2019038546

NOVATO HIGH SCHOOL SPORTS FIELDS PROJECT
NOTICE OF EXEMPTION DISCUSSION

Project Description

Existing Conditions

Novato High School, located at 625 Arthur Street in Novato is owned and operated by the Novato Unified School District. The site proposed for the project is a 9.55-acre portion of the overall 15- acre existing field on the southern and eastern portions of the school site, adjacent to homes on Washington Street and Van Buren Court. The site includes existing baseball and softball fields, as well as a large grassy area used for informal recreation. The school is in a mostly single-family residential neighborhood, with houses directly adjacent to the east, south, and west of the school grounds.

Proposed Project

The project would consist of grading the existing field area to level it, then installing an artificial turf system on the baseball, softball, and practice fields for soccer, baseball practice, and Lacross. Approximately 16,000 cubic yards of material would be graded on the site. Grading would be balanced on the site. No lighting or sound system would be used on the fields. Existing lighted tennis courts also would be relocated to this site.

Specific improvement proposed are:

- Construct new 85,000 square feet (sq. ft.) synthetic turf Practice Field
- Construct new 30,240 sq. ft. Tennis Complex (Five Courts)
- Construct new 31,000 sq. ft. synthetic turf Softball Field
- Reduce existing Baseball Field to 102,000 sq. ft. and replace grass with synthetic turf
- Prepare area for 15,000 sq. ft. donated JROTC Marching Pavilion

A total of 9.55 acres would be improved with a total of up to 15 acres to be disturbed.

The fields use would increase from about 2,000 hours/year to about 3,000 hours/year, with most of the additional use occurring in the rainy months and afternoons. The fields would continue to be used only in daylight hours, up until about 6pm in the winter months.

The field would be a FieldTurf brand artificial turf on an aggregate base over cement-treated soil. FieldTurf is composed of a surface layer of monofilament polyethylene blend fibers tufted into a polypropylene backing. The infill is composed of a bottom layer of silica sand, and a top layer of cork or olive pits. The artificial turf would be placed over a 1" thick combination shock and drainage pad. The pad would be over 4 inches of non-permeable rock.

The project would be constructed over a 20-week period, from May 15, 2019 to December 1, 2019. No other construction is proposed as part of this project.

Categorical Exemption Analysis

Class 4 Exemption

The CEQA Class 4 Exemption (Minor Alterations to Land (CEQA Guidelines, Section 15304) applies to "minor private or public alterations in the condition of land...which do not result in the removal of healthy, mature, scenic trees...". It includes grading of land on slopes of less than 10% outside of environmentally or geologically sensitive areas.

The project would involve minor grading of the existing field, and no tree removal would occur. Per CEQA Guidelines section 15300.2, exceptions to this categorical exemption can apply where the following occur:

- Cumulative impact of the same type in the same place, over time is significant.
- Significant effect due to unusual circumstances.
- Damage to scenic resources, including but not limited to, trees, historic buildings, rock outcroppings, or similar resources, within a state scenic highway.
- Hazardous Waste Sites included on any list compiled pursuant to Section 65962.5 of the Government Code.
- A substantial adverse change in the significance of a historical resource.

As summarized below, none of these exceptions appear to apply to this project and therefore this exemption would apply:

- The project area is a developed residential neighborhood, and no cumulative development is likely to occur nearby.

- Construction would be on the existing ports fields on the south and east sides of the school campus. Up to 24 houses on Washington Street and Van Buren Court may have views of portions of the field from their back yards. However, views would be looking upslope and the yards are typically fences and landscaped with trees at their rear, therefore views from the yards would be somewhat buffered. As the fields would be aesthetically similar to the existing field, views from the nearest houses would not represent a significant adverse change from existing views. The relocated lighted tennis courts would be set back about 200-250 feet from the nearest houses, and would be located near the three existing courts. Lights would be shielded with sharp cut-offs, so impacts would not be significant to the nearest homes (on van Buren).

- The site is not on or near a listed hazardous waste site (database search performed March 1, 2019: http://www.envirostor.dtsc.ca.gov/public/search.asp?CMD=search&city=Novato&zip=94949&county=marin&case_number=&business_name=&FEDERAL_SUPERFUND=True&STATE_RESPONSE=True&VOLUNTARY_CLEANUP=True&SCHOOL_CLEAN

UP=True&CORRECTIVE_ACTION=True&tiered_permit=True&evaluation=True&operating=True&post_closure=True&non_operating=True&inspections=True)

- The proposed project would not demolish or substantially alter any historic structures. The project would entail construction on a portion of a previously developed and graded parking lot and adjacent graded grassy area used for storage. Therefore, no historic resources would be affected.

- Noise and air quality assessments have been prepared to determine if there are any unusual circumstances that may result in a potentially significant impact from the proposed project (attached). Based on those studies, there do not appear to be any unusual noise or air quality circumstances (e.g., potentially significant impacts) that could result in significant environmental impacts at the site.

Attachments: Noise and Air Quality Reports

AIR QUALITY AND GREENHOUSE GAS EMISSIONS TECHNICAL REPORT

Novato High School Artificial Turf Fields

Novato, California

Prepared For

Novato Unified School District
1015 7th Street
Novato, CA 94945

Prepared By

RCH Group
11060 White Rock Road Suite 150-A
Rancho Cordova, CA 95670

January 31, 2019

TABLE OF CONTENTS

Page

Summary 1

Introduction 1

CEQA Exemption Standards 1

Project Overview 2

Air Quality 2

Greenhouse Gas Emissions 10

Conclusion 11

References 12

TABLES

1: Estimated Construction Equipment Usage 6
2: Estimated Daily Construction Emissions (pounds) 7
3: Estimated Greenhouse Gas Emissions (metric tons of CO_2e) 11

ATTACHMENTS

Attachment A: Air Quality and Greenhouse Gas Emissions Output

Summary

RCH Group (RCH) has conducted this air quality and greenhouse gas (GHG) emissions analysis for the Novato High School Artificial Turf Fields (the "proposed project"). The proposed project consists of construction of several artificial turf fields at Novato High School in Novato, California. The project site is at Novato High School at 625 Arthur Street in Novato, California. The proposed project would not increase existing operational emissions because the project site has existing athletic fields and no new vehicle trips would be created as a result of the project.

Construction activities would result in increases of air quality and GHG emissions during the estimated three month construction period. Construction emissions from the proposed project would be below the Bay Area Air Quality Management District's (BAAQMD) air quality and GHG emissions thresholds of significance. The proposed project would be required to comply with all BAAQMD rules and would be required to implement BAAQMD's required best management practices to control fugitive dust.

In summary, the proposed project would have a less-than-significant impact on air quality and GHG emissions, and neither the General Rule Exemption nor the Minor Alteration of Land Exemption would be precluded from use due to air quality or GHG emissions impacts.

Introduction

This document presents the results of an air quality and GHG emissions analysis for the Novato High School Artificial Turf Fields (the "proposed project") and is prepared to answer the air quality and GHG emissions questions in the Initial Study Environmental Checklist Form in Appendix G of the State CEQA Guidelines, in order to determine the potential applicability of the CEQA General Rule Exemption and/or the CEQA exemption for Minor Alterations of Land. This document provides an overview of the existing air quality conditions at the project site, the air quality regulatory framework, and an analysis of potential air quality impacts that would result from implementation of the proposed project. Other issues related to air emissions covered in this document include potential health and odor impacts. The supporting information, assumptions, and detailed results used in the air quality analysis are provided in **Attachment A**. This air quality analysis is consistent with the methods described in the BAAQMD's *CEQA Air Quality Guidelines*.[1]

CEQA Exemption Standards

This analysis is intended to determine whether the proposed project may result in a potentially significant air quality or GHG emissions impact, which would constitute an exception to the applicability of the CEQA exemption for Minor Alternations of Land (CEQA Guideline Section

---

[1] Bay Area Air Quality Management District. *CEQA Air Quality Guidelines*, May 2017, http://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en

15304), and whether the CEQA General Rule Exemption (CEQA Guidelines Section 15061(3)) may apply to the proposed project.

Specifically, this report addresses the following exceptions set forth in CEQA Guidelines Section 15300.2 and 15061.3, respectively:

> 15300.2 (c) - Significant Effect. A categorical exemption shall not be used for an activity where there is a reasonable possibility that the activity will have a significant effect on the environment due to unusual circumstances.
>
> 15061.3 - The activity is covered by the general rule that CEQA applies only to projects which have the potential for causing a significant effect on the environment. Where it can be seen with certainty that there is no possibility that the activity in question may have a significant effect on the environment, the activity is not subject to CEQA.

In order to address the applicability of the exemption standards to the proposed project, the air quality and GHG emissions questions included in the CEQA Initial Study air quality and GHG emissions sections are considered in this report.

Project Overview

The proposed project is the construction of several artificial turf fields:

- Construct new 85,000 square feet (ft^2) synthetic turf Practice Field
- Construct new 30,240 ft^2 Tennis Complex (Five Courts)
- Construct new 31,000 ft^2 synthetic turf Softball Field
- Reduce existing Baseball Field to 102,000 ft^2 and replace grass with synthetic turf
- Prepare area for 15,000 ft^2 donated JROTC Marching Pavilion

A total of 9.55 acres would be improved with a total of up to 15 acres to be disturbed.

Air Quality

Existing Setting

The project site is located within the San Francisco Bay Area Air Basin (Air Basin), which encompasses Alameda, Contra Costa, Santa Clara, San Francisco, San Mateo, Marin, and Napa Counties, and the southern portions of Solano and Sonoma Counties. The Air Basin is characterized by complex terrain which distorts normal wind flow patterns, consisting of coastal mountain ranges, inland valleys, and bays.

The United States Environmental Protection Agency (USEPA) has established the National Ambient Air Quality Standards (NAAQS) under the Clean Air Act (CAA) for six common air

pollutants known as "criteria pollutants".[2] These air pollutants consist of carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), particulate matter (PM_{10} and $PM_{2.5}$), sulfur dioxide (SO_2), and lead (Pb). An ambient air quality standard establishes the concentration above which the pollutant is known to cause adverse health effects to sensitive groups within the population such as children and the elderly. The goal is for localized project effects not to cause or contribute to an exceedance of the standards.

The California Air Resources Board (CARB) manages air quality, regulates mobile emissions sources, and oversees the activities of county and regional Air Pollution Control Districts and Air Quality Management Districts. CARB regulates local air quality indirectly by establishing State ambient air quality standards and vehicle emissions and fuel standards; and by conducting research, planning and coordinating activities. California has adopted ambient standards (known as California Ambient Air Quality Standards or CAAQS) that are more stringent than the federal standards for some criteria air pollutants.

The BAAQMD monitors and regulates air quality pursuant to the CAA, as amended, and the California Clean Air Act. The BAAQMD adopts and enforces controls on stationary sources of air pollutants through its permit and inspection programs. Other BAAQMD responsibilities include monitoring air quality, preparation of clean air plans, and responding to citizen air quality complaints. The BAAQMD has also published *CEQA Air Quality Guidelines*, to assist lead agencies in evaluating air quality impacts of projects and plans proposed in the Bay Area.

The Bay Area is currently designated nonattainment for state and national (1-hour and 8-hour) ozone standards, for the state PM10 standards, and for state and national (annual average and 24-hour) $PM_{2.5}$ standards. The Bay Area is designated attainment or unclassifiable with respect to the other ambient air quality standards.

City of Novato General Plan

The City of Novato has released a Draft Novato General Plan 2035 Update, but it has not been adopted by the City. The City of Novato General Plan (1996, revised in 2014)[3] is the current General Plan and contains the following policies and programs related to air quality:

Policy 32 Regional Planning to Improve Air Quality. Continue to cooperate with the BAAQMD in implementing the regional Clean Air Plan.

- Program 32.1: Use the environmental review process to determine whether air emissions from proposed development would exceed BAAQMD standards.

---

[2] U.S. Environmental Protection Agency, *Six Common Air Pollutants*, https://www.epa.gov/criteria-air-pollutants

[3] City of Novato. City of Novato General Plan. 1996, Revised May 2014, https://novato.org/government/community-development/planning-division/existing-general-plan

- Program 32.2: If fireplaces or wood burning stoves/heaters are installed in new development, these fireplaces, stoves, and/or heaters shall meet the most current USEPA standards regarding particulate emissions.
- Program 32.3: The City shall monitor new development to ensure that projections made in the Draft General Plan are not exceeded. If there is substantial increase in development over projections; then the City shall investigate additional transportation, land use, and air quality beneficial measures to improve air quality.

Policy 33 Vehicle Trips. Encourage transportation facilities and modes that minimize motor vehicle use.

- Program 33.1: Develop program for trip reduction and implement as permitted by law.

Policy 34 Local Efforts. Encourage local efforts to improve air quality.

- Program 34.1: Use the City's development review process and CEQA regulations to evaluate and mitigate the local and cumulative effects of new development on air quality.
- Program 34.2: Continue to include responsible agencies in the review of proposed land uses that would handle, store or transport any potential air pollutant sources such as, but not limited to, lead, mercury, vinyl chloride, benzene, asbestos, beryllium and all fossil fuels.
- Program 34.3: Continue to require and enforce a dust emissions control plan for construction.
- Program 34.4: Review all new industrial development for potential air quality impacts on sensitive receptors. Require adequate buffer zones between industrial development and sensitive receptors to ensure public health and to prevent odor-based nuisance.
- Program 34.5: Support a strong street tree planting and community forest component of the proposed Tree Preservation Ordinance and tree management program to help improve local air quality.

Conformance with Implementation of The BAAQMD's Air Quality Plan

The BAAQMD's Clean Air Plan (2017 Clean Air Plan) is the regional air quality plan for the Air Basin. The 2017 Clean Air Plan was adopted in April of 2017.[4] The 2017 Clean Air Plan updates the 2010 Clean Air Plan, pursuant to air quality planning requirements defined in the California Health and Safety Code. The 2017 Clean Air Plan provides a comprehensive strategy to improve

[4] Bay Area Air Quality Management District, *Final 2017 Clean Air Plan*, April 19, 2017, http://www.baaqmd.gov/~/media/files/planning-and-research/plans/2017-clean-air-plan/attachment-a_-proposed-final-cap-vol-1-pdf.pdf?la=en

air quality, protect public health, and protect the climate, utilizing all the tools and resources available to the BAAQMD. The BAAQMD recommends that the agency approving a project where an air quality plan consistency determination is required analyze the project with respect to the following questions. If the first two questions are concluded in the affirmative and the third question concluded in the negative, the BAAQMD considers the project consistent with air quality plans prepared for the Bay Area. Therefore, the following criteria will be used for determining a project's consistency with the 2017 Clean Air Plan.

Criterion 1: Does the project support the primary goals of the 2017 Clean Air Plan?

The primary goals of the 2017 Clean Air Plan are to:

- Protect air quality and health at the regional and local scale
- Protect the climate

As discussed in this section, all air quality and GHG emissions impacts would be less than significant. Therefore, the proposed project supports the primary goals of the 2017 Clean Air Plan.

Criterion 2: Does the project include applicable control measures from the 2017 Clean Air Plan?

The 2017 Clean Air Plan's control strategy includes 85 control measures designed to reduce ozone precursors in order to fulfill ozone planning requirements, protect public health by reducing emissions of ozone precursors, particulate matter and toxic air contaminants, and to serve as a regional climate protection strategy by reducing GHG emissions across a full range of economic sectors. None of the control measures apply to the proposed project.

Criterion 3: Does the project disrupt or hinder implementation of any 2017 Clean Air Plan control measures?

The BAAQMD provides examples of how a project may cause the disruption or delay of control measures. Examples include a project that precludes an extension of a transit line or bike path, or proposes excessive parking requirements. The proposed project would not cause a disruption or delay of the 2017 Clean Air Plan's control measures and would support the control measure related to bicycle and pedestrian access and facilities.

The proposed project would support the primary goals of the 2017 Clean Air Plan and would not disrupt or hinder implementation of any 2017 Clean Air Plan control measures. Therefore, this impact would be less than significant.

Potential to Violate Air Quality Standards or Contribute Substantially to an Existing or Projected Air Quality Violation

The proposed project would generate temporary construction emissions. The proposed project would not increase existing operational emissions because the project site has existing athletic

fields and no new vehicle trips would be created as a result of the project. The emissions generated from construction activities include:

- Dust (including particulate matter less than 10 micrometers (coarse or PM_{10}), particulate matter less than 2.5 micrometers (fine or $PM_{2.5}$)) primarily from "fugitive" sources (i.e., emissions released through means other than through a stack or tailpipe) such as material handling and travel on unpaved surfaces; and
- Combustion emissions of criteria air pollutants (CO, nitrogen oxides (NO_x), SO_2, volatile organic compounds (VOC) as reactive organic gases (ROG), PM_{10}, and $PM_{2.5}$) primarily from operation of heavy off-road construction equipment, haul trucks, (primarily diesel-operated), and construction worker automobile trips (primarily gasoline-operated).

Construction activities would consist of clearing the existing natural grass, excavating and grading to create level fields and installing artificial turf. The site clearing and grading/excavation would use equipment such as backhoes, graders, dozers, loaders, and haul trucks. The grading activities would import approximately 10,000 cubic yards of materials for aggregate base for the artificial turf and other infill materials. Construction is expected to start in May of 2019 and would take approximately six months to complete in November of 2019. Site preparations would occur over six weeks, grading would occur over twelve weeks, and turf installation would occur over six weeks.

The estimated construction equipment associated with the proposed project along with the number of pieces of equipment, daily hours of operation, horsepower (hp), and load factor (i.e., percent of full throttle) are shown in **Table 1.** It is assumed a lot of turf installation will be done by hand and diesel equipment would be used intermittently.

Table 1: Estimated Construction Equipment Usage

Phase	Equipment	Amount	Daily Hours	HP	Load Factor
Site Preparation	Rubber Tired Dozer	3	8	247	0.40
Site Preparation	Tractor/Loader/Backhoe	4	8	97	0.37
Grading	Excavator	1	8	158	0.38
Grading	Grader	1	8	187	0.41
Grading	Rubber Tired Dozer	1	8	247	0.40
Grading	Tractor/Loader/Backhoe	1	8	97	0.37
Turf Installation	Dumpers/Tender	1	4	16	0.38
Turf Installation	Air Compressor	1	4	78	0.48
Turf Installation	Rubber Tired Dozer	1	4	247	0.40
Turf Installation	Tractor/Loader/Backhoe	1	4	97	0.37
Turf Installation	Roller	1	4	80	0.38

SOURCE: CalEEMod Version 2016.3.2.

Table 2 provides the estimated short-term construction emissions that would be associated with the proposed project and compares those emissions to the BAAQMD's thresholds of significance

for construction exhaust emissions. As the construction phases are sequential, the average daily construction period emissions (i.e., total construction period emissions divided by the number of construction days) were compared to the BAAQMD significance thresholds. Construction emissions were estimated using the California Emissions Estimator Model (CalEEMod) Version 2016.3.2.[5]

Table 2: Estimated Daily Construction Emissions (pounds)

Criteria	ROG	NOx	CO	PM10	PM2.5
Daily Construction Emissions	**2.79**	**14.6**	**1.45**	**1.33**	**16.4**
Significance Threshold	54	54	--	82[1]	54[1]
Potentially Significant (Yes or No)?	No	No	No	No	No

SOURCE: CalEEMod Version 2016.3.2.

NOTE: PM10 and PM2.5 significance thresholds are for exhaust emissions only. BAAQMD considers PM10 and PM2.5 emissions from fugitive dust as less than significant if required best management practices are implemented.

As shown in **Table 1**, criteria pollutant emissions from construction would be below the BAAQMD's daily significance thresholds for ROG, NO_x, PM_{10} and $PM_{2.5}$. There is no significance threshold for CO. Therefore, construction impacts would be less than significant. The assumptions and detailed results used in the air quality analysis are provided in **Attachment A.**

Construction-related fugitive dust emissions would vary from day to day, depending on the level and type of activity, silt content of the soil, and the weather. In the absence of dust control, construction activities may result in significant quantities of dust, and as a result, local visibility and PM_{10} concentrations may be adversely affected on a temporary and intermittent basis during construction. In addition, the fugitive dust generated by construction would include not only PM_{10}, but also larger particles, which would fall out of the atmosphere within several hundred feet of the project site, which could result in nuisance-type impacts.

Poor construction practices could result in substantial emissions of fugitive dust that would be a nuisance and could create localized health impacts. The BAAQMD require implementation of a number of best management practices to control fugitive dust. The BAAQMD consider fugitive dust impacts to be less than significant if best management practices are implemented. The following required best management practices (if applicable to the proposed project) would be implemented as part of the proposed project, therefore fugitive dust impacts would be less than significant.

- All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.

---

[5] California Air Pollution Control Officers Association, *CalEEMod User's Guide Version 2016.3.2*, November 9, 2017, http://www.caleemod.com/

- All haul trucks transporting soil, sand, or other loose material off-site shall be covered.
- All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
- All vehicle speeds on unpaved roads shall be limited to 15 miles per hour.
- All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.
- Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to five minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations). Clear signage shall be provided for construction workers at all access points.
- All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.
- A publically visible sign shall be posted with the telephone number and person to contact at the Lead Agency regarding dust complaints. This person shall respond and take corrective action with 48 hours. The Air District's phone number shall also be visible to ensure compliance with applicable regulations.

Operational emissions would be limited to maintenance equipment. No new vehicle trips would be created as a result of the project.

Result in a Cumulatively Considerable Net Increase of Any Criteria Pollutant for which the Project Region is Non-Attainment

In developing thresholds of significance for criteria air pollutants, BAAQMD considered the emissions levels for which a project's individual emissions would be cumulative considerable. If a project exceeds the identified significance thresholds, its emissions would be cumulatively considerable, resulting in significant adverse air quality impacts to the region's existing air quality conditions. As disclosed in this air quality analysis, the proposed project would not exceed BAAQMD's significance thresholds and would not result in individual significant air quality impacts. Therefore, the proposed project would not generate cumulatively considerable air emissions and the cumulative impact would be less than significant.

Exposure of Sensitive Receptors to Substantial Concentrations of Toxic Air Contaminants

Land uses such as schools, children's daycare centers, hospitals, and convalescent homes are considered to be more sensitive than the general public to poor air quality because the population

groups associated with these uses have increased susceptibility to respiratory distress. Persons engaged in strenuous work or exercise also have increased sensitivity to poor air quality. The CARB has identified the following people as most likely to be affected by air pollution: children less than 14 years of age, the elderly over 65 years of age, athletes, and those with cardiovascular and chronic respiratory diseases. These groups are classified as sensitive population groups.

Residential areas are considered more sensitive to air quality conditions than commercial and industrial areas, because people generally spend longer periods of time outside their residences, resulting in greater exposure to ambient air quality conditions. The project site is bordered by single family residences to the east, south and west.

A toxic air contaminant (TAC) is defined as an air pollutant that may cause or contribute to an increase in mortality or in serious illness, or that may pose a hazard to human health. TACs are usually present in minute quantities in the ambient air. However, the high toxicity or health risk of TAC may pose a threat to public health even at very low concentrations. In general, for those TAC that may cause cancer, there is no concentration that does not present some risk. This contrasts with the criteria pollutants for which acceptable levels of exposure can be determined and for which the state and federal governments have set ambient air quality standards.

The proposed project would constitute a new emission source of diesel particulate matter (DPM)[6] due to construction activities. Studies have demonstrated that DPM from diesel-fueled engines is a human carcinogen and that chronic (long-term) inhalation exposure to DPM poses a chronic health risk. Typically, heath risks are estimated based on an exposure period of 30 years. The proposed project is a short-term construction activity (approximately six months) that would not generate substantial emissions, therefore the proposed project would have a less-than-significant impact relative to health impacts.

Creation of Objectionable Odors Affecting a Substantial Number of People

As a general matter, the types of development that pose potential odor problems include agriculture, food processing, dairies, rendering, refineries, chemical plants, wastewater treatment plants, landfills, composting facilities, and transfer stations. No such odiferous uses would be a part of the proposed project and no such odiferous uses are located nearby the project site.

---

[6] In August of 1998, CARB identified particulate emissions from diesel-fueled engines as a toxic air contaminant. CARB developed the *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles*. The document represents a proposal to reduce diesel particulate emissions, with the goal to reduce emissions and the associated health risk by 75 percent in 2010 and by 85 percent in 2020. The program aims to require the use of state-of-the-art catalyzed diesel particulate filters and ultra-low sulfur diesel fuel on diesel-fueled engines.

Diesel particulate matter (DPM) is the most complex of diesel emissions. Diesel particulates, as defined by most emission standards, are sampled from diluted and cooled exhaust gases. This definition includes both solid and liquid material that condenses during the dilution process. The basic fractions of DPM are elemental carbon; heavy hydrocarbons derived from the fuel and lubricating oil and hydrated sulfuric acid derived from the fuel sulfur. DPM contains a large portion of the polycyclic aromatic hydrocarbons found in diesel exhaust. Diesel particulates include small nuclei particles of diameters below 0.04 micrometers (μm) and their agglomerates of diameters up to 1 μm.

Therefore, odor impacts associated with the location of the proposed project would be less than significant.

Construction of the proposed project would generate some temporary odors from diesel exhaust emissions. However, the diesel equipment at the project site could result in minimally perceptible odors. Odors would be temporary and odor emissions are highly dispersive, especially in areas with higher average wind speeds. Therefore, a substantial number of people would not be affected due to proposed project construction. Therefore, odor impacts associated with the location of the proposed project would be less than significant.

Greenhouse Gas Emissions

Generation of Significant Greenhouse Gas Emissions

Gases that trap heat in the atmosphere are referred to as greenhouse gases (GHGs) because they capture heat radiated from the sun as it is reflected back into the atmosphere, much like a greenhouse does. The accumulation of GHGs has been implicated as the driving force for global climate change. The primary GHGs are carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O), ozone, and water vapor.

While the presence of the primary GHGs in the atmosphere are naturally occurring, CO_2, CH_4, and N_2O are also emitted from human activities, accelerating the rate at which these compounds occur within earth's atmosphere. Emissions of CO_2 are largely by-products of fossil fuel combustion, whereas methane results from off-gassing associated with agricultural practices and landfills. Other GHGs include hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride, and are generated in certain industrial processes. GHGs are typically reported in units of "carbon dioxide-equivalents" (CO_2e).[7]

The BAAQMD does not have an adopted threshold of significance for construction-related GHG emissions. The BAAQMD recommends that the Lead Agency quantify and disclose GHG emissions that would occur during construction and make a determination on the significance of these construction-generated GHG emissions impacts. Construction GHG emissions are a one-time release and are, therefore, not typically expected to generate a significant contribution to global climate change in the long-term. As a conservative approach, BAAQMD's operational GHG significance threshold of 1,100 metric tons of CO_2e per year is used in the analysis to make a significance determination.

CalEEMod was used to quantify GHG emissions associated with proposed project construction activities. The proposed project's estimated construction GHG emissions are presented in **Table 3**. The estimated construction GHG emissions are approximately 65 metric tons of CO_2e in 2019, which is less than the BAAQMD significance threshold of 1,100 metric tons of CO_2e per year.

[7] Because of the differential heat absorption potential of various GHGs, GHG emissions are frequently measured in "carbon dioxide-equivalents," which present a weighted average based on each gas's heat absorption (or "global warming") potential.

Thus, the construction emissions from the proposed project would have a less-than-significant impact on climate change.

Table 3: Estimated Greenhouse Gas Emissions (metric tons of CO_2e)

Criteria	Annual CO_2e Metric Tons
Construction Emissions	65
BAAQMD Significance Threshold	1,100
Potentially Significant (Yes or No)?	No

SOURCE: CalEEMod Version 2016.3.2.
NOTE: GHG Emissions rounded to the nearest metric ton

Conflict with an Applicable GHG Reduction Plan, Policy, or Regulation

The City of Novato adopted the Novato Climate Change Action Plan (CCAP) in 2009.[8] The CCAP outlines strategies to achieve a GHG reduction target of 15 percent below 2005 emission levels by the year 2020, consistent with the State's direction to local governments. The CCAP also suggests a 2035 goal of 40 percent below 2005 levels to achieve the 80 percent statewide reduction by 2050 called for in Executive Order S-3-05. None of the goals and measures within the CCAP are applicable to the proposed project, as most of the goals and measures are related to residential land uses, green buildings, and city-wide infrastructure.

The proposed project would generate construction GHG emissions as the proposed project would replace existing natural grass fields with turf fields and the proposed project would not result in an increase in operational emissions. It is important to note that the proposed project would eliminate the need for landscaping equipment and would reduce outdoor water usage, which would reduce operational GHG emissions of the proposed project. Construction GHG emissions are a one-time source and are, therefore, not typically expected to generate a significant contribution to global climate change in the long-term. The CCAP does not contain measures related to construction, therefore the proposed project would not conflict with the CCAP. The proposed project would not conflict with an applicable plan, policy or regulation adopted for the purpose of reducing GHG emissions. Thus, this impact would be less than significant.

Conclusions

As detailed in this study, the proposed project would have a less-than-significant impact on air quality and GHG emissions, and neither the General Rule Exemption nor the Minor Alteration of Land Exemption would be precluded from use due to air quality or GHG emissions impacts. The proposed project would be required to comply with all BAAQMD rules and would be required to implement BAAQMD's required best management practices to control fugitive dust.

[8] City of Novato. Climate Change Action Plan. 2009.
http://www.marinclimate.org/sites/default/files/documents/novato_climate_action_plan.pdf

References

Bay Area Air Quality Management District, *CEQA Air Quality Guidelines*, May 2017, http://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en

Bay Area Air Quality Management District, *Final 2017 Clean Air Plan*, April 19, 2017, http://www.baaqmd.gov/~/media/files/planning-and-research/plans/2017-clean-air-plan/attachment-a_-proposed-final-cap-vol-1-pdf.pdf?la=en

California Air Resource Board, *Area Designations Maps/State and National.* http://www.arb.ca.gov/desig/adm/adm.htm

California Air Pollution Control Officers Association, *CalEEMod User's Guide Version 2016.3.2*, November 9, 2017, http://www.caleemod.com/

City of Novato, *City of Novato General Plan*, 1996, Revised May 2014, https://novato.org/government/community-development/planning-division/existing-general-plan

City of Novato, *Climate Change Action Plan*. 2009. http://www.marinclimate.org/sites/default/files/documents/novato_climate_action_plan.pdf

Office of Environmental Health Hazard Assessment, Program Guidance Manual for the Preparation of Health Risk Assessments, February 2015, http://oehha.ca.gov/air/hot_spots/hotspots2015.html

U.S. Environmental Protection Agency. *Six Common Air Pollutants.* https://www.epa.gov/criteria-air-pollutants

Attachment A

Air Quality and Greenhouse Gas Emissions Output

CalEEMod Version 2016.3.2 Output

- Annual
- Summer
- Winter

NOISE TECHNICAL REPORT

Novato High School Artificial Turf Fields

Novato, California

Prepared For

Novato Unified School District
1015 7th Street
Novato, CA 94945

Prepared By

RCH Group
11060 White Rock Road Suite 150-A
Rancho Cordova, CA 95670

March 2019

TABLE OF CONTENTS

Page

Summary 1

Introduction 2

CEQA Exemption Standards 2

Background 2

Impact Analysis 6

References 12

Noise Appendix 13

TABLES

1: Typical Noise Levels 3
2: Allowable Exterior Noise Levels 5
3: Existing Noise Measurements 7
4: Typical Noise Levels from Construction Equipment 8
5: Representative Vibration Source Levels for Construction Equipment 10

Summary

RCH Group (RCH) has conducted this noise analysis for the Novato High School Artificial Turf Fields project. The project consists of the construction of an artificial turf practice field, artificial turf softball field, artificial turf baseball field and tennis courts, and the grading for a future JROTC Marching Pavilion at Novato High School in Novato, California.

The practice field would be an upgrade to the existing natural grass field that has limited use due to its rugged nature. The practice field is currently used for informal recreation. The practice field would be a multi-sport field supporting soccer and lacrosse practice. It would not include lighting but would receive longer hours of use compared to the existing natural grass field. The practice field use would increase from about 2,000 hours/year to about 4,000 hours/year, with most of the additional use occurring in the rainy months and afternoons. The practice field would continue to be used only in daylight hours, up until about 6 p.m. in the winter months.

The proposed artificial turf softball field, artificial turf baseball field and tennis courts would replace the existing softball field, baseball field and tennis courts at the school and would not increase usage. The grading for the future JROTC Marching Pavilion is proposed in case funding is ever available in the future and would not increase usage of JROTC activities at the school.

The fields are adjacent to other high school uses and residential land uses. The closest areas of project grading could be as close as 15 feet from residential structures. All other areas of the fields would be farther from adjacent residences (up to about 500 feet away).

Construction activities would result in increases in ambient noise levels in the project vicinity for the approximately six months of construction. The project would comply with the construction hour guidelines set forth in the Novato Noise Ordinance, which permits construction activities between 7 a.m. and 6 p.m. on weekdays and between 10 a.m. and 5 p.m. on Saturdays. The impact of exposure of people to excessive construction noise levels would be less than significant.

Hours of sports activities (primarily daytime practices) at the proposed practice field are expected to approximately double as a result of the project. The proposed practice field is expected to support increased soccer and lacrosse practice. The activities would be limited to daytime hours and amplified sound systems are not proposed. The bleachers would be limited, expected to hold about 100 spectators. With the limitations on the activities, the noise increases from the practices would not be significant. Noise measurements of soccer practices and a review of athletic field noise indicate that the practices would have average noise levels of 60 dB or less at adjacent residential property lines. The voices of coaches coaching, occasional whistles and sounds from the players would not result in violations of the limits in the Novato Noise Ordinance and noise levels would not be disturbing to normal conversation, as the average noise would be below 60 dB.

In summary, neither the construction activities nor the operational activities at the artificial turf field would result in significant noise impacts to the nearby residences, and neither the General Rule Exemption nor the Minor Alteration of Land Exemption would be precluded from use due to noise impacts.

Introduction

This document presents the results of a noise analysis for the Novato High School Artificial Turf Fields (the "project") and is prepared to answer the noise questions in the Initial Study Environmental Checklist Form in Appendix G of the State CEQA Guidelines, in order to determine the potential applicability of the CEQA General Rule Exemption and/or the CEQA exemption for Minor Alterations of Land. This document provides an overview of the existing noise environment at the project site, recent measurements of the existing noise at the project site, the noise regulatory framework, and an analysis of potential noise impacts that would result from implementation of the project. The Noise Appendix to this report includes the noise measurement data.

CEQA Exemption Standards

This analysis is intended to determine whether the project may result in a potentially significant noise impact, which would constitute an exception to the applicability of the CEQA exemption for Minor Alternations of Land (CEQA Guideline Section 15304), and whether the CEQA General Rule Exemption (CEQA Guidelines Section 15061(3)) may apply to the project.

Specifically, this report addresses the following exceptions set forth in CEQA Guidelines Section 15300.2 and 15061.3, respectively:

> 15300.2 (c) - Significant Effect. A categorical exemption shall not be used for an activity where there is a reasonable possibility that the activity will have a significant effect on the environment due to unusual circumstances.
>
> 15061.3 - The activity is covered by the general rule that CEQA applies only to projects which have the potential for causing a significant effect on the environment. Where it can be seen with certainty that there is no possibility that the activity in question may have a significant effect on the environment, the activity is not subject to CEQA.

In order to address the applicability of the exemption standards to the project, the noise questions included in the CEQA Initial Study noise section are considered in this report.

Background

Noise Descriptors

Sound is mechanical energy transmitted by pressure waves through a medium such as air. Noise is defined as unwanted sound. Sound pressure level has become the most common descriptor used to characterize the "loudness" of an ambient sound level. Sound pressure level is measured in decibels (dB), with zero dB corresponding roughly to the threshold of human hearing, and 120 to 140 dB corresponding to the threshold of pain. Decibels are measured using different scales, and it has been found that A-weighting of sound levels best reflects the human ear's reduced sensitivity to low frequencies, and correlates well with human perceptions of the annoying aspects of noise. The A-weighted decibel scale (dBA) is cited in most noise criteria. All references to decibels (dB) in this report will be A-weighted unless noted otherwise.

Several time-averaged scales represent noise environments and consequences of human activities. The most commonly used noise descriptors are the equivalent A–weighted sound level over a given time period (Leq)[1]; day–night 24-hour average sound level (Ldn)[2] with a nighttime increase of 10 dB to account for sensitivity to noise during the nighttime; and community noise equivalent level (CNEL)[3], also a 24-hour average that includes both an evening and a nighttime sensitivity weighting.

Table 1 identifies decibel levels for common sounds heard in the environment.

Table 1: Typical Noise Levels

Noise Level (dB)	Outdoor Activity	Indoor Activity
90+	Gas lawn mower at 3 feet, jet flyover at 1,000 feet	Rock Band
80–90	Diesel truck at 50 feet	Loud television at 3 feet
70–80	Gas lawn mower at 100 feet, noisy urban area	Garbage disposal at 3 feet, vacuum cleaner at 10 feet
60–70	Commercial area	Normal speech at 3 feet
40–60	Quiet urban daytime, traffic at 300 feet	Large business office, dishwasher next room
20–40	Quiet rural, suburban nighttime	Concert hall (background), library, bedroom at night
10–20		Broadcast / recording studio
0	Lowest threshold of human hearing	Lowest threshold of human hearing

Source: (modified from Caltrans Technical Noise Supplement, 1998)

Noise Attenuation

Stationary point sources of noise, including construction equipment, attenuate (lessen) at a rate of 6 to 7.5 dB per doubling of distance from the source, depending on ground absorption. Soft sites attenuate at 7.5 dB per doubling because they have an absorptive ground surface such as soft dirt, grass, or scattered bushes and trees. Hard sites have reflective surfaces (e.g., parking lots or smooth bodies of water) and therefore have less attenuation (6.0 dB per doubling). A street or roadway with moving vehicles (known as a "line" source), would typically attenuate at a lower rate, approximately 3 to 4.5 dB each time the distance doubles from the source, which also depends on ground absorption (CalTrans, 1998). Physical

---

[1]The Equivalent Sound Level (Leq) is a single value of a constant sound level for the same measurement period duration, which has sound energy equal to the time–varying sound energy in the measurement period.

[2]Ldn is the day–night average sound level that is equal to the 24-hour A-weighted equivalent sound level with a 10-decibel penalty applied to night between 10:00 p.m. and 7:00 a.m.

[3]CNEL is the average A-weighted noise level during a 24-hour day, obtained by addition of 5 decibels in the evening from 7:00 to 10:00 p.m., and an addition of a 10–decibel penalty in the night between 10:00 p.m. and 7:00 a.m.

barriers located between a noise source and the noise receptor, such as berms or sound walls, will increase the attenuation that occurs by distance alone.

Regulatory Framework

State Guidelines

State Land Use Compatibility Standards for Community Noise are provided in the State of California General Plan Guidelines. The guidelines indicate that for Schools, a Community Noise Exposure up to 70 dB (Ldn or CNEL) is Normally Acceptable, as well as Conditionally Acceptable. Residential low density uses, such as those adjacent to the field, are Normally Acceptable up to 60 dB (Ldn or CNEL) and Conditionally Acceptable up to 70 dB (Ldn or CNEL) (OPR 2003).

Novato General Plan

The Safety and Noise Chapter of the Novato General Plan identifies and evaluates community noise sources and problems, and includes standards for indoor and outdoor noise exposure. SF Table 3 of the General Plan (Noise and Land Use Compatibility Standards) indicates that for Schools, an Exterior Noise Exposure of 60 dB (Ldn or CNEL) is Normally Acceptable and an Exterior Noise Exposure of 75 dB (Ldn or CNEL) is Conditionally Acceptable (City of Novato 1996). The Explanation of SF Table 3, part B (Suitable Interior Environments) states that an objective is to maintain a suitable interior noise environment at no greater than 45 dB Ldn (City of Novato 1996).

The following General Plan policies and programs are relevant to the potential noise impact of project generated noise on the existing land uses in the project area.

Safety and Noise Element (SF) Policy 38 Noise Reduction and Mitigation. Mitigate noise exceeding standards and significant noise impacts to the maximum feasible extent.

> SF Program 38.1: Require acoustical studies and mitigation measures for new developments and transportation improvements which affect noise sensitive uses such as schools, hospitals, libraries, group care facilities, and convalescent homes.
>
> SF Program 38.5: Investigate mitigation measures for projects that would cause a substantial increase in noise (i.e., cause the Ldn to increase above 60 dBA or cause an increase of 5 dBA Ldn or more in the noise environment) in adjacent residential areas or in residential areas affected by traffic generated by the proposed project. (Draft EIR, pages 166 and 167, Impact 4.7A) In areas where noise is within standards, some increases are inevitable. This program is to keep those increases to the minimum necessary.

Novato Noise Ordinance

The Novato Noise Ordinance (City of Novato 2017) sets allowable exterior noise levels (**Table 2**). According to the Noise Ordinance "used, activities, and processes shall not generate or emit any noise or sound in excess of the levels provided in Table 3-5 [**Table 2** below] beyond the property line of the parcel on which they are located".

The following are exempt from the allowable noise level requirements:

- Authorized construction activities, including warming-up or servicing of equipment, and any preparation for construction between 7 a.m. and 6 p.m. on weekdays, and between 10 a.m. and 5 p.m. on Saturdays. No construction is allowed on Sundays or official federal national holidays, except as otherwise authorized herein by the Community Development Director.

- Authorized grading activities and equipment operations between 7 a.m. to 6 p.m. weekdays only, when City inspectors are available.
- Routine maintenance activities.
- Other construction activities as authorized in writing by the Community Development Director.

Table 2: Allowable Exterior Noise Levels

Type of Land Use	Allowable Exterior Levels (1)	
	Time Interval	Maximum Noise Level (2)
Residential (3)	10 p.m. to 6 a.m.	45 dBA
	6 a.m. to 10 p.m.	60 dBA
Commercial (4)	10 p.m. to 6 a.m.	60 dBA
	6 a.m. to 10 p.m.	70 dBA
Industrial or manufacturing (4)	Any time	70 dBA

Notes:
(1) Each of the noise limits shall be reduced by 5 dBA for impulse or simple tone noises. If the ambient noise exceeds the resulting standard, the ambient shall be the standard.

(2) Maximum noise levels shall not be exceeded for an aggregate period of more than three minutes within a one-hour time period or by more than 20 dBA at any time.

(3) Residential standards apply to sensitive receptors such as schools, hospitals, libraries, group care facilities, and convalescent homes. These uses may require special mitigation.

(4) Commercial standards apply to Mixed Use Districts.

Significance Criteria

The following criteria were used to evaluate the significance of environmental noise resulting from the project:

- **Substantial Permanent Noise Increase.** Consistent with General Plan Safety and Noise Element SF Program 38.5, operation of the project would result in a significant impact if it would cause the Ldn to increase above 60 dBA or cause an increase of 5 dBA Ldn or more in adjacent residential areas.[4]

[4] This threshold is consistent with Federal Interagency Committee on Noise (FICON) thresholds for assessing changes in ambient noise levels resulting from aircraft operations (FICON 1992), and is based on noise levels at which people typically become highly annoyed. Although the FICON recommendations were specifically developed to assess aircraft noise impacts, the FICON criteria have since been recognized by various federal, state, and local agencies for the analysis of noise impacts. At higher ambient noise levels the threshold for highly disturbed is lower (i.e., above 60 dB CNEL/Ldn the threshold is an additional 3 dB rather than 5 dB for environments that have existing noise levels below 60 dB CNEL/Ldn).

• **Construction Noise**. Temporary construction noise impacts would be significant if construction is not in compliance with the construction hours and days of the week in the exemptions of the Novato Noise Ordinance.

Existing Noise Sources and Levels

To quantify existing ambient noise levels in the immediate project vicinity, RCH conducted short-term (10-minute) measurements at two locations and long-term (48-hour) measurements at one location at the project site. Noise measurements were made using Metrosonics db308 Sound Level Meters calibrated before and after the measurements.

The noise measurements are summarized in **Table 3** below. The Noise Appendix includes 24-hour noise plots of the data and a figure showing noise measurement locations. In general, the project site is a quiet location. Dominant sources of existing noise in the vicinity of the project are distant traffic noise, dogs barking, and crows cawing. There were no athletic practices scheduled at the field during the time of the noise measurements, so the noise measurements recorded the existing ambient noise at the project site.

As shown in **Table 3**, short-term sound level measurements at the site were conducted on Monday October 9 and Thursday October 12, 2017. The average noise level (Leq) for the 5-minute periods measured at the southwest side of the field (Site 1) was 42 to 44 dB. The average 5-minute Leq measured at the southeast side of the field (Site 2) was 42 to 55 dB. The long-term sound level measurements were conducted from Tuesday October 10 through Wednesday October 11, 2017 at Site 1. The 24-hour noise levels (CNELs) at Site 1 were 54 and 51 dB.

Existing Sensitive Receptors

Noise sensitive land uses are identified in the Novato General Plan Noise Element as hospitals, convalescent homes, schools, and libraries. There are homes to the west/southwest and south/southeast of the proposed fields. The nearest sensitive receptors to the project site include homes adjacent to the proposed practice field along the southeast side.

Impact Analysis

Temporary Construction Noise

Construction activities would require the use of numerous pieces of noise-generating equipment, such as excavating machinery (e.g., backhoes, bulldozers, excavators, front loaders, etc.) and other construction equipment (e.g., compactors, scrapers, graders, etc.). During the limited construction period, construction worker traffic and construction-related material haul trips would raise ambient noise levels along local haul routes, but not substantially, as the trips would primarily be worker vehicles and material deliveries. Grading would import approximately 10,000 cubic yards of materials for aggregate base for the artificial turf and other infill materials. Construction activities and associated traffic would occur primarily during the daytime, in compliance with the exemption for construction noise in the Novato Noise Ordinance. The exemption includes authorized construction activities, including warming-up or servicing of equipment, and any preparation for construction between 7 a.m. and 6 p.m. on weekdays, and between 10 a.m. and 5 p.m. on Saturdays. No construction is allowed on Sundays or official federal national holidays, except as otherwise authorized herein by the Community Development Director.

Table 3: Existing Noise Measurements

Location	Time Period	Noise Levels (dB)	Noise Sources
Site 1. Southwest side of field, along long edge of the field and adjacent to residences, see Noise Appendix Figure N-1	Monday October 9, 2017 2:29-2:39 p.m.	5-minute Leq's: 44, 42	Crow is 51 dB. Dog barking is 50 dB. Car is 45 dB. Background noise is <42 dB. Quieter noises include a distant motorcycle, students talking, birds and insects, and wind rustling leaves.
Site 1. Southwest side of field, along long edge of the field and adjacent to residences, see Noise Appendix Figure N-1	Tuesday October 10, 12:00 a.m. through Wednesday October 11, 11:59 p.m., 2017 48-hour measurement	Hourly Leq's ranged from: 43-62 CNELs: 54, 51	Unattended noise measurements do not specifically identify noise sources.
Site 1. Southwest side of field, along long edge of the field and adjacent to residences, see Noise Appendix Figure N-1	Thursday October 12, 2017 2:02-2:12 p.m.	5-minute Leq's: 43. 42	Distant traffic is 53 dB. Distant motorcycle is 47 dB. Crow is 47 dB. Airplane is 43 dB. Background noise is <42 dB. Quieter noises include wind, birds, insects, and backup beepers from distant construction equipment.
Site 2. Southeast side of field, middle of short edge of the field and adjacent to residences, see Noise Appendix Figure N-1	Monday October 9, 2017 2:44-2:54 p.m.	5-minute Leq's: 55, 42	Dog barking is 66 dB. Crow is 45 dB. Wind is 44 dB. Airplane is 43 dB. Background noise is <42 dB. Quieter noises include distant traffic, birds, and insects.
Site 2. Southeast side of field, middle of short edge of the field and adjacent to residences, see Noise Appendix Figure N-1	Thursday October 12, 2017 2:17-2:17 p.m.	5-minute Leq's: 46, 45	Dog barking is 59 dB. School bell is 53 dB. P.A. system is 52 dB. Garbage truck is 47 dB. Sirens are 45 dB. Construction saw is 44 dB. Airplane is 44 dB. Background noise is <42 dB. Quieter noises include distant traffic, students, and birds and insects.

Source: RCH Group, 2017

The noise levels generated by construction equipment would vary greatly depending upon factors such as the type and specific model of the equipment, the operation being performed, the condition of the equipment and the prevailing wind direction. As shown in **Table 4**, maximum noise levels generated by various types of construction equipment can range from 76 to 89 dB at 50 feet. The noise would move from place to place during the construction so no adjacent residences would be subjected to the construction noise throughout the entire construction period. The construction would also occur within the daytime hours specified in the Novato Noise Ordinance, so the noise would be exempt from the Noise Ordinance decibel standards and the temporary impact of construction noise would be less than significant.

Table 4: Typical Noise Levels from Construction Equipment

Construction Equipment	Noise Level (dB, Lmax at 50 feet)
Dump Truck	76
Air Compressor	78
Concrete Mixer (Truck)	79
Jackhammers	89
Scraper	84
Dozer	82
Paver	77
Generator	81
Auger Drill Rig	84
Front End Loader	79
Grader	85
Backhoe	78

Source: Federal Highway Administration, Roadway Construction Noise Model User's Guide, 2006

Operational Noise Impacts

The proposed artificial turf practice field is the focus of the operational noise impact analysis as it is the closest use to adjacent homes and the proposed artificial turf softball field, artificial turf baseball field and tennis courts would replace the existing softball field, baseball field and tennis courts at the school and would not increase usage. Therefore, operational noise impacts from the proposed artificial turf softball field, artificial turf baseball field and tennis courts would be less than significant.

The proposed artificial turf practice field would be an upgrade to the existing natural grass field that has limited use due to its rugged nature. The existing natural grass field is currently used for informal recreation. The proposed artificial turf practice field would be a multi-sport field supporting soccer and lacrosse practice. It would not include lighting but would receive longer hours of use compared to the existing natural grass field. The practice field use would increase from about 2,000 hours/year to about 4,000 hours/year, with most of the additional use occurring in the rainy months and afternoons. The

practice field would continue to be used only in daylight hours, up until about 6 p.m. in the winter months.

Some games may be played on the practice field. Games are generally louder than practices, and would inherently include more cheering. If games are played, noise would not be substantially greater than practices. There would be minimal stands for any observers of classes, practices or games (a "five-high" portable bleacher, with a capacity of 100 spectators, would be installed). The project would not install a P.A. system.

There were no athletic classes, practices, or games on the existing field during the noise monitoring survey. To estimate future noise levels, the noise analysts collected noise measurements at another soccer field and reviewed other relevant analyses of similar athletic fields/activities. RCH conducted noise measurements of soccer practices at an alternate location in Rancho Murieta, California with two teams practicing on the field at the same time. Noise from player activity was minimal. The main noise was coaching instructions from the area of the goals and midfield, which usually reached about 62 dB at the edge of the field. The average total noise (Leq) ranged from 58 to 64 dB on the sidelines of the field, 75 feet from the center of the soccer field. Projecting these measurements to the project site, at the nearest residences, located approximately 155 feet from the center of the field, the estimated noise level from activities on the proposed field would range from 50 to 56 dB Leq.

The noise measurements described above are consistent with an acoustic study of sports fields at a proposed new Salinas High School (Pack, 2011). That study noted that in their experience with youth soccer games, and community college ladies soccer games that at 210 ft. from the center of the field, with varying numbers of spectators, the average sound levels would be 49-52 dBA Leq. The acoustic study indicated that soccer game noise is created primarily by the shouts of spectators and referee whistles. This is well under 60 dB CNEL significance threshold and consistent with the measurement described above.

The noise from practices and games on the artificial turf practice field would be no louder than practices that could occur now on the existing natural grass turf. The noise from practices could occur on more days (due to better weather tolerance) but the noise level on any day would not substantially increase from the level that could occur now on the existing natural grass turf. Because the hourly average from soccer practices/games would remain below 60 dB, Leq, at offsite residences from activity noise, the effect of noise from the increased hours and days of use of the field for practices/games would not raise the noise level at the residences above 60 dB, Ldn and would be less than significant. In regard to the criterion of a 5 dB, Ldn increase, a potential doubling in the practice hours on the artificial turf would be estimated to increase the annual noise from field activities by 3 dB, Ldn or less[5]. This is below the 5 dB, Ldn criterion and therefore the noise increase would be less than significant.

Off-site noise from whistles was also considered in relation to the 75 Lmax[6] limit in the Novato Noise Ordinance. The Lmax is the maximum noise level and for sporting whistle noise is very brief (to signal a penalty, stop a play, or end of a quarter/half). The technical noise study for the Environmental Impact Report (EIR) for the San Marin field improvements measured noise at nearby off-site receptors from whistles during Varsity Football games (which should have generated more noise than any of the activities that would be part of this project). The noise levels of the whistles ranged from 54 to 73 dB Lmax at off-site locations, which is in compliance with the Noise Ordinance standard (RGD Acoustics,

---

[5] The doubling of a noise source increases the resulting noise level by 3 dBA (Caltrans 1998).

[6] The Noise Ordinance Lmax would be 20 dB above 60 dB minus 5 dBA for impulse or simple tone noises. The result for the project site would be 75 dB.

2017). Based on these data, the Lmax from whistles would not exceed the Novato Noise Ordinance standard at the new artificial turf project site.

The voices of coaches coaching, occasional whistles and sounds from the players would not result in violations of the limits in the Novato Noise Ordinance and noise levels would not be disturbing to normal conversation, as the average noise would be below 60 dB.

Groundborne Vibration and Groundborne Noise Levels

Construction operations have the potential to result in varying degrees of temporary ground vibration, depending on the specific construction equipment used and operations involved. The ground vibration levels associated with various types of construction equipment are summarized in **Table 5**. Ground vibration generated by construction equipment spreads through the ground and diminishes in magnitude with increases in distance. The effects of ground vibration may be imperceptible at the lowest levels, low rumbling sounds and detectable vibrations at moderate levels, and slight damage to nearby structures at the highest levels.

Table 5: Representative Vibration Source Levels for Construction Equipment

Equipment		Peak Particle Velocity at 25 Feet (in/sec)	Peak Particle Velocity at 15 feet
Pile Driver (impact)	upper range	1.518	3.266
	typical	0.644	1.386
Pile Driver (sonic)	upper range	0.734	1.579
	typical	0.170	0.366
Vibratory Roller		0.210	0.452
Large Bulldozer		0.089	0.191
Loaded Trucks		0.076	0.164
Jackhammer		0.035	0.075
Small Bulldozer		0.003	0.006

Source: Federal Transit Administration, 2006.

Note: Vibration levels at 15 feet were calculated using the equation provided by FTA that may be used to estimate vibration at different distances based on a reference ppv at 25 feet for various construction equipment.

At the highest levels of vibration, damage to structures is primarily architectural (e.g., loosening and cracking of plaster or stucco coatings) and rarely results in structural damage. For most structures, a peak particle velocity (ppv) threshold of 0.5 inch per second or less is sufficient to avoid structural damage. The Federal Transit Administration recommends a threshold of 0.5 ppv for residential and commercial structures, 0.25 ppv for historic buildings and archaeological sites, and 0.2 ppv for non-engineered timber and masonry buildings (FTA 2006).

The project would not involve the use of any equipment or processes that would result in potentially significant levels of ground vibration (i.e., pile drivers that could be above 0.5 ppv). The closest residential structures to the project site are approximately 15 feet away. As shown in **Table 5**, the predicted vibration levels from vibratory rollers, bulldozers, loaded trucks, and jackhammers at a distance of 15 feet would not exceed the 0.5 ppv threshold for residential and commercial structures. It is assumed that pile drives would not be used for construction of the project. Vibration impacts from construction would be less than significant.

Other CEQA Initial Study Checklist Noise Issues

The project site is not located within an area covered by an airport land use plan or within two miles of a public or public use airport. The nearest public airport is Marin County Airport Gnoss Field, located 5 miles north of Novato High School. There are no private airstrips located near the project site. Development of the project site would not expose people working or residing at the site to excessive aircraft noise levels and no impact would occur.

References

California Department of Transportation (Caltrans), 1998. *Technical Noise Supplement.*

California Department of Transportation (Caltrans), 1998. *Traffic Noise Analysis Protocol for New Highway Construction and Reconstruction Projects,* October 1998.

City of Novato, 1996. *City of Novato General Plan.* Chapter V: Safety & Noise.

City of Novato, 2017. *Code of Ordinances*. Division 19.22 - General Performance Standards. 19.22.070 - Noise and Construction Hours.

Federal Highway Administration (FHWA), 2006. *Roadway Construction Noise Model User's Guide.*

Federal Interagency Committee on Noise (FICON), 1992. *Federal Agency Review of Selected Airport Noise Analysis Issues.* August 1992.

Federal Transit Administration (FTA), 2006. *Transit Noise and Vibration Impact Assessment* (FTA-VA-90-1003-06).

Governor's Office of Planning and Research (OPR), 2003. *State of California General Plan Guidelines.*

Pack, Jeffrey K., 2011. *Noise Assessment Study for High School #5, Rogge Road, Salinas.* June, 2011.

RGD Acoustics, 2017. *San Marin High School Athletic Field Upgrade Project Assessment of Crowd and PA Noise Impact Novato, CA.* Prepared for Rincon Consultants, Inc., March, 2017.

Novato High School Artificial Turf Fields

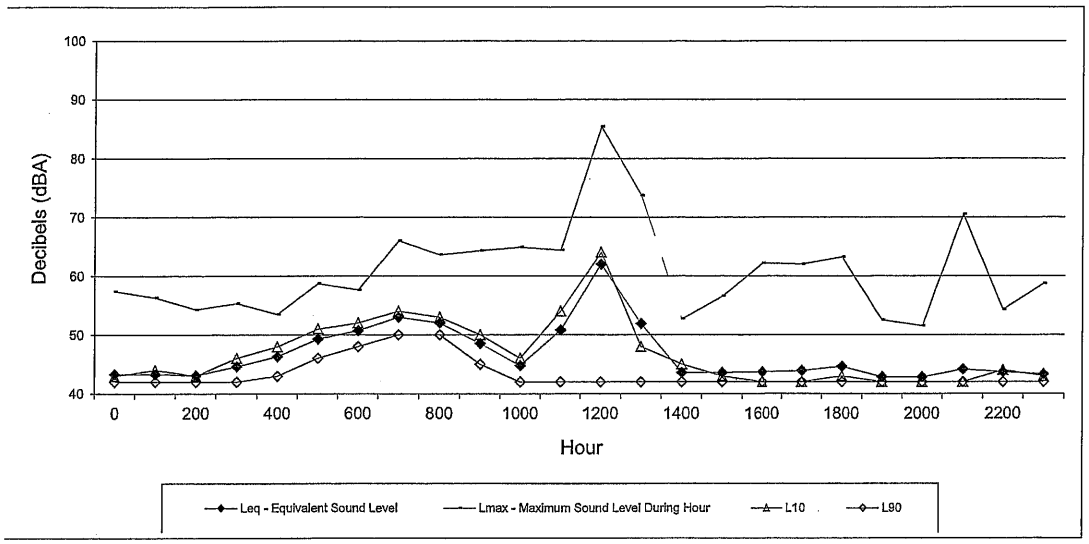
Noise Appendix

Site 1 – 24-Hour Noise Plots (2 pages)

Noise Measurement Locations Figure

RCH GROUP

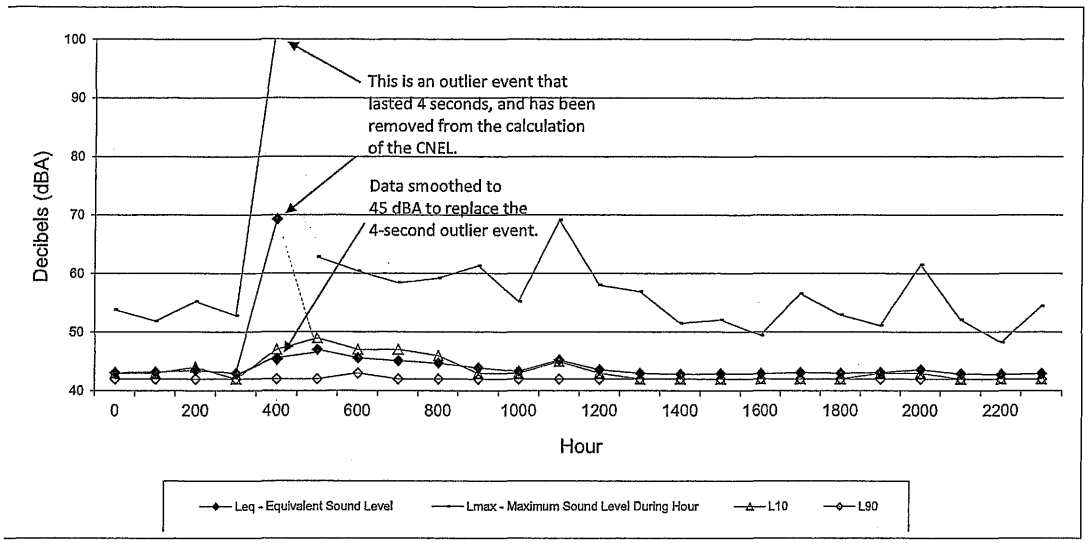
11060 WHITE ROCK ROAD, SUITE 150-A RANCHO CORDOVA, CA 95670 (916)782-4427



Site 1: Southwest side of field, 125 feet from the centerline of Washington Street
Tuesday October 10, 2017

Hour	Leq - Equivalent Sound Level	Lmax - Maximum Sound Level During Hour	L10	L90
0	43	57	43	42
100	43	56	44	42
200	43	54	43	42
300	45	55	46	42
400	46	54	48	43
500	49	59	51	46
600	51	58	52	48
700	53	66	54	50
800	52	64	53	50
900	49	64	50	45
1000	45	65	46	42
1100	51	64	54	42
1200	62	85	64	42
1300	52	74	48	42
1400	44	53	45	42
1500	44	57	43	42
1600	44	62	42	42
1700	44	62	42	42
1800	45	63	43	42
1900	43	53	42	42
2000	43	52	42	42
2100	44	71	42	42
2200	44	54	44	42
2300	43	59	43	42

CNEL 54



Site 1: Southwest side of field, 125 feet from the centerline of Washington Street
Wednesday October 11, 2017

Hour	Leq - Equivalent Sound Level	Lmax - Maximum Sound Level During Hour	L10	L90
0	43	54	43	42
100	43	52	43	42
200	44	55	44	42
300	43	53	42	42
400	45	104	47	42
500	47	63	49	42
600	46	60	47	43
700	45	58	47	42
800	45	59	46	42
900	44	61	43	42
1000	43	55	43	42
1100	45	69	45	42
1200	44	58	43	42
1300	43	57	42	42
1400	43	52	42	42
1500	43	52	42	42
1600	43	49	42	42
1700	43	57	42	42
1800	43	53	42	42
1900	43	51	43	42
2000	44	62	43	42
2100	43	52	42	42
2200	43	48	42	42
2300	43	54	42	42

CNEL: 51



SOURCE: Google Earth and RCH Group 2017

Novato High School Artificial Turf Field

Figure N-1

Noise Measurement Locations