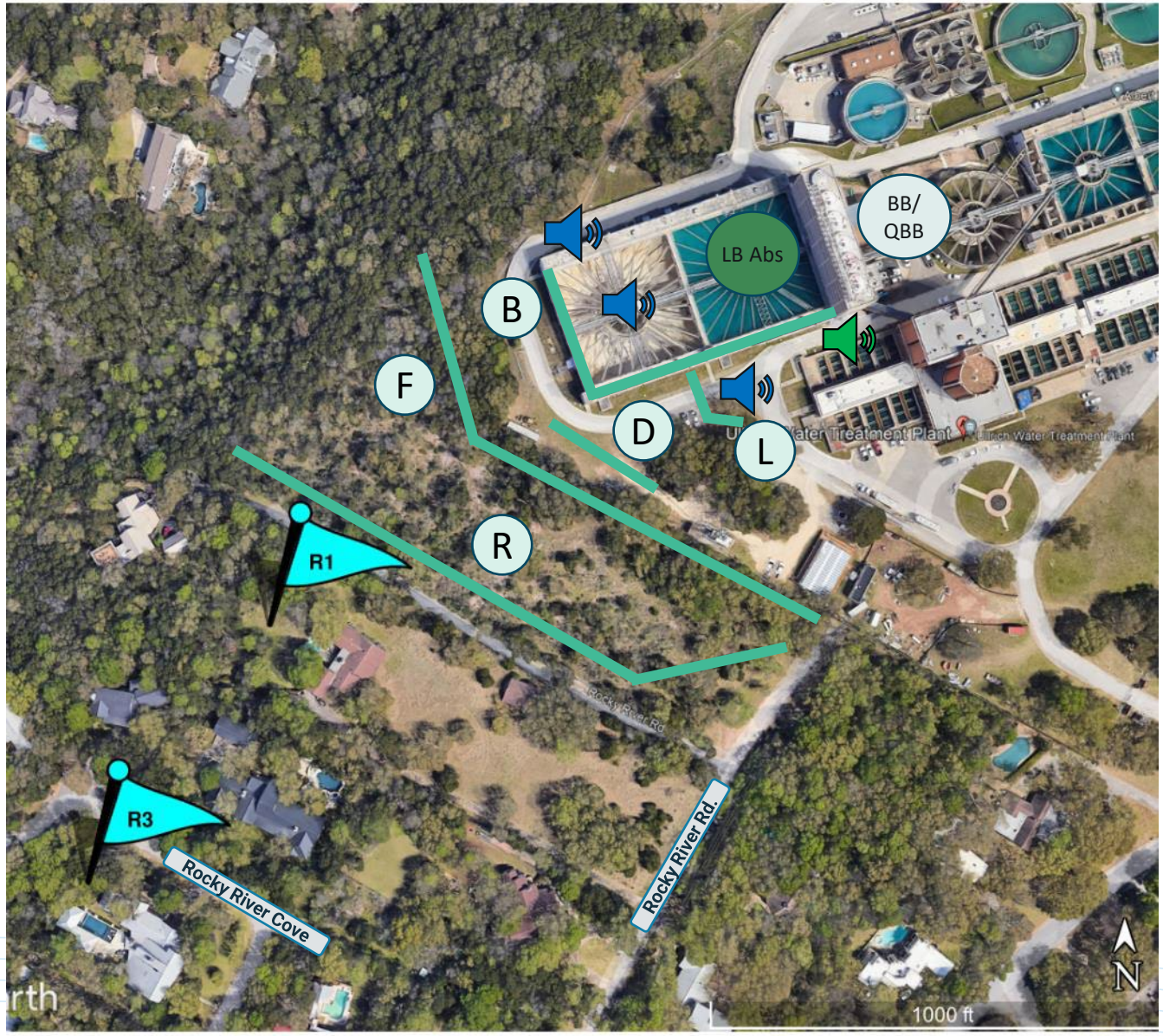


3D Sound Modeling



- Information from Original Noise Collection was Utilized to Develop a Sound Model
- Modeled 41 acoustic treatments for 4 baseline scenarios.

3D Sound Modeling



Baseline Scenarios

Normal Operating Conditions
Cleaning of Basin 1
Lime Blower on Truck
Lime Blower in Building

Noise Receiver Locations Modeled

Designation	Location
R1	Noise Receiver Location 1st Row of homes
R3	Noise Receiver Location 3rd row of homes

Noise Barrier Locations & Heights Modeled

Designation	Location	Barrier Length (ft)	Barrier Heights (ft)
B	On top of Basins 1 and 2	450	6, 10, 16
D	Between Ullrich perimeter driveway and fence	140	16, 20
F	Along west fence line, west of Basin 1	550	12, 20
R	Barrier in the buffer zone	750	12, 20, 25
L	Barrier at grade in lawn to reduce vacuum truck noise	80	20

Lime Blower Operational Alternatives Modeled

Designation	Location
BB	Lime Building Blower
QBB	Quiet Lime Building Blower (upgraded silencer)

Other Alternatives Modeled

Designation	Location
LB Abs	Sound absorption on the west façade of Lime Building (near Basin 2)

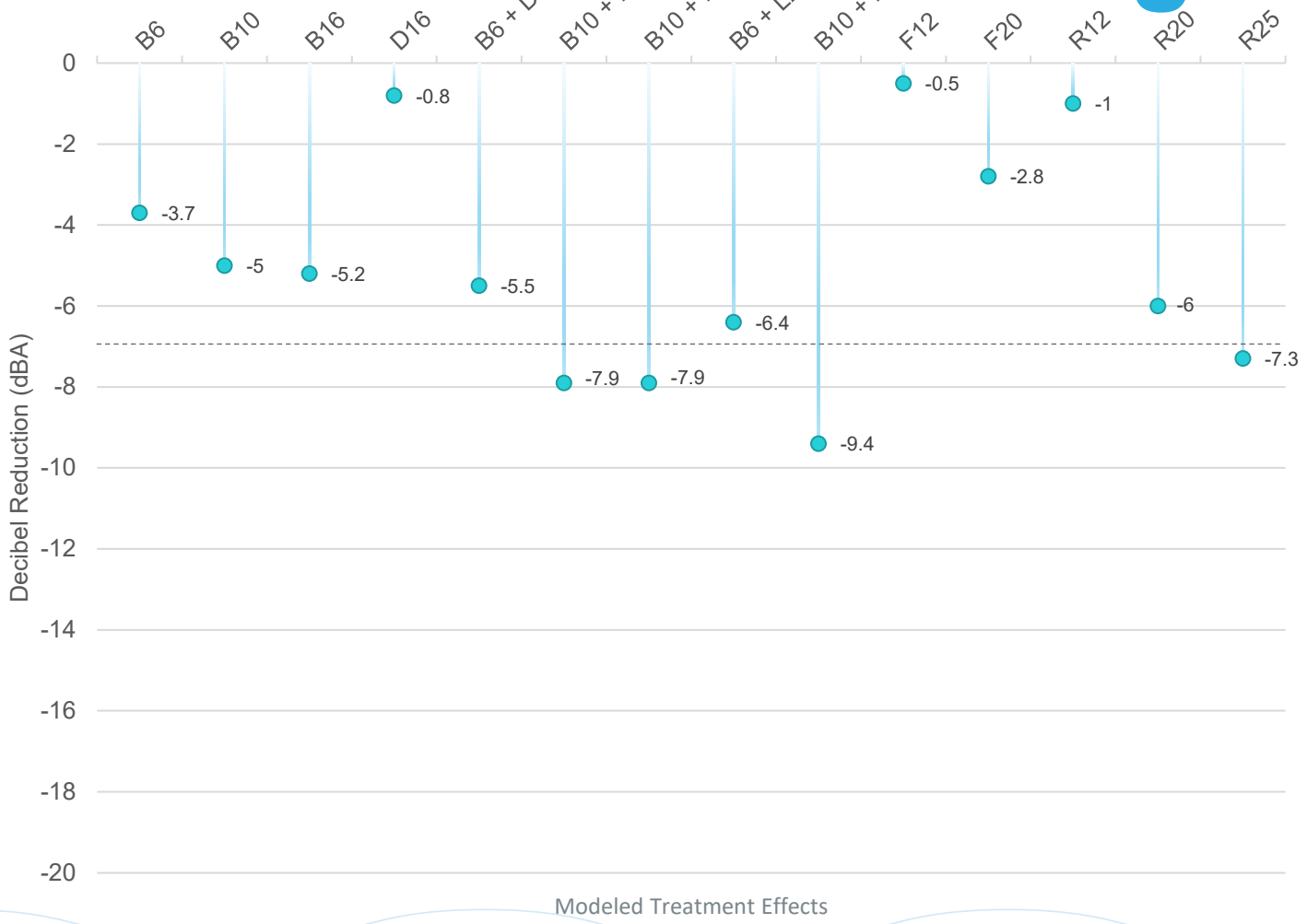
Evaluation of 3D Sound Modeling Results

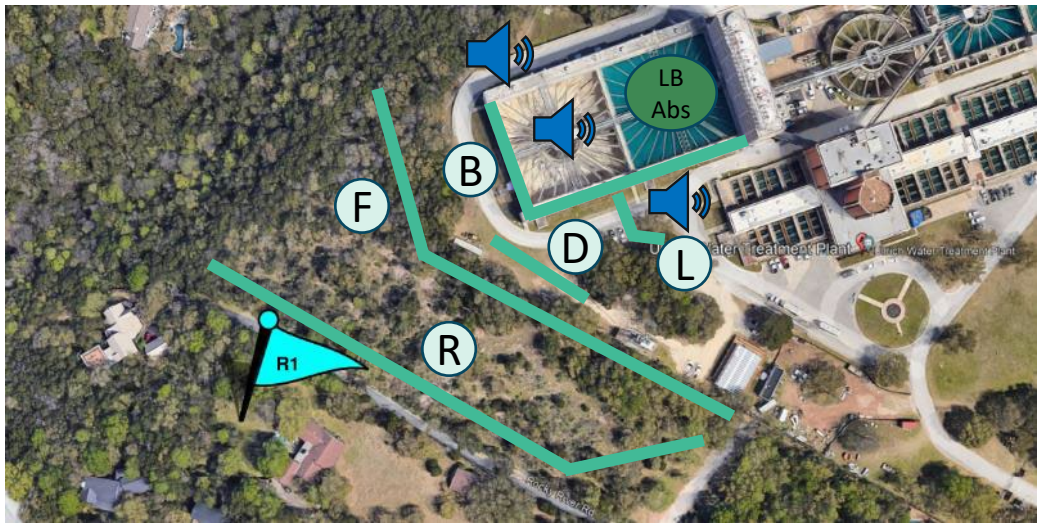
Insertion Loss	Reduction in Sound Energy	Relative Reduction in Loudness
5 dBA	68%	Readily Perceptible
10 dBA	90%	Half as Loud
15 dBA	97%	One-third as Loud
20 dBA	99%	One-fourth as Loud

Source: FHWA Noise Barrier Design Handbook

TxDOT Recommended Noise Reduction Design Goal: **7 dBA**

Summary of Modeled Treatment Effects at R1 Based on Cleaning of





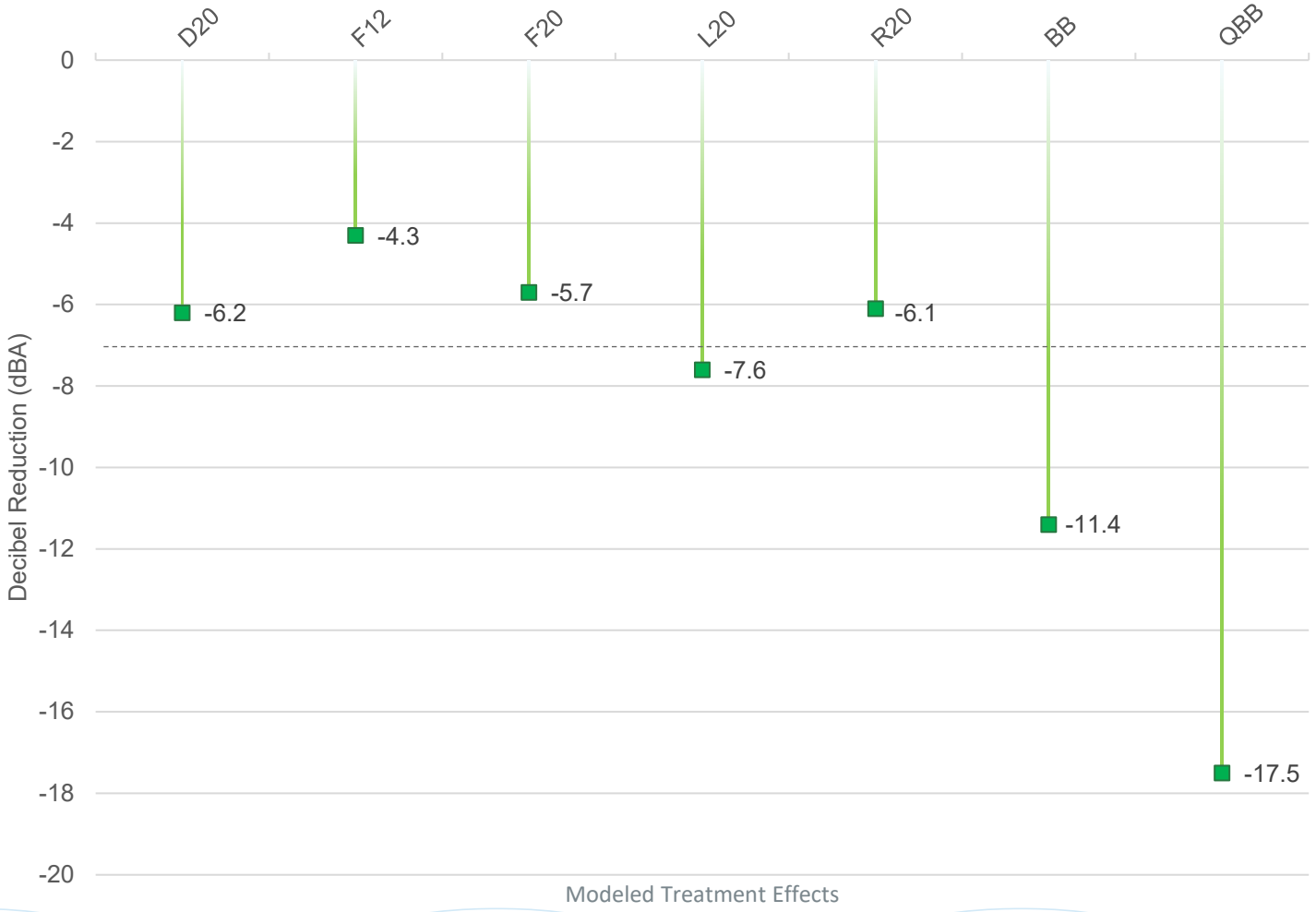
Noise Barrier Locations & Heights Modeled

Designation	Location	Barrier Length (ft)	Barrier Heights (ft)
B	On top of Basins 1 and 2	450	6, 10, 16
D	Between Ullrich perimeter driveway and fence	140	16, 20
F	Along west fence line, west of Basin 1	550	12, 20
R	Barrier in the buffer zone	750	12, 20, 25
L	Barrier at grade in lawn to reduce vacuum truck noise	80	20

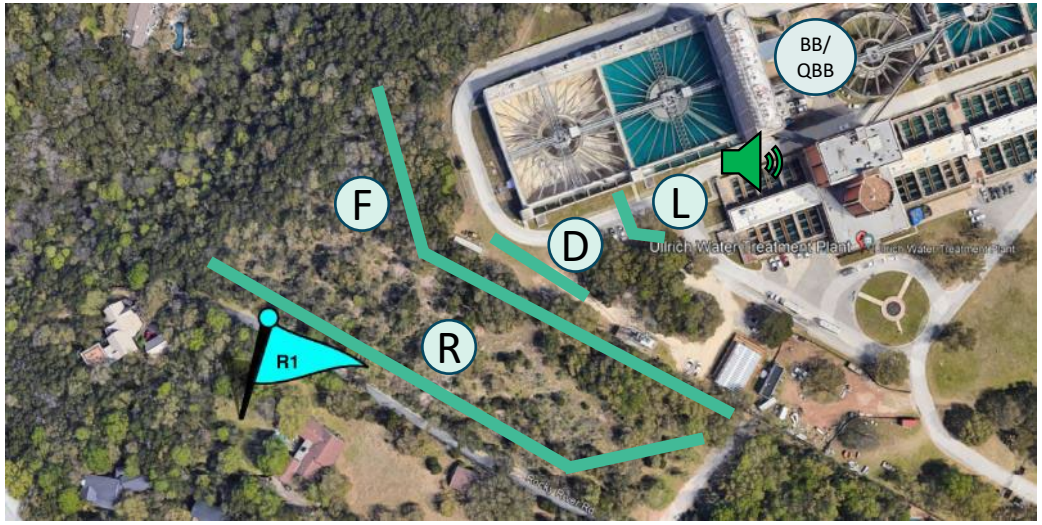
Other Alternatives Modeled

Designation	Location
LB Abs	Lime Building with sound absorption*

Summary of Modeled Treatment Effects at R1 Based on Lime Blower Operations



Note: Ullrich Staff are utilizing the Building Blower (BB) for current Lime Operations.



Noise Barrier Locations & Heights Modeled

Designation	Location	Barrier Length (ft)	Barrier Heights (ft)
D	Between Ullrich perimeter driveway and fence	140	20
F	Along west fence line, west of Basin 1	550	12, 20
R	Barrier in the buffer zone	750	20
L	Barrier at grade in lawn to reduce vacuum truck noise	80	20

Lime Blower Operational Alternatives Modeled

Designation	Location
BB	Lime Building Blower
QBB	Quiet Lime Building Blower (upgraded silencer)

Most Effective Noise Modeling Results

	Model Scenario	Description	Sound Mitigation (dBA Reduction)	Conceptual Cost ($) (1)(2)	Potential Operational Impact
Cleaning Basin 1	R25	25-ft high barrier in the buffer zone	-7.3	Highest	None
	B10 + D20	10-ft high barrier on top of Basins 1 and 2 + 20-ft high barrier between Ullrich perimeter driveway and fence	-7.9	High	Medium/High
	B10 + L20	10-ft high barrier on top of Basins 1 and 2 + 20-ft high barrier at grade in lawn to reduce vacuum truck noise	-9.4	High	Medium/High
Lime Blower Operations	L20	20-ft high barrier at grade in lawn to reduce vacuum truck noise	-7.6	High	Medium/High
	BB	Lime Building Blower	-11.4	Existing	None
	QBB	Quiet Lime Building Blower (upgraded silencer)	-17.5	Low(3)	Low

Note:

(1) Additional cost and feasibility factors related to implementation need to be further investigated.

(2) Cost Range (Low < $100K < High)

(3) Additional investigations needed for selecting upgraded silencer and modifications required for cost assumptions.

Summary / Recommended Next Step

- CSTI Modeled 41 Mitigation Scenarios. Alternatives for Different Barrier Locations and Heights, as well as Mitigation Combinations for Noise Reduction.

- KJ Developed High-level Conceptual Costs for Each Barrier Alternative.

- KJ Recommends Additional Evaluation of the Top Model Scenarios with Consideration for:
  - Operation & Maintenance Impacts
  - Barrier Materials
  - Site Constraints
  - Constructability/Structural Requirements
  - Schedule for Implementation
  - Impacts on Neighborhood
  - Permitting
  - Total Project Cost

Next Steps

Next Steps

- Austin Water will study the most effective noise treatments presented by the consultant
  - Evaluate their feasibility, constructability and compatibility with ongoing operations;
- Solutions that are feasible and recommended by Austin Water will be presented to neighbors for comment in 2024.
- Recommended solutions will then be considered for funding in Austin Water's Capital Improvement Program (CIP). Projects are added annually.

Typical Timeline for CIP Projects

Project Design: 12-24 months

- Hire engineering firm
- Survey & Geotechnical Services
- Design
- Apply for permits

Contract Bid and Award: 6-9 months

- Contractor selection
- Approval by Water and Wastewater Commission and City Council

Construction: 18-24 months

- Set up project
- Order materials
- Prepare site
- Install environmental controls
- Construct Improvements

Basin Cleaning Schedule

- Basin 1 will be cleaned in January 2024
  - This has been delayed in anticipation of this report being completed
- Temporary sound mitigation solutions will be used based on learnings from the report
- We will continue these measures to reduce impact to neighbors:
  - Limit work hours to 8 a.m. to 5 p.m.
  - No work on weekends or holidays
  - Locate some equipment on north side of basins

Questions and Answers

Thank you for attending.

- Call **512-972-1000** and select Option 1 to report concerns at the plant, such as noise. Please tell the agent that you want to report a “Neighbor Concern at Ullrich Water Treatment Plant.”

- Sign up to receive updates by email at **austintexas.gov/Ullrich**

Community Outreach Contact:
Emlea Chanslor
512-972-0145
emlea.chanslor@austintexas.gov