

# MEMO

**TO:** Suzanne Carter, Milwaukee County

**FROM:** Dana Lodico, RSG

**DATE:** October 24, 2022

**SUBJECT:** Rock Sports Complex – Sound Study Workplan

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This workplan describes the methods and assumptions for conducting the Sound Study for the Rock Sports Complex (ROC), located in Franklin, Wisconsin.

## 1.1 PHASE I: PROJECT KICK OFF

Phase I of the Project includes an initial Project kick off meeting with Milwaukee County (the County), preparation of a workplan, and review of existing data. With the completion of this workplan, Phase I will be complete.

### Kick Off Meeting

The RSG team has met virtually with the County multiple times to discuss project expectations, approach, deliverables, and project timeline. This task is complete.

### Workplan Preparation

A workplan describing the methods for conducting long term sound monitoring for the ROC was prepared for the County on June 23, 2022. Due to the timing of the project approval relative to the ROC event schedule and the unknowns pertaining to the cooperation with the ROC facility, it was agreed that initial efforts should focus on getting monitoring conducted and the public meeting completed. The full workplan would follow once these unknowns were resolved. The ROC facility was contacted multiple times by the County and by the RSG team and has not agreed to cooperate with the project. This workplan documents the proposed sound study efforts, given the non-cooperation of the ROC. Since the initial scope was prepared with the assumption that the ROC would cooperate with the study, some changes in scope from the original are included in this workplan. With the completion of this workplan, this task is complete.

### Data Review

The RSG team has reviewed the scheduling of ROC events, including the Milwaukee Milkmen, Milky Way Drive In, Umbrella Bar Summer Concert Series, and Rock League Baseball. Complaint records were also reviewed. This task is complete.

## **Additional Information Gathering**

The RSG team has identified noise-sensitive human use areas through review of aerial photography of the project area and confirmed these locations during our visits to the site. This task is complete.

## **1.2 PHASE II: SOUND STUDY**

Phase II of the project includes the bulk of the sound study and field work, including the assessment of sound impacts of the site through public outreach, sound monitoring, sound modeling, and compliance evaluation. This phase is currently underway.

### **Topographical Review**

Modeling for the project will be conducted in accordance with the standard ISO 9613-2, “Acoustics – Attenuation of sound during propagation outdoors, Part 2: General Method of Calculation.” The model takes into account source sound power levels, surface reflection and absorption, atmospheric absorption, geometric divergence, meteorological conditions, walls, barriers, berms, and terrain.

The acoustical modeling software used will be CadnaA, from Datakustik GmbH. CadnaA is a widely accepted acoustical propagation modeling tool, used by many noise control professionals in the United States and internationally. ISO 9613-2 assumes downwind sound propagation between every source and every receiver, consequently, all wind directions, including the prevailing wind directions, are considered. Inputs to the model will include topographical data available from the County, ground types, foliage, structures and other manmade barriers, and sensitive receptor locations. Preliminary sound source information, based on data measured by the RSG team for similar use facilities, will be utilized for the preliminary model to help identify areas of concern in the surrounding community.

### **Event Sound Impact**

The event sound impact task includes public outreach, attended and unattended sound monitoring, and sound modeling.

#### ***Public Outreach***

The RSG team conducted a virtual public meeting for the project on Monday August 29, 2022. The objective of the meeting was to share information on the purpose of the sound study and receive input from the public.

The meeting was a three-hour long event, with presentations occurring on each hour (4:00, 5:00, and 6:00 pm). Presenters included Regina Flores (Milwaukee County), Beth Foy (Beth Foy Associates), and Dana Lodico (RSG). Following each presentation, the public was given the opportunity to give comments. Presenters responded to comments, as time allowed.



Notice of the meeting was mailed in a post card format to owners and occupants of properties closest to ROC and to the primary operators of the ROC. The meeting was also posted on the Milwaukee County Events page. The City of Franklin and County Supervisors also shared meeting information.

Attendance at the meeting included four County Supervisors, the Mayor of Franklin, the Franklin Director of Administration, County staff from Procurement, Parks, and Economic Development, developer Mike Zimmerman and managers of sites at the ROC, and approximately 15 to 20 residents, with some representing more than one resident. In addition, two residents that were unable to attend the meeting asked that statements be read by others.

Input was received by residents adjacent to the ROC and those up to a mile and a half from the facility. All reported being disturbed by sound from the ROC, with some discussing the negative impact of these sounds on their quality of life. One resident requested that the ROC inform nearby residents when louder events, such as fireworks and helicopter activities, are to take place. Several residents negatively commented on the placement of the speakers along the outfield edge of the baseball stadium. These speakers point from the stadium and in the direction of neighborhoods. These residents asked that the speaker be turned toward the stadium and that the volume be turned down. A summary of the feedback received from the public outreach meeting was provided to the County on September 7, 2022.

This task is complete.

### ***Sound Monitoring***

Sound monitoring will include unattended long-term continuous monitoring in conjunction with attended short-duration monitoring.

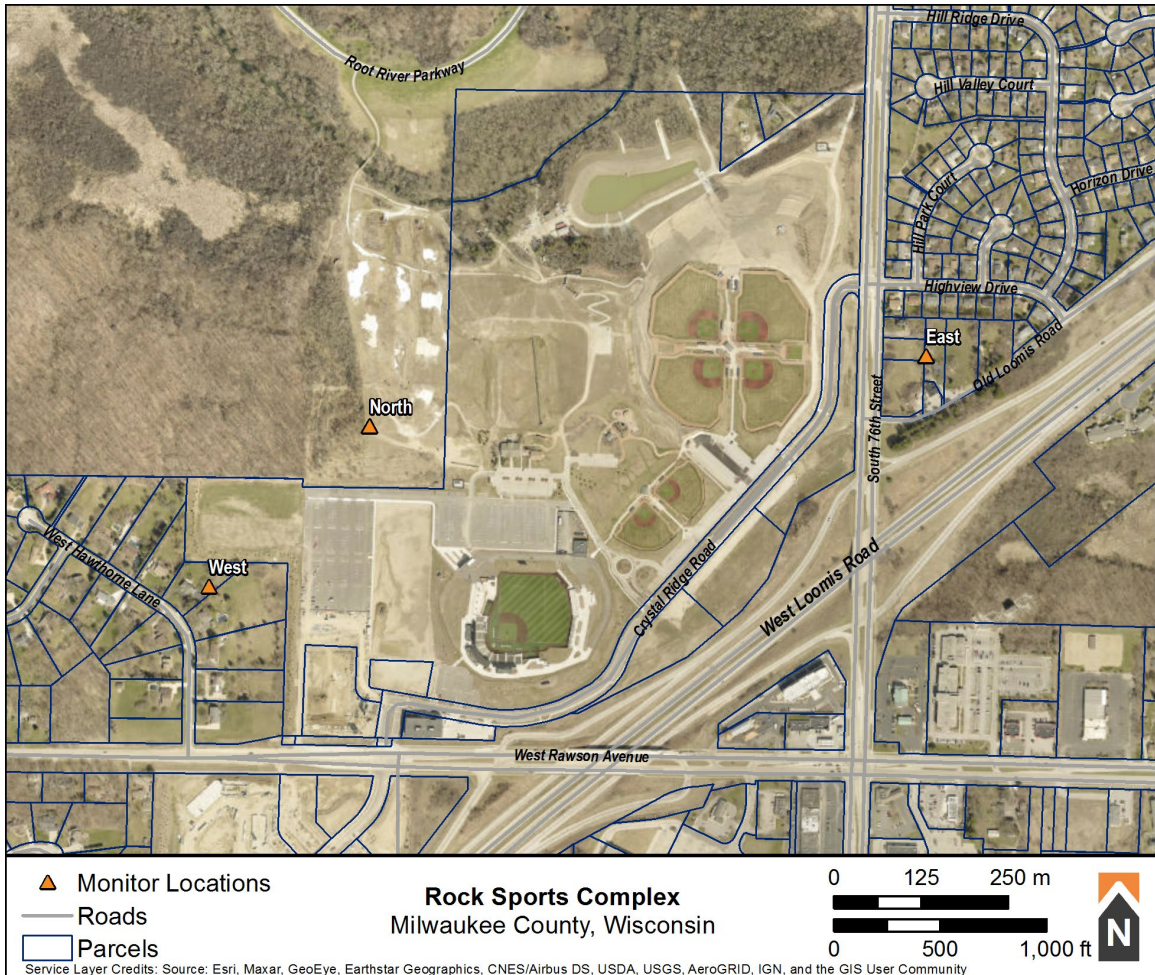
Sound level monitoring is performed with ANSI/IEC Type 1 sound level meters with a minimum frequency range of 6.3 Hz to 20 kHz. The sound level meters are field calibrated during setup, tear down, and all meter checks.

### **Long-Term Continuous Monitoring**

The purpose of the long-term continuous monitoring is to assess the diurnal ambient sound levels occurring during periods with and without events occurring at the ROC. Three long-term monitors were installed in semi-permanent locations for up to a six-month period, with field staff accessing the sound levels meters to download data and change batteries and/or maintain the equipment as needed. Monitors were installed in early July 2022 and will be picked up in early January 2023. Long term monitoring locations are shown in Figure 1. Note that the ski hill monitor may be relocated slightly in November to accommodate snow making equipment and recreational users of the Facility.

Sound level meters are covered with windscreens to minimize the impact of wind distortion on measurements. The meters also record audio in .wav format to aid in sound

source identification. An ultrasonic anemometer is also installed to measure wind speed, direction, and temperature.



**FIGURE 1: NOISE MONITORING LOCATIONS**

### Short-Term Attended Monitoring

Attended monitoring at five events has occurred, as follows:

- Evening of Saturday, August 6, 2022: Baseball game, parade, fireworks, live band in Umbrella Bar (The Playlist)
- Evening of Saturday, August 20, 2022: Baseball game, live band in stadium, fireworks, live band in Umbrella Bar (The Toys)
- Evening of Saturday, August 27, 2022: Baseball game, parade, movie in stadium, live band in Umbrella Bar (Superfly)



- Afternoon of Sunday, August 28, 2022: Baseball game, planned movie in stadium and helicopter drop (which was cancelled due to weather)
- Evening of Saturday, September 10, 2022: Live band in Umbrella Bar (33 RPM)

In addition to the events that have already been monitored, the RSG team plans on monitoring at one or more of the following events, weather and schedules permitting:

- Evening of Saturday, October 29, 2022: Haunted Hills Event, drive-in movie at Milky Way Drive-In
- Representative event occurring at the Ski Hill (event schedule not yet available)

The project team did not receive permission to monitor on ROC property. As a result, attended monitoring has been and will continue to be conducted at the Ski Hill and in the surrounding communities. Field staff will typically attend each site for a period of approximately 30 minutes and then move to the next site. Attended monitoring sites include locations on the Ski Hill and in neighborhoods to the east, west, and north of the ROC.

Attended sound level meters are mounted on tripods at a height of approximately 1.5 meters (5 feet) and covered with windscreens to minimize the impact of wind distortion on measurements. Field staff attend each monitor and document sound levels attributable to facility and non-facility related activities occurring during the attended events.

Note that without permission to make sound measurements on the ROC property, measurements during each attended event were made by a single field staff, moving from site to site. The revised scope proposed 1 to 2 field staff to monitor both within the facility and in the surrounding areas. Budget for this additional field staff has been reallocated to allow for further low frequency analysis of the data and review of the existing ROC sound monitors, as described in the appropriate sections of this workplan.

### ***Data Analysis***

Analysis of the attended event data will occur following each attended event. This data will be provided to the County in the form of a technical memo. The purpose of the memo will be to document the data acquired during these events including the sound level time history, spectral content of the sound, and sound level statistics, such as “time above”, L10, L50, L90, and  $L_{eq}$ .

Analysis of the long-term monitors will occur following the completion of the long-term monitoring in January of 2023. This data will be used to determine statistical sound levels occurring during periods with and without events. We will then compare levels occurring during the attended events and other event periods to sound levels occurring under similar conditions without events (same time of day, day of week, etc.). This comparison, along with feedback received during the public outreach and the attended monitoring, will be used to inform our recommendations on appropriate thresholds.



Feedback received during public outreach and field staff experiences during attended monitoring have indicated that low frequency sounds are of particular concern to the community. Using budget reallocated from the sound system evaluation task, we will assess the low frequency content of the sounds generated at the ROC and compare these levels to those occurring during periods without events and to noise-induced vibration thresholds such as those found in ANSI S12.9 Part 4 and ANSI S12.2.

### ***Sound Modeling***

The preliminary sound model developed above will be updated with the data acquired during the sound monitoring survey. Sound contour maps will be developed for each of the six events selected for attended sound monitoring. These maps will visually show affected areas in the vicinity of the site. Sounds levels at discrete receptor locations, both at ground level and at upper stories, will also be provided. Sound contour lines can be provided to County staff in GIS format, suitable to be integrated into County GIS database. Modeled increases in sound levels between baseline, as determined through the long-term monitoring data, and baseline plus event sound scenarios will be calculated. Sound modeling will also allow for a comparison of sound levels between attended and unattended monitoring locations and with the existing ROC sound monitors. Modeling results will be provided as part of the final reporting.

### **Sound System Evaluation**

The project team did not receive permission to monitor on ROC property or to have access to the existing ROC sound system. As a result, the RSG team is unable to evaluate the ROC sound system. Budget for this task item has been reallocated to allow for further low frequency analysis of the data and review of the existing ROC sound monitors, as described in the appropriate sections of this workplan.

### **Compliance Monitor Evaluation**

The RSG team will evaluate the three existing sound monitors located at the facility to determine appropriateness of locations, appropriateness of quantity, and quality of data. This scope item utilizes budget reallocated from the sound system evaluation task.

### **Compliance Evaluation**

The RSG team will review noise-related laws, regulations, ordinances, and other recommendations from the City of Franklin, Village of Greendale, Milwaukee County, State of Wisconsin, United States, World Health Organization, ANSI, and other applicable agencies. Based on this review, we will review the jurisdictional, regulatory, and contractual authority for regulating or restricting sound generated by the facility and make recommendations for thresholds to be used for the facility to assess sound impacts to humans.



## **1.3 PHASE III: RECOMMENDATIONS**

In Phase III of the project, we will synthesize the information gathered in Phases I and II to understand and address the impact of sound generated by facility activities on the surrounding residential areas and develop sound thresholds for use in municipal code documents.

The RSG team is unable to recommend specific improvements to the design of the ROC facility without cooperation from the facility and access to the existing sound systems. However, we will develop general recommended best practices for design, appropriate thresholds to reduce noise impacts on the surrounding areas, and measures for the facility to comply with the proposed sound thresholds and processes for approval of any future proposed uses for the site.

### **Sound Impact Assessment**

The RSG team will synthesize the information gathered in Phases I and II to understand and address the impact of sound generated by facility activities on the surrounding area. Potential impacts to residents will be compiled and we will suggest thresholds and / or mitigation to reduce identified impacts.

### **Ordinance**

The RSG team will develop appropriate sound thresholds for use in the County's and/or other municipality's municipal code(s). We will meet with the County and other municipalities, as appropriate, to discuss the needs of the County with respect to balancing sounds generated by the facility and the concerns of nearby residents and businesses. Based on these discussions, we will develop draft municipal noise ordinance code language for County review. We will then respond to County feedback and provide a final version of the code language.

### **Contractual Compliance**

The RSG team will recommend monitoring systems, procedures, and reporting required to track the Developer's sound-related contractual obligations to Milwaukee County with respect to the sound thresholds and associated ordinance developed above. These recommendations will be documented in the final report.

### **Compliance Monitoring**

Based on the results of Phase II, the RSG team will recommend locations and number and type of monitoring devices to adequately measure and monitor sound at the facility, including recommendations with respect to existing and any potential future uses. These recommendations will be documented in the final report.

## Engineering and Design

Without cooperation from the ROC and access to existing sound systems, the RSG team is unable to develop specific recommendations of best practices for staging, engineering, sound system design, and/or equipment to mitigate the sound emanating from all activities at the facility to nearby noise sensitive areas. Budget for this task item has been reallocated to allow for further low frequency analysis of the data and review of the existing ROC monitors, as described in the appropriate sections of this workplan.

## Future Uses

The RSG team will develop recommendations for best practice(s) and process(es) for approval of future uses of the site, including recommendations with respect to sound thresholds, monitoring devices, engineering, and design. These recommendations will be documented in the final report.

## 1.4 PHASE IV: FINAL REPORTING

The RSG team will develop a final report for submission to the County. Data acquired over the course of study will be provided, including analyzed sound monitoring data, public outreach efforts, and sound modeling results. More extensive data will be provided as supplemental electronic files.<sup>1</sup>

The final report will include the following information:

- a. Executive Summary
- b. Methodology
- c. Survey Findings
  - i. Public Outreach
  - ii. Sound Monitoring Results
  - iii. Sound Modeling Results
  - iv. Compliance Evaluation
- d. Recommendations
  - i. Sound impacts
  - ii. Draft Noise Ordinance
  - iii. Compliance Procedures
  - iv. Monitoring Locations

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<sup>1</sup> Audio files will not be provided, as they may contain private conversations. However, RSG may release examples of audio from different events that have been pre-screened to remove private conversations.





## 1.5 SCOPE MODIFICATIONS

The ROC has not cooperated with RSG requests for collaboration on the Sound Study and did not grant permission for RSG to make sound measurements on ROC property. Some items in the scope provided at the September 14<sup>th</sup>, 2022 Milwaukee County Audit Committee Meeting are unable to be completed without collaboration with the ROC. As a result, the following scope have been removed / changed from the scope provided to the Audit Committee on September 14, 2022.

- On site sound measurements are no longer proposed as part of the scope. This reduces the number of staff making attended measurements to one staff for each attended event (the scope included one to two staff per event).
- Attended events were selected based on publicly available event schedules for the ROC. Therefore, private corporate events were monitored as they occurred and were not included as a separate attended event. The number of attended events remains the same (i.e., six) as in prior versions of the scope.
- RSG is unable to evaluate and conduct inventory of the staging, engineering, and sound systems in place at the ROC without cooperation from the Facility (Phase II-C). This scope item is removed.
- RSG is unable to make recommendations of best practices for the staging, engineering, and sound systems in place at the ROC without cooperation from the Facility (Phase III-E). This scope item is removed.

With the additional budget that would have been allotted to the items above, RSG will provide the following services that were part of the original scope and were removed due to a reduction in budget from the original RFP.

- RSG will review available data from ROC sound monitoring equipment and compare these with data compiled in the course of the sound study on select dates.
- In the course of the study to date, it has become apparent that low frequency sounds are of particular annoyance to local residents. To address this concern, RSG will provide low frequency analysis of the data and develop recommendations at which to set municipal sound regulations/ordinance with respect to low frequency sounds.
- RSG will assess and document background and event sound levels with respect to time of day and day of the week.

For clarity, the following correspondence occurred between the County / RSG and ROC Ventures concerning potential collaboration for the Sound Study:

- RSG is collaborating with ski hill staff (Mike Schmitz and Rick Schmitz) to make measurements and understand snow making and other ski hill sound generating activities.
- County staff reached out by email to Tom Jones, Mike Zimmerman, Dan Kuenzi, and Paul Cimoch of ROC Ventures in June and July of 2022 (June 26, July 27). On July 27, 2022, Mike Zimmerman responded giving RSG permission to call his cellular telephone number.
- RSG left two phone messages with Mike Zimmerman (July 28 and August 1, 2022). No response was received.
- RSG reached out by email to Tom Jones, Mike Zimmerman, Dan Kuenzi, and Paul Cimoch on multiple occasions in July, August, and September 2022 (July 28, August 1, 2 and 9, and September 8). Mike Zimmerman responded to some of these emails but would not commit to collaboration with the RSG team, to participating in a 30-minute phone call with the RSG team to discuss potential collaboration, or to allowing RSG staff on ROC property to make sound measurements or assess the staging, engineering, and sound systems in place at the ROC. In each email from RSG, dates and times were provided to encourage collaboration and information was provided on the exact request being made, the intent of the request, and the timeline needed for RSG to be able to complete the portion of the scope that required collaboration with the ROC.
- The final email provided from RSG to ROC Ventures (September 8, 2022) explained that the window of opportunity for collaboration on attended events had ended (the events having been completed by this time). However, collaboration on facility design could still be made available to ROC if they were able to respond with interest by the date of the Audit Committee meeting (September 14, 2022). RSG has not received a response to this email.