

January 12, 2021

Via email

Bettye Lusk, President
Board of Directors
Monterey Peninsula Unified School District

Subject: Comments on the Draft Environmental Impact Report for the Monterey High School athletics project – noise impact analysis

Dear President Lusk and members of the board:

Attached please find the expert comments of Derek Watry on the subject Draft EIR. The subject is “Monterey High School Stadium Improvements Project Draft Environmental Impact Report, Review of Noise Impact Analysis.”

Thank you.

Sincerely,
STAMP | ERICKSON
/s/ Molly Erickson
Molly Erickson

Attachment: Expert comments by Derek Watry, Wilson Ihrig, dated January 12, 2021
(total 20 pp.)

cc: Ascent Environmental, Inc. (montereyhsstadium@ascentenvironmental.com)



12 January 2021

Molly Erickson, Esq.
STAMP | ERICKSON
Box 2448
Monterey, California 93942

Subject: Monterey High School Stadium Improvements Project
Draft Environmental Impact Report
Review of Noise Impact Analysis

Dear Ms. Erickson:

Previously, in 2019, we reviewed the noise section of the *Proposed Mitigated Negative Declaration - Monterey High School Athletic Field Improvements*. Subsequent to that review, the Monterey Peninsula Unified School District (“MPUSD”) decided to prepare a full environmental impact report for the proposed project, the draft of which was released in November 2020. In this letter, we review the noise analysis presented in the *Draft Environmental Impact Report for the Monterey High School Stadium Improvements Project* (“DEIR”).¹

Wilson, Ihrig & Associates, Acoustical Consultants, has practiced exclusively in the field of acoustics since 1966. During our 55 years of operation, we have prepared hundreds of noise studies for Environmental Impact Reports and Statements. We have one of the largest technical laboratories in the acoustical consulting industry. We also regularly utilize industry-standard acoustical programs such as Environmental Noise Model (ENM), Traffic Noise Model (TNM), SoundPLAN, and CADNA. I have worked at Wilson Ihrig for 28 years and have personally worked on dozens of CEQA and NEPA environmental noise studies. My *curriculum vitae* regarding this work is appended to this letter.

¹ *Draft Environmental Impact Report for the Monterey High School Stadium Improvements Project*, State Clearinghouse No. 2019079092, November 2020.

ADVERSE EFFECTS OF NOISE²

Although the health effects of noise are not taken as seriously in the United States as they are in other countries, they are real and, in many parts of the country, pervasive.

Noise-Induced Hearing Loss. If a person is repeatedly exposed to loud noises, he or she may experience noise-induced hearing impairment or loss. In the United States, both the Occupational Health and Safety Administration (OSHA) and the National Institute for Occupational Safety and Health (NIOSH) promote standards and regulations to protect the hearing of people exposed to high levels of industrial noise.

Speech Interference. A common problem associated with noise is speech interference. In addition to the obvious issues that may arise from misunderstandings, speech interference also leads to problems with concentration fatigue, irritation, decreased working capacity, and automatic stress reactions. For complete speech intelligibility, the sound level of the speech should be 15 to 18 dBA higher than the background noise. Typical indoor speech levels are 45 to 50 dBA at 1 meter, so any noise above 30 dBA begins to interfere with speech intelligibility. The common reaction to higher background noise levels is to raise one's voice. If this is required persistently for long periods of time, stress reactions and irritation will likely result. The problems and irritation that are associated with speech disturbance have become more pronounced during the COVID-19 pandemic because many people find themselves and the people they live with trying to work and learn simultaneously in spaces that were not designed for speech privacy.

Sleep Disturbance. Noise can disturb sleep by making it more difficult to fall asleep, by waking someone after they are asleep, or by altering their sleep stage, e.g., reducing the amount of rapid eye movement (REM) sleep. Noise exposure for people who are sleeping has also been linked to increased blood pressure, increased heart rate, increase in body movements, and other physiological effects. Not surprisingly, people whose sleep is disturbed by noise often experience secondary effects such as increased fatigue, depressed mood, and decreased work performance.

Cardiovascular and Physiological Effects. Human's bodily reactions to noise are rooted in the "fight or flight" response that evolved when many noises signaled imminent danger. These include increased blood pressure, elevated heart rate, and vasoconstriction. Prolonged exposure to acute noises can result in permanent effects such as hypertension and heart disease.

Impaired Cognitive Performance. Studies have established that noise exposure impairs people's abilities to perform complex tasks (tasks that require attention to detail or analytical processes) and it makes reading, paying attention, solving problems, and memorizing more difficult. This is why there are standards for classrooms background noise levels and why office and libraries are designed to provide quiet work environments. While sheltering-in-place during the COVID-19

² More information on these and other adverse effects of noise may be found in *Guidelines for Community Noise*, eds B Berglund, T Lindvall, and D Schwela, World Health Organization, Geneva, Switzerland, 1999.

pandemic, many people are finding working and learning more difficult because their home environment is not as quiet as their office or school was.

PREFACE TO COMMENTS

The residents in the area surrounding Dan Albert Stadium at Monterey High School are not unique in their concern about sports facility noise. I have previously been involved in numerous matters in which such noise was contentious, including high school sports field developments in Albany and the Brentwood neighborhood of Los Angeles, a Little League field development in Atherton, and a batting cage in Castro Valley. Sport field noises are unnatural, unusual, in the ears of many, unnecessary, especially after dark, in addition to being potentially loud. These are all factors that many cities take into consideration when determining if a noise unreasonable and, therefore, prohibited. Many cities include in their noise control regulations a list of factors to be considered in assessing a noise impact similar to the following taken from the California Model Noise Ordinance, and these factors are all relevant here:

1. The sound level of the objectionable noise.
2. The sound level of the ambient noise.
3. The proximity of the noise to residential sleeping facilities.
4. The nature and zoning of the area within which the noise emanates.
5. The number of persons affected by the noise source.
6. The time of day or night the noise occurs.
7. The duration of the noise and its tonal, informational, or musical content.
8. Whether the noise is continuous, recurrent, or intermittent.
9. Whether the noise is produced by a commercial or noncommercial activity.³

One key point of these factors is recognizing that the level of noise in decibels, while important, is not the sole factor in determining whether a noise would cause environmental impacts and whether those impacts would be acceptable to the community. Given the nature of and heightened potential for annoyance from evening sports field noise and the foreseeable noises that the proposed project will generate, these are factors that should have been considered, but they were not.

STADIUM IMPROVEMENTS PROJECT CONTEXT

The existing stadium with stone bleachers was built in 1928.⁴ From approximately 2009 to 2018, four or five nighttime football games per year were enabled by temporary field lighting

³ *Model Community Noise Control Ordinance*, Office of Noise Control, California Department of Health, April 1977.

⁴ The DEIR in one place states that the stadium was built in 1938, but this appears to be an error.

and a temporary public address (“PA”) system. Residents around the stadium report that during games they could clearly hear announcements from the PA system, referee whistles, crowd noise including individual yelling and group cheering, music (presumably from one or more bands), and air horn sounds. In the context of primarily daytime contests and only four of five nighttime contests, they found those noises acceptable.⁵ However, the introduction of permanent lights would enable many more night games, practices, concerts, etc. Moreover, the project would introduce a new noise source into the area: metal bleachers which sports and event fans routinely use as a rallying noise-generator by stomping their feet. Additionally, there was previously much concern by neighbors that the conversion of a dirt parking lot to the Lower Field would force over one hundred cars onto local streets, many of which are narrow, winding, and without sidewalks. This concern is purportedly being addressed by the development of new and modified parking areas at the site, but that element of the overall stadium improvements is being treated as a separate project by the MPUSD.

COMMENTS ABOUT DEIR NOISE ANALYSIS

1 DEIR Fails to Convey the Scope and Scale of Significant Noise Impacts

From the 2009 until 2018, local residents tolerated 4 nighttime football games as part of a compromise with the school district. Now, the proposed improvements would increase evening and nighttime games to 21 per year [DEIR at p. 2-8, Table 2-3].⁶ This sort of incremental degradation of the noise environment is, unfortunately, common. Noise begets noise. In this situation, the degradation is all the more striking because the existing ambient conditions are unusually pristine. As the DEIR states, “existing ambient noise levels during the evening hours are relatively quiet” [DEIR at p. 3.11-14]. Average evening noise levels are 38 to 43 dB, and average nighttime levels are 34 to 41 dB [DEIR at p. 3.11-8, Table 3.11-6].⁷

In stark contrast to the quiet ambient levels, the DEIR indicates that average noise levels during sporting events would be up to 22 dB higher at nearby residences. It would be at least 13 dB higher at five of the six residences analyzed in the DEIR. To begin to understand how significant this is, consider these Caltrans’ decibel perception “rules of thumb” cited by the DEIR:

⁵ The acceptance of four nighttime games was negotiated with the school superintendent and documented.

⁶ In acoustics, 7:00 p.m. to 10:00 p.m. is considered the “evening” period, a period during which people are somewhat more sensitive to noises. The “nighttime” period, during which people are generally much more sensitive to noise, is 10:00 p.m. to 7:00 a.m.

⁷ Because decibels are a logarithmic scale, the “average” level is typically presented as the constant level that contains as much energy as the time-varying sound over the time period. This is called the *equivalent level*, and it is denoted by *Leq*.

In typical noisy environments, changes in noise of 1 to 2 dB are generally not perceptible. However, it is widely accepted that people can begin to detect sound level increases of 3 dB in typical noisy environments. Further, a 5-dB increase is generally perceived as a distinctly noticeable increase, and a 10-dB increase is generally perceived as a doubling of loudness. [DEIR at p. 3.11-5]

This passage supports an increase of 10-dB constituting a significant noise impact. As such, the homes at which the sound level is predicted to increase by 13 to 22 dB all would suffer significant impacts based on the relative increase alone. However, the Caltrans passage specifically pertains to highway noise which is “simpler” than the noise produced by the project proposed here. Note that the passage says, “In typically noisy environments.” What that means is, “If there is already highway noise, and that highway noise increases, here is how various increases are likely to be perceived by the public.” The passage addresses an existing noise – highway noise – getting louder. That is very different from the stadium improvement project situation. In this situation, the existing ambient noise sources are not increasing in level. Rather, entirely new sources would be introduced by the stadium project. As such, these perception “rules of thumb” do not apply, and the noises are likely to be annoying and cause harmful effects at far smaller increases in decibel levels. One way to think about this is to consider an orchestra in which one violin player is inept and out of tune and creates more screeches than notes. The decibel level would not increase at all, but the experience would be transformed. That is an apt analogy for what this project would do to the surrounding neighborhoods, in terms of its qualitative impact. The project would also generate quantitative impacts, specifically, high noise levels.

The DEIR admits that the proposed project will result in significant and unavoidable impacts to the residents surrounding the stadium based solely on an analysis of the noise levels. While this is true and correct, it does not convey the import of that impact – it will forevermore alter the character of the quiet, peaceful neighborhoods that surround the school. I have worked on many projects where houses were built next to long-standing noise producers. One was a food bank operating in an industrial area. After residences were built, people moved in, and, in short order, action was taken to restrict nighttime operations at the food bank. The stadium improvement project is the opposite situation. People – some decades ago – chose to live near the school when there were no nighttime games, PA, bands, or lighting. That changed slightly between 2009 and 2018 under a compromise agreement which opened up the door to degradation four nights a year. The proposed project will make that change worse by expanding the facility, and it will make it permanent. If the lights and PA system are installed, they will never be removed. The noise environment around the high school will be forever altered, forever diminished. This is the import of the noise impact of this project, and it can be avoided by foregoing the improvements that enable evening and nighttime activities and/or placing unambiguous restrictions on the evening and nighttime use. In Chapter 5, the DEIR presents five alternatives that would do just that.

Finally, the DEIR fails to adequately analyze the geographic scope of the impacts, focusing only on six individual residences and not the neighborhoods at large, neighborhoods that already object to noise emanating from the stadium. Given the acknowledgement that noise impacts will be significant and unavoidable, it would be appropriate for the major noise sources – crowd noise (cheering, air horns, feet-stomping, etc.), PA announcements, and bands – to be modeled using a computer application that could accurately account for the effects of distance, topography, and shielding by buildings over a large area surrounding the project site and produce graphical depictions of future noise levels that can be easily understood by the public.⁸ The DEIR has not provided this basic information to the public or to decisionmakers.

2 Comments Regarding Reference Noise Levels

2.1 DEIR fails to consider all relevant noise sources

Table 3.11-8 of the DEIR presents the reference noise levels used as the bases for noise level calculations. Notably, the DEIR does not include reference noise levels for the following known or foreseeable noise sources: foot-stomping on aluminum bleachers, music played over the PA system, bands, air horns. Consequently, none of these are represented in the DEIR noise analysis, resulting in an inadequate assessment that underestimates the foreseeable impacts. Additional comments on each:

Marching Band: The DEIR states that the band use of the outdoor facilities would not change [DEIR at p. 2-10] which may be the reason for not considering it. This statement implies that the marching band has been playing at night football games during the past decade and this would not change. If so, the exact number of games should be stated and made into an enforceable mitigation on which the public could review and comment.

Air Horns: Local residents report hearing the sound of air horns at past games. Therefore, they should be included in the noise analysis. Handheld air horns that may be purchased for less than \$15 are capable of producing a noise level of 125 dB at 3/4 feet (95 dB at 100 feet). The SeaSense horn states “Ideal for all sporting events” on its label, and one listed feature is, “Can be heard up to one mile away”.⁹

Foot-Stomping: The floorboards of aluminum bleachers may and often are used as a drum. This is one cheering advantage that the visiting spectators will have, and, being mostly high-school students, they may be expected to take full advantage of it. Just as one kettle drum player contributes significant sound energy to an orchestra, only a relatively small number of fans need to stomp in unison to excite the entire aluminum bleacher structure, greatly amplifying their efforts. As the sound of a rattling aluminum bleacher certainly meets the

⁸ Two commonly used environmental noise analysis applications are SoundPLAN and CadnaA. Either of these or an equivalent should be used.

⁹ <https://seasense.com/products/air-horn-jumbo-8-oz>

definition of *noise*, this should be included in the analysis. The same impacts would result from the proposed aluminum bleachers at the lower sports field and would be a new daytime noise. This noise could be mitigated by either installing wood or plastic-plank bleachers or lagging either material to the top surfaces of the aluminum bleachers. The DEIR failed to consider and quantify the noise levels and, therefore, failed to consider effective and enforceable mitigations and to quantify the effectiveness of that mitigation.

Another major source that is not considered is noise that will be generated by the **associated parking lot** project. Although that is being presented as a separate project, it appears to have been formulated as a measure to mitigate parking impacts and traffic noise and congestion impacts on surrounding neighborhoods in response to comments made about the *Proposed Mitigated Negative Declaration* for the stadium project. As such, its noise and other impacts should be analyzed within the subject DEIR lest the project impacts be dealt with piecemeal. To my knowledge, no construction or operational noise analyses on the parking lot development have been prepared. The parking lot improvements will be made in four areas. All of these are at the perimeter of the campus area and, therefore, close to homes on Logan Lane, Martin Street, Van Buren Court, Larkin Street, and Herrmann Street. Given the close proximity of the construction work to homes, it is very likely that the work will result in additional significant impacts.

Furthermore, as we discussed in our previous letter on the *Proposed Mitigated Negative Declaration*, even with the associated parking lot, it is still reasonable to assume that **some people will park on the residential streets north of the stadium** (El Caminito, La Selva, etc.). Whereas the fans may arrive in staggered fashion, they will most certainly leave in a short time following the completion of a game. On the dark, narrow streets, this invites loud conversation and yelling by fans while finding the way back to their parked vehicles. Horn honking, prolonged idling, and even engine racing, may also occur, in addition to inevitable door slams and car starts.¹⁰ While this may be difficult to quantify, as a reasonably-foreseeable, project-related noise source in a very quiet neighborhood, it should be assessed.

Finally, regarding **events put on by others**, the DEIR states, “[w]hile the public may rent facilities according to these limitations, it is difficult to determine which events and activities may occur and when because entities other than MPUSD would propose other events and activities. The use of the MHS facilities for public nighttime events is unlikely to generate additional events in the area; instead, already-existing events would have an additional venue to choose from within the City.” [DEIR at p. 2-10]. The argument to forego analyzing noise from the events is based on faulty logic. The question is not whether the stadium improvement project would introduce new events to the Monterey Peninsula, it’s whether it introduces new events to the school site. As the other prominent, outdoor venues in the area – the county fairgrounds and Monterey Peninsula College – do not have nearly as nice a view nor environs as Dan Albert Stadium, and are not walkable from downtown, it is reasonable to assume that outside groups would be interested in renting the stadium. Possible events are outdoor concerts and car-related

¹⁰ All these have been reported by residents on the streets after night events in the 2009-2018 period.

events during Monterey's world-famous Car & Concourse Week. There may be other events, as well. If the DEIR is unable to assess these potential noise events, the mitigation measures should make it clear that all events other than the Monterey High School's are strictly prohibited.

2.2 Comments on noise sources that are analyzed in the DEIR

Table 3.11-8 does include reference noise levels for crowds, the PA system, and Lower Field activities. Some of the levels appear to be unreasonable and too little information has been provided to allow an adequate review to point out all the shortcomings. The preparers should provide more substantial bases for them or revise them and the attendant calculations.

Home Bleacher Crowd: The DEIR argues on p. 2-10 that increasing the total seating capacity at Dan Albert Stadium will not result in larger crowds because, in the past, the stadium has not sold out "[e]ven when games feature local rivalries." This argument assumes that the only reason the crowd size would increase is that, at present, the crowd size is limited by capacity. The assumption is not supported. There are other reasons the crowd size would increase, the most prominent and fairly obvious one being that the facility will be improved which would make new uses and increased demand foreseeable. If the project is implemented as proposed, the bright lights, permanent PA system, and new visitor bleachers will make the stadium a more attractive venue for spectators. The DEIR should make some estimate of how much larger the home crowd could be if the project is implemented and revise the noise level estimates accordingly. CEQA requires review of capacity for increase because now is the time for that review. If, in the future, the crowd actually increases to fill the stands that would not be a project such that CEQA review would be triggered, so the review of the environmental impacts should be done at this stage to allow for an informed decision by the school board.

Visitor Bleacher Crowd: The DEIR claims the maximum noise level for the Home Bleachers is 90 dB whereas for the Visitor Bleachers it is only 80 dB [DEIR at p. 3.11-14, Table 3.11-8]. Assuming that the maximum level occurs when a majority of the crowd cheers in unison, a 10 dB difference indicates that the visiting crowd is 1/10 the size of the home crowd (this based on "decibel mathematics" which are logarithmic in nature). The DEIR analysis relies on past ticket sales of 341 to 502 (which includes both home and visiting fans), so 10% visitor attendees would be, at most, 50 people. The DEIR analysis implies that the visitor bleachers need only hold 50 people, perhaps 60 at most. The proposed new 300 visitor seats would provide a capacity for noise that should be evaluated accurately in the DEIR and has not been.

The DEIR states the average (L_{eq}) noise level for the Home Bleachers is 75 dB, 15 dB less than the maximum. In contrast, the DEIR says the average noise level for the Visitor Bleachers is 35 dB, 45 dB less than the maximum. This is unrealistically low and is likely a typographical error. If so, it should be corrected. If the calculations were actually done using 35 dB as the reference level, the use of such a low level must either be substantiated (which would be, in our opinion, impossible) or revised.

PA System: Very little is said about the public address system in the DEIR. Reference noise levels are provided in Table 3.11-8 [DEIR at p. 3.11-14], and it is stated that the speakers will be attached to the light standards [DEIR at p. 2-7]. Elsewhere in document – in Mitigation Measure 3.11-3 – the DEIR states that “The public address system shall be designed to . . .” implying that no design work has yet been done. In fact, on August 14, 2020, nominally 3 months before the DEIR was published, Verde Design issued detailed project specifications the stadium improvement project.¹¹ I have reviewed the document with regard to specifications as to the audio system in Division 27 of the document. These specifications include very detailed information about the “audio system”, information that contradicts that in the DEIR:

DEIR	Audio System Specifications
The DEIR states “A public address (PA) system would also be installed, with speakers attached on the light standards for game announcements” [DEIR at p. 2-7], implying there will not be a PA system for the Lower Field.	The specifications cover “a complete audio system for the high school stadium and baseball field.” [Specs at p. 27 41 16 – 1] The system includes two (2) speakers each for the Home Bleachers, the Visitor Bleachers, and the (Lower) Field. [Specs at p. 27 41 16 – 3]
The DEIR states that the high school will “[p]rohibit use of the public address system when it is not specifically necessary for a game, event, or other activity. For example, safety-related announcements, announcements required by governing leagues, and announcements regarding game play such as scoring summaries are necessary and shall be allowed.” [DEIR at p. 3.11-15]	The specifications included wireless microphones, implying that referees make announcements from the field or interviews with coaches and players are done at halftime. [Specs at p. 27 41 16 – 2]. So, “announcements regarding game play” could go well beyond “scoring summaries”. “Game commentary with music.” “dance music” and “paging and dispatching” are also identified as audio uses. [Specs at 16-4 through -7, 16-15] The word “music” appears 31 times in the Specs.
Mitigation Measure 3.11-3 states, “The public address system shall be designed to focus the sound within the bleacher areas and minimize spillover to adjacent residential areas.” [DEIR at p. 3.11-15] This implies no detailed design work has yet been done.	The specifications are very detailed, including, for example, speaker model numbers (the Home Bleachers get two Fulcrum Acoustic CX 1265-WR speakers). [Specs at p. 27 41 16 – 3] The DEIR should have utilized this detailed information, which it did not.

¹¹ Verde Design, *Monterey High School Multi-Use Field and Stadium Renovations, Project Specifications*, DSA Submittal, August 14, 2020.

In the DEIR, the maximum reference noise level for the PA system is 85 dB at 100 ft, and the average reference level is 70 dB at 100 feet. Given that announcements are purportedly only for safety announcements, routine league announcements, and score announcements – and explicitly not to exhort cheering from the crowd – it is reasonable to assume that the volume (“loudness”) of the announcements is relatively constant (85 dB). Therefore, the 15 dB difference between the maximum and the average indicates that announcements are made only 2 minutes during each hour (again, “decibel mathematics”). This seems unrealistically brief for a high school football game, and it underestimates the noise impacts of the PA system. The preparers should confirm or otherwise substantiate the technical basis for the average reference noise level value.

3 Comments Regarding Construction Noise

Like a lot of environmental documents, the DEIR presents a through, detailed construction noise analysis and then disavows it by claiming “[t]he City has historically determined that construction-generated noise is exempt from the City’s noise standards” during the expected hours of construction. It gives an illusion of analysis by adopting the City’s Municipal Code noise limits during other hours – hours during which no construction is to occur.

During this time when the COVID-19 pandemic is compelling most people to shelter-in-place most of the time, all hours of the day are “noise sensitive”. Students are learning from home and people are working from home (including many telephone calls and video meetings). Additionally, there are residents in the area who typically sleep during the day and early evening. Some rise early for work. Others are medical professionals who works the night shift from time-to-time. Daytime construction noise will have an impact on people.

The DEIR cites the EIR for the City’s General Plan as a precedent for neglecting to analyze the construction noise levels, however, the City’s certification of an EIR does not carry the same precedential weight as an appellate court ruling. Just because the City years ago may have certified an EIR with an error in it does not give MPUSD the right and the ability to do so now. The purpose of a CEQA environmental impact analysis is to reveal to the public and decision-makers the adverse effects of a project, not to determine the legality of any particular action. While the City of Monterey may not imposes noise limits on construction, that does not obviate the DEIR’s obligation to provide a reasonable assessment of the noise that will occur. That is the information that the lead agency should have to make an informed decision. The DEIR itself cites “noise levels that are substantially louder than existing conditions” as one of the reasons it concludes that operational noise levels will create a significant impact [DEIR at p. 3.11-14].

Table I below summarizes the construction noise levels presented in the DEIR [at p. 3.11-12] and compares them to the reported existing ambient levels [DEIR at p. 3.11-8, Table 3.11-6]. As was done for the project-specific acoustical report comparison of Existing + Project Levels to

Existing Ambient Levels,¹² all noise level increases 5 dB or greater are marked in red text. (Unlike Table 6 in the Bollard report, the construction noise levels presented in Table I below are solely construction noise levels. They have not been added to the existing ambient levels, because this would make no effective difference given how much higher the construction noise levels are compared to the existing.)

As can be seen in Table I, the average (L_{eq}) construction noise levels are 10 to 30 dB higher than existing ambient levels, which would likely prompt most people to close their windows. Even with windows closed, a construction noise level 20 dB or more about the ambient would be very disruptive to concentration and speech intelligibility. . Given average noise levels that are 10 to 30 dB greater than the existing ambient levels and given that those noises are atypical for the neighborhood – diesel engines revving, grading, concrete cutting, etc. – the impact of construction noise should be identified as significant and unavoidable. The impacts likely would have even more significant impacts now because many more people are working from home and foreseeably will continue to work from home in the future. Students could still be learning remotely when the construction commences.

Table I Summary of DEIR Construction Noise Calculations

Construction Phase	Nearest House	Existing (Daytime)		Construction		Increase	
		Lmax (dB)	Leq (dB)	Lmax (dB)	Leq (dB)	Lmax (dB)	Leq (dB)
Grading and earthmoving	Logan Ln	69	48	82	78	13	30
	Van Buren Cir	67	49	72	68	5	19
Concrete cutting	Van Buren Cir	67	49	75	68	8	19
Press box replacement	Larkin St	70	53	67	63	-3	10
Visitor bleachers	Van Buren Cir	67	49	70	66	3	17
Stadium lights installation	Van Buren Cir	67	49	79	74	12	25

Because the associated high school parking project is not included in this DEIR, the noise that will result from its construction is not included in the analysis. In addition to grading and excavation, this phase of the project will require breaking up and removing large areas of

¹² *Environmental Noise Assessment – Monterey High School Stadium Improvement Project*, BAC Job No. 2020-017, Bollard Acoustical Consultants, Inc., April 2, 2020. See page 18, Table 6.

existing paving.¹³ To mitigate the sound of this broken paving being loaded into haul trucks, a front loader can be used to first lay down a 12" layer of dirt which will cushion the impact and damp the resonance of the metal truck bed.

At this time, it is not clear if the parking lot project would be developed concurrently with the stadium improvements and Lower Field or sequentially. If concurrently, the average noise levels would be even higher than shown in Table I and the impacts would be more severe. If sequentially, the disruption caused by construction would persist for a longer period of time. As there is no DEIR mitigation to ensure that the two projects would not be constructed at the same time, the DEIR should have analyzed and mitigate the potential impacts for the reasonably foreseeable scenario that both projects would be constructed simultaneously.

Finally, the DEIR makes a cursory statement about haul truck noise in which a reference level is given (83 dB SEL at 50 feet), but no actual analysis is done for any particular receptor [DEIR at p. 3.11-12]. No information about the number of haul trips is provided in the DEIR. Some of the parking project's haul trips may be estimated from information in the *Parking Lot Improvement Plans*.¹⁴

Area	Net Cut	
1	1,897	cubic yards
2	2,476	cubic yards
3	1,934	cubic yards
4	<u>1,006</u>	cubic yards
Total	7,313	cubic yards
÷	<u>12</u>	cu yds / truck trip
=	609	trips

The net cut associated with Areas 2, 3, and 4 – those abutting Logan Lane – is 5,416 cubic yards. This will require at least 451 haul trips to remove, assuming 12 cy/truck trip. 451 haul trips is 902 round trips. Per statements in the *Parking Lot Improvement Plans*, these number do not include “existing pavement removal and other over excavation and recompaction, utility trench spoils, and soil expansion and contraction factors” [Plans at, for example, Sheet C1.3A].

Haul trucks, as well as construction worker vehicles and other construction equipment, will, for the most part, access the project site via Logan Lane, a narrow road. The center of Logan Lane is 15 feet from the residence at 768 Pacific Street. The noise levels at this residence will, therefore, be 93 dB SEL. Use of this access road will also directly expose the residences at 47 and 49 Logan Lane to the haul trucks and other vehicles. As these residences normally are exposed to very little road traffic, the continual passage of haul trucks will expose them to many

¹³ Parking Lot Improvement Plans, Monterey High School and MPUSD District Offices, DSA Application No. 01-118835, DSA Backcheck, August 26, 2020.

¹⁴ *Ibid.*

more and much noisier vehicles than usual. The noise impact of haul trucks and all project-related vehicles should be explicitly assessed at these residences. The analysis should consider the noise from an individual truck passage and the total noise exposure from all of the trucks that will access the project site over the 11-month construction of the DEIR subject project and that of the associated parking project.

4 Comments Regarding Proposed Mitigation Measures

Impact 3.11-1: Generate Substantial Noise Levels During Construction

Even though the DEIR's own calculations indicate that construction will generate substantial noise levels that are much higher than the relatively quiet existing ambient, it concludes that these high noise levels do not constitute a significant noise impact. Therefore, it posits that no mitigation for construction noise is required. For the reasons discussed above, I disagree. I find that construction noise will be a significant and unavoidable impact, so feasible mitigation measures should be developed.

Impact 3.11-3: Generate Noise During Evening Use of Dan Albert Stadium and Daytime Use of the Lower Field

The DEIR finds that operational noise from each of these sources individually exceeds local standards and/or is substantial higher than the existing ambient. On this basis, it declares noise impacts to be significant and unavoidable. Nonetheless, the project applicant is required to adopt all feasible mitigation measures to minimize the significant impact. The potential actions put forth in Mitigation Measure 3.11-3 (MM 3.11-3) fail to do this on several levels.

The very first mitigation measure listed is:

Remove the PA system from the proposed project and restrict the use of Dan Albert Stadium for spectator events. Spectator events shall not be allowed during evening hours. [DEIR at p. 3.11-15]

These measures would eliminate the two most problematic noise sources associated with the improvement project.

Note that the first measure is not qualified. However, immediately after the first measure is stated, it is qualified post facto by this statement:

If removal of the PA system from the proposed project and restricting spectator events to daytime hours is not feasible . . . [DEIR at p. 3.11-15]

There is no information nor performance standards to inform the public who and by what standards feasibility of the first measure will be determined. Given all of the effort that has gone into securing entitlements for this project and the detailed design work that has already been

done for the two PA systems (stadium and baseball field), one may presume that the first measure will be “found” to be infeasible by the MPUSD at some later point. This is contra to the spirit of CEQA – the District should state during the CEQA review process whether or not it will adopt the actions listed in the first mitigation measure.

Following the qualification statement, three alternative measures are listed [all DEIR at p. 3.11-15]:

- “Prohibit use of the public address system when it is not specifically necessary” This measure is subjective and, essentially, unenforceable. Who is to determine what is “specifically necessary” and by what standard? Who would be responsible for the enforcement, and what would be the consequences for violations? As the DEIR notes regarding crowd noise, “it is challenging to control crowd noise at athletic games because ultimately each individual fan or spectator controls their own noise generation. For example, encouraging attendees to limit their cheering would not necessarily result in compliance” [DEIR at p. 3.11-17]. Similarly, the commentators and people with control of the microphones and audio system would, as a practical matter, determine what is “specifically necessary”, a standard that is open to varied and broad ranging interpretation. This does not meet the CEQA standards for proposed noise mitigation.
- “The public address system shall be designed to focus the sound within the bleacher areas and minimize spillover to adjacent residential areas.” This is also vague and contains no quantified performance standards. As such, it is unenforceable. Additionally, as discussed above, detailed specification for the PA system have already been developed, and there is no indication that this directive was incorporated into that design.
- Use “the minimum volume levels required for intelligibility over background crowd noise.” Although Spec Section 3.03 AUDIO SYSTEM PROGRAMMING sets the PA system 0 dB point at 10 dB above “the ambient noise level at the center of the bleachers”, there is no provision for automatic gain control, so a person will have to increase the loudspeaker volume when the crowd noise exceeds the ambient as it will invariably do. How is this person to judge “the minimum volume levels required for intelligibility”? Having increased the volume, it is not realistic to think that the person would then turn it back down when the crowd noise subsides. The PA volume will, over the course of a game, increase to levels that are higher than indicated by this unenforceable mitigation measure.
- “Events shall be scheduled to conclude before 10:00 p.m. or earlier . . . [but] . . . this measure does not require that an event stop at 10 p.m. should it last beyond its scheduled time.” The operation noise assessment in Table 3.11-9 of the DEIR is based on existing ambient noise levels in the 5 p.m. to 10 p.m. timeframe, so this measure does absolutely nothing to mitigate the significant impact. Additionally, since high school football games are typically 2½ hours, games could continue to be scheduled to start at 7:30 p.m. (as

they have been in the past at MPC), but yet continue past 10 p.m.¹⁵ This mitigation measure does nothing to mitigate noise.

The proposed noise mitigation measures for the likely scenario in which the PA system is implemented and evening games are played are either unenforceable or impotent. There should be an enforceable mitigation measure for both the maximum decibel level and cumulative duration of announcements. Amplified music should be prohibited over the PA systems. These measures should be circulated for public review and comment.

No mitigation measures for Lower Field

The DEIR states, “there are no feasible measures for reducing the levels of noise exposure at the residence on the south end of Larkin Street and the north end of Logan Lane from noise generated by activities on the lower field” [DEIR at p. 3.11-17]. However, there is no indication of what, if any, measures were considered and why they are infeasible. The obvious one would be walls on the north, east, and south sides of the Lower Field. At a minimum, the DEIR should state how high a wall would have to be to achieve meaningful noise reduction (Caltrans uses 5 dB) at the residences. Depending on the height, feasibility could be assessed rationally.

The DEIR implies there will not be a PA system for the Lower Field, but the Specifications indicate that there will be. If there will be, it would presumably generate a significant noise impact as does the stadium PA. As such, mitigation for the Lower Field PA should be proposed.

One PA noise mitigation measure the DEIR does not consider for either Dan Albert Stadium or the Lower Field is a more distributed audio system than the one proposed. Since mobile internet-enabled telephones are ubiquitous these days, the school could provide free internet access at the stadium and then stream the audio commentary over a wi-fi channel. By distributing the audio system in this way, the volume could be reduced substantially – a speaker held to one’s ear or headphones need be at a much lower sound level than a speaker 150 feet away. This would also allow fans to adjust their volume individually. If enough fans played the audio over their external telephone speaker, it’s very likely that all fans could hear the feed.

An alternative to this approach would be to design a PA system with more speakers distributed amongst and closer to the fans. The operating principal is the same as described in the preceding paragraph. The “distributed speaker” model is somewhat analogous to a drive-in movie sound system: because each car has its own speaker, everyone in attendance can hear the movie, but a spectator outside the fence cannot.

¹⁵ <https://gamedayr.com/how-long-is-a-football-game/>

5 Conclusion

I find that the DEIR noise analysis – despite concluding that noise impacts would be significant and unavoidable – does not properly convey to the public the degradation that would come to the quiet community surrounding Monterey High School. This is due in part to the DEIR’s approach in which only six residences of hundreds were analyzed. It is also due to a reliance by the DEIR primarily on numerical decibel values, a scale with which most people are utterly unfamiliar. As noted in this letter, there are many qualitative factors that differentiate “noise” from “sound”, and those are not considered or conveyed.

As a technical matter, the DEIR did not consider all relevant noise sources, principally, bands, air horns and similar personal noise makers, and foot-stomping on metal bleachers – all either existing or foreseeable. The DEIR takes a piecemeal approach to construction noise at the school by treating the parking lot improvement project – a project made necessary by the development of the Lower Field – as a separate project. Parking lot construction noise is not considered in the DEIR, neither as component of this project nor in a cumulative noise analysis as a separate project. Finally, while indicating that the improved facility could be rented by the public, it does nothing to analyze the noise from these events.

The three main sources the DEIR does consider are cheering from the home crowd, cheering from the visiting crowd, and announcements from the PA system. The crowd noise analysis is deficient because it is based on attendance from recent seasons (when, unfortunately, the Toreadores have not been very successful; they rank 786 out of 1,042 schools in California at present¹⁶) and not accounting for the additional draw that the stadium improvements will add. The DEIR should make some effort to analyze the noise assuming the football team is having a strong season and the crowd approaches the capacity of the home and visitor bleachers.

The PA system noise analysis does not provide a lot of details, particularly in light of the revelation that detailed design specifications were published three months before release of the DEIR. There are several contradictions between what is said or assumed in the DEIR and the audio system specifications that were not included in the DEIR .

The DEIR does present calculated decibel levels for construction noise – levels that are significantly above the existing ambient – but then fails to identify these noise levels as a significant noise impact citing the technicality that the City of Monterey does not enforce any noise limit on construction work. The CEQA process is separate and distinct from municipal regulations.

Finally, the noise mitigation measures presented in the DEIR are confusing and, most likely, ineffectual. The confusion comes from the clearly stated measure of removing the PA system and night games from the project being immediately qualified and countermanded by other measures that assume that there will be a PA system and night games. The measures for the PA

¹⁶ <https://www.maxpreps.com/rankings/football/42/state/california.htm>

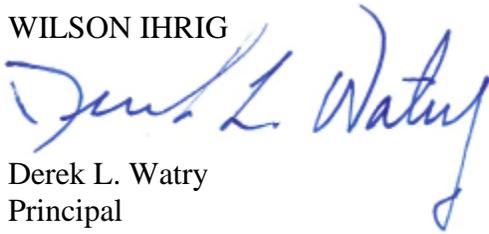
system are ambiguous and unenforceable. I have suggested feasible and more reasonable PA noise mitigation measures: build a distributed sound system with many speakers much closer to the fans or simply stream the audio over the internet to fans' mobile phones. The measure regarding scheduling would have no effect whatsoever on either scheduling (games would still be able to start at 7:30 p.m. as they do now) or late-night noise (if games persist past 10:00 p.m., the noise would continue).

* * * * *

Please contact me if you have any questions or comments about this review.

Very truly yours,

WILSON IHRIG



Derek L. Watry
Principal

DEREK L. WATRY

Principal

Since joining Wilson Ihrig in 1992, Derek has gained experienced in many areas of practice including environmental, construction, forensic, architectural, and industrial. For all of these, he has conducted extensive field measurements, established acceptability criteria, and calculated future noise and vibration levels. In the many of these areas, he has prepared CEQA and NEPA noise technical studies and EIR/EIS sections. Derek has a thorough understanding of the technical, public relations, and political aspects of environmental noise and vibration compliance work. He has helped resolve complex community noise issues, and he has also served as an expert witness in numerous legal matters.

Education

- M.S. Mechanical Engineering, University of California, Berkeley
- B.S. Mechanical Engineering, University of California, San Diego
- M.B.A. Saint Mary's College of California

Project Experience

12th Street Reconstruction, Oakland, CA

Responsible for construction noise control plan from pile driving after City received complaints from nearby neighbors. Attendance required at community meetings.

525 Golden Gate Avenue Demolition, San Francisco, CA

Noise and vibration monitoring and consultation during demolition of a multi-story office building next to Federal, State, and Municipal Court buildings for the SFDPW.

911 Emergency Communications Center, San Francisco, CA

Technical assistance on issues relating to the demolition and construction work including vibration monitoring, developing specification and reviewing/recommending appropriate methods and equipment for demolition of Old Emergency Center for the SFDPW.

Central Contra Costa Sanitary District, Grayson Creek Sewer, Pleasant Hill, CA

Evaluation of vibration levels due to construction of new sewer line in hard soil.

City of Atascadero, Review of Walmart EIR Noise Analysis, Atascadero, CA

Review and Critique of EIR Noise Analysis for the Del Rio Road Commercial Area Specific Plan.

City of Fremont, Ongoing Environmental Services On-Call Contract, Fremont, CA

Work tasks primarily focus on noise insulation and vibration control design compliance for new residential projects and peer review other consultant's projects.

City of Fremont, Patterson Ranch EIR, Fremont, CA

Conducted noise and vibration portion of the EIR.

City of King City, Silva Ranch Annexation EIR, King City, CA

Conducted the noise portion of the EIR and assessed the suitability of the project areas for the intended development. Work included a reconnaissance of existing noise sources and receptors in and around the project areas, and long-term noise measurements at key locations.

Conoco Phillips Community Study and Expert Witness, Rodeo, CA

Investigated low frequency noise from exhaust stacks and provided expert witness services representing Conoco Phillips. Evaluated effectiveness of noise controls implemented by the refinery.

Golden Gate Park Concourse Underground Garage, San Francisco, CA

Noise and vibration testing during underground garage construction to monitor for residences and an old sandstone statue during pile driving for the City of San Francisco.

Laguna Honda Hospital, Clarendon Hall Demolition, San Francisco, CA

Project manager for performed vibration monitoring during demolition of an older wing of the Laguna Honda Hospital.

Loch Lomond Marina EIR, San Rafael, CA

Examined traffic noise impacts on existing residences for the City of San Rafael. Provided the project with acoustical analyses and reports to satisfy the requirements of Title 24.

Mare Island Dredge and Material Disposal, Vallejo, CA

EIR/EIS analysis of noise from planned dredged material off-loading operations for the City of Vallejo.

Napa Creek Vibration Monitoring Review, CA

Initially brought in to peer review construction vibration services provided by another firm, but eventually was tapped for its expertise to develop a vibration monitoring plan for construction activities near historic buildings and long-term construction vibration monitoring.

San Francisco DPW, Environmental Services On-Call, CA

Noise and vibration monitoring for such tasks as: Northshore Main Improvement project, and design noise mitigation for SOMA West Skate Park.

San Francisco PUC, Islais Creek Clean Water Program, San Francisco, CA

Community noise and vibration monitoring during construction, including several stages of pile driving. Coordination of noise and ground vibration measurements during pile driving and other construction activity to determine compliance with noise ordinance. Coordination with Department of Public Works to provide a vibration seminar for inspectors and interaction with Construction Management team and nearby businesses to resolve noise and vibration issues.

San Francisco PUC, Richmond Transport Tunnel Clean Water Program, San Francisco, CA

Environmental compliance monitoring of vibration during soft tunnel mining and boring, cut-and-cover trenching for sewer lines, hard rock tunnel blasting and site remediation. Work involved long-term monitoring of general construction activity, special investigations of groundborne vibration from pumps and bus generated ground vibration, and interaction with the public (homeowners).

Santa Clara VTA, Capitol Expressway Light Rail (CELR) Bus Rapid Transit (BRT) Update EIS, CA

Reviewed previous BRT analysis and provide memo to support EIS.

Shell Oil Refinery, Martinez, CA

Identified source of community noise complaints from tonal noise due to refinery equipment and operations. Developed noise control recommendations. Conducted round-the-clock noise measurements at nearby residence and near to the property line of the refinery and correlated results. Conducted an exhaustive noise survey of the noisier pieces of equipment throughout the refinery to identify and characterize the dominant noise sources that were located anywhere from a quarter to three-quarters of a mile away. Provided a list of actions to mitigate noise from the noisiest pieces of refinery equipment. Assisted the refinery in the selection of long-term noise monitoring equipment to be situated on the refinery grounds so that a record of the current noise environment will be documented, and future noise complaints can be addressed more efficiently.

Tyco Electronics Corporation, Annual Noise Compliance Study, Menlo Park, CA

Conducted annual noise compliance monitoring. Provided letter critiquing the regulatory requirements and recommending improvements.

University of California, San Francisco Mission Bay Campus Vibration Study, CA

Conducted measurements and analysis of ground vibration across site due to heavy traffic on Third Street. Analysis included assessment of pavement surface condition and propensity of local soil structure.