BROOKSIDE GOLF COURSE IMPROVEMENTS PROJECT

INITIAL STUDY/MITIGATED NEGATIVE DECLARATION

JANUARY 2023

Rose Bowl
AMERICA'S STADIUM

PLACEWORKS

January 2023 | Initial Study/Mitigated Negative Declaration

BROOKSIDE GOLF COURSE IMPROVEMENTS PROJECT

Rose Bowl Operating Company

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PLACEWORKS

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Abbreviations and Acronyms

AAQS	ambient air quality standards
AB	Assembly Bill
ACM	asbestos-containing materials
ADA	Americans with Disabilities Act
ADT	average daily traffic
amsl	above mean sea level
AQMP	air quality management plan
AST	aboveground storage tank
bgs	below ground surface
BMP	best management practices
CAA	Clean Air Act
CAFE	corporate average fuel economy
CalEEMod	California Emissions Estimator Model
Cal/EPA	California Environmental Protection Agency
CAL FIRE	California Department of Forestry and Fire Protection
CALGreen	California Green Building Standards Code
Cal/OSHA	California Occupational Safety and Health Administration
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CAP	Climate Action Plan
CBC	California Building Code
CCAA	California Clean Air Act
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CDOC	California Department of Conservation
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
cfs	cubic feet per second
CGS	California Geologic Survey
CH4	Methane
City	City of Pasadena

Abbreviations and Acronyms

CNDDB	California Natural Diversity Database
CNEL	community noise equivalent level
CO	carbon monoxide
CO_2e	carbon dioxide equivalent
CUP	Conditional Use Permit
CWA	Clean Water Act
dB	decibel
dBA	A-weighted decibel
DPM	diesel particulate matter
DTSC	Department of Toxic Substances Control
DU	Dwelling Unit
DWR	California Department of Water Resources
EPA	United States Environmental Protection Agency
FEMA	Federal Emergency Management Agency
FMMP	Farmland Mapping and Monitoring Program
GHG	greenhouse gases
GSA	Groundwater Sustainability Agencies
I-210	Interstate 210
L_{dn}	day-night noise level
L_{eq}	equivalent continuous noise level
LBP	lead-based paint
LED	light-emitting diode
LRA	Local Responsibility Area
LST	localized significance thresholds
MMT	million metric tons
MPO	metropolitan planning organization
MND	Mitigated Negative Declaration
MT	metric ton
MTCO2e	metric tons of carbon dioxide equivalent
MWD	Metropolitan Water District of Southern California
NAHC	Native American Heritage Commission
NO_X	nitrogen oxides

Abbreviations and Acronyms

NPDES	National Pollution Discharge Elimination System
NRHP	National Register of Historic Places
NWI	National Wetland Inventory
O_3	ozone
OEHHA	Office of Environmental Health Hazards Assessment
OES	California Office of Emergency Services
OS	Open Space
PM	Post Mile
PM2.5	fine inhalable particulate matter
PM10	coarse inhalable particulate matter
PWP	Pasadena Water and Power
RBOC	Rose Bowl Operating Company
REC	recognized environmental condition
RTP/SCS	Regional Transportation Plan/Sustainable Communities Strategy
RWQCB	Regional Water Quality Control Board
SB	Senate Bill
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SGMA	Sustainable Groundwater Management Act
SLM	sound level meter
SR-134	State Route 134
SoCAB	South Coast Air Basin
SO2	sulfur dioxide
SO_X	sulfur oxides
SQMP	stormwater quality management plan
SRA	source receptor area
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TPZ	Tree Protection Zone
UCLA	University of California, Los Angeles
USDA	United State Department of Agriculture
UFAC	Forestry Advisory Committee

Abbreviations and Acronyms

USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
VHFHSZ	very high fire hazard severity zone
VMT	vehicle miles traveled
VOC	volatile organic compound

Abbreviations and Acronyms

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1. Project Description

1.1 INTRODUCTION

The Rose Bowl Operating Company (RBOC) proposes to reorient and expand the existing driving range and construct a new miniature golf facility (Project) within the existing driving range area at the Brookside Golf Course (or golf course). Project improvements would occur on 16 acres within the exiting driving range, Hole 10 of the C.W. Koiner Course, and Holes 6 and 7 of the E.O. Nay Course (Project Site). The RBOC will be considering the Project as the Lead Agency under the California Environmental Quality Act (CEQA). The RBOC is undertaking this environmental review concurrent with a substantial allocation of public funds toward the Project, even though the RBOC is not yet ready to break ground. This commitment to the Project is undertaken now because the RBOC subsequently needs to seek additional substantial funding for the Project, including from philanthropic sources who will require the level of detail discussed herein and that the funds be used exclusively for the Project. In other words, the RBOC now seeks to build bureaucratic, public, and financial momentum behind the Project, and to ensure that all environmental concerns of the Project that can be reasonably foreseen and analyzed are properly studied and disclosed now. At a later date, the RBOC will apply to the City of Pasadena for a Conditional Use Permit (CUP) associated with the Project.

The expanded driving range and new miniature golf course would be located in the same area as the existing driving range, which is currently located between the concrete-channeled Arroyo Seco to the west, the Brookside Clubhouse to the east, the C.W. Koiner Course to the north and south, and the E.O. Nay Course also located to the north.

The proposed expansion of the driving range from 20 hitting bays to approximately 60 hitting bays and the addition of a 36-hole miniature golf course would reduce the E.O. Nay course from par-70 to par-69; however, it would remain a championship layout and the course reduction would be designed to improve the pace of play. In order to accommodate the expanded driving range and new miniature golf course, tree removal and relocation and surficial grading would be required. Details of the Project description are provided below.

1.2 ENVIRONMENTAL SETTING

1.2.1 Project Location and Surrounding Uses

The City of Pasadena (City) is approximately 10 miles northeast of downtown Los Angeles in the County of Los Angeles. Regional access to Pasadena is provided by State Route (SR) 134, Interstate 210 (I-210), and State Route 110 (SR-110) (**Figure 1**, *Regional Location*). Located at 1133 Rosemont Avenue, the Project Site is just west of I-210 and north of SR-134. Local access to the Project Site is provided from Rosemont Avenue, Seco Street, Salvia Canyon Road, West Drive, West Washington Boulevard, and Rose Bowl Drive.

The Brookside Golf Course is located within Arroyo Seco Canyon in the western portion of Pasadena. The Arroyo Seco, a major tributary of the Los Angeles River, flows out of the San Gabriel Mountains in the northwestern portion of Pasadena, through Arroyo Seco Canyon, and ultimately to the Los Angeles River in downtown Los Angeles. As it flows through Pasadena, the Arroyo Seco passes three major areas that comprise Arroyo Seco Canyon: The Upper Arroyo Seco (Hahamonga Watershed Park); the Central Arroyo Seco (the Brookside Golf Course, Rose Bowl, and associated facilities); and the Lower Arroyo Seco. The Brookside Golf Course is located within the Central Arroyo Seco, and the Project Site is situated entirely within the interior of the existing golf course. Central Arroyo Seco is generally bounded by the Colorado Street Bridge to the south, Arroyo Boulevard and Arroyo Terrace to the east, I-210 to the north/east, and Linda Vista Avenue to the west.

Single-family residential neighborhoods bound the Central Arroyo Seco and the Brookside Golf Course to the east and west along the slopes of Arroyo Seco Canyon. The southeast portion of the Central Arroyo Seco also contains the Chandler School along Seco Street and some small areas developed with multi-family residential uses along Arroyo Terrace. Other surrounding land uses in the Central Arroyo Seco include the Rose Bowl, the Recreation Loop, Brookside Park, Kidspace Children's Museum, the Rose Bowl Aquatic Center, the Rosemont Pavilion, the Jackie Robinson baseball and softball diamonds, tennis courts, an amphitheater, recreation and equestrian trails, multipurpose fields, and parks. The Central Arroyo Seco comprises approximately 409 acres and is the most developed and active section of Arroyo Seco Canyon (City of Pasadena, 2003).

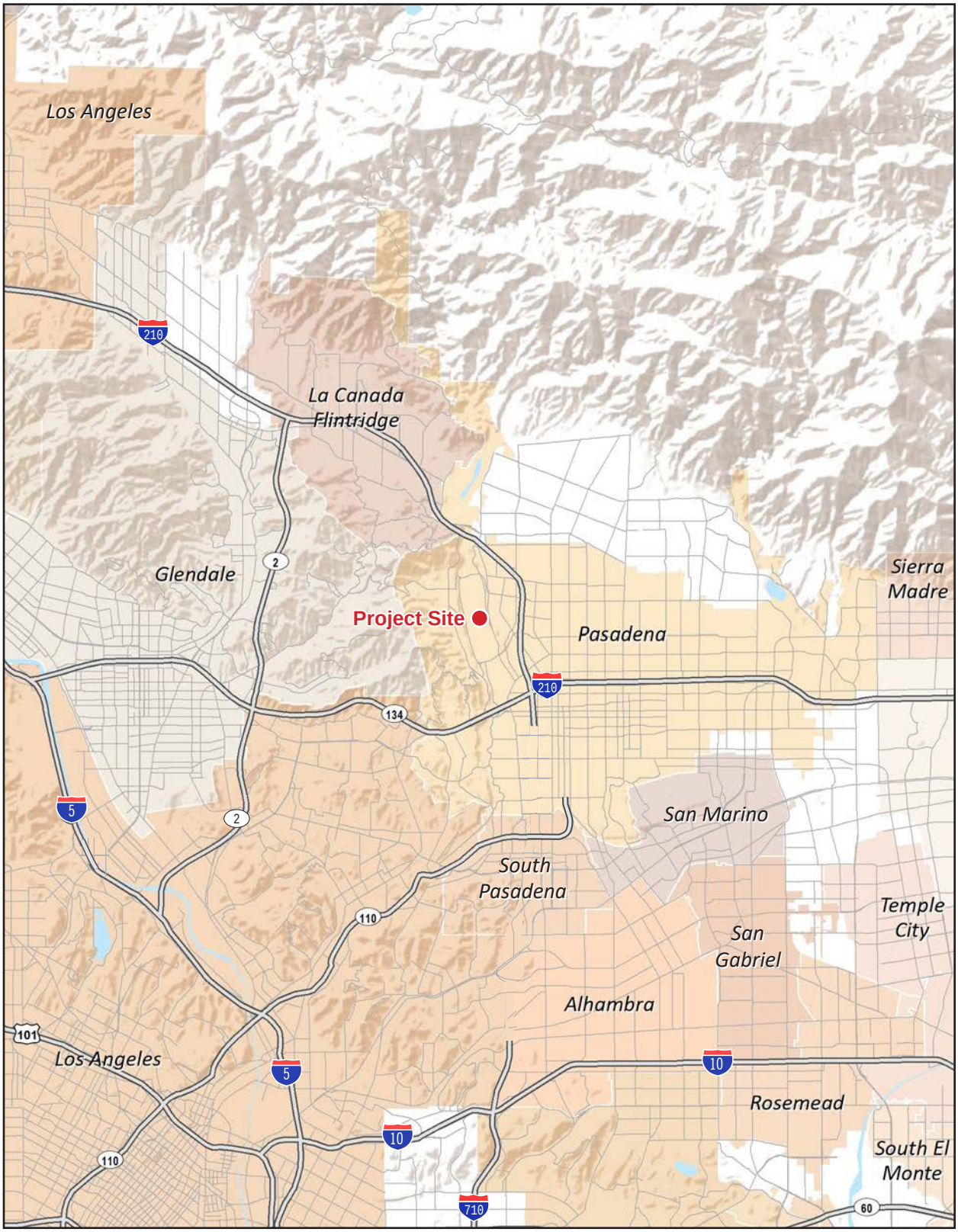
1.3 BROOKSIDE GOLF COMPLEX BACKGROUND AND EXISTING CONDITIONS

The Brookside Golf Course and Clubhouse (herein referred to as the Brookside Golf Complex) is managed by RBOC, a California non-profit, public benefit corporation, founded in 1995 by an act of the Pasadena City Council. Board members are appointed by the City Council, the City Manager, the Tournament of Roses, and the Chancellor of the University of California, Los Angeles (UCLA). The purpose of the RBOC is to enhance the economic and civic value of the Rose Bowl as a world-class stadium and the Brookside Golf Course as a professional-quality course.

First opened in 1928, the Brookside Golf Course is a public 36-hole complex designed by famed golf architect William P. Bell. Owned by the City of Pasadena, Brookside Golf Course features two 18-hole tracks: The C.W. Koiner Course, a par 72 course, and the E.O. Nay Course, a par-70 course. The Brookside Golf Complex includes the approximately 18,000-square-foot Brookside Clubhouse, which contains a full-service restaurant, lounge, banquet facilities, meeting rooms, and a retail golf shop. The restaurant and retail golf shop are open to the public daily.

The Brookside Golf Complex is part of a historic district, the Pasadena Arroyo Park and Recreation District (Historic District), which contains 27 contributing historic features (including the Brookside Golf Course) and was listed in 2009 on the National Register of Historic Places (NRHP) (#08000579) at the local level of significance under Criterion A in the areas of entertainment and recreation for its association with the development of Pasadena as a recreational mecca. The parks and recreation facilities and the public open spaces in the Historic District were nominated in the Cultural Landscapes category. A cultural landscape is a geographic area that includes both man-made and natural resources that are important in history.

Figure 1 - Regional Location



Note: Unincorporated county areas are shown in white.

Source: ESRI, 2021

0 2
Scale (Miles)

1. Project Description

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In addition to golf, the Brookside Golf Complex is also used for Rose Bowl "enterprise" events, attracting up to 20,000 people per event (as distinguished from the larger "displacement" events where attendance is between 20,000 and 90,000 and the golf course is used solely for parking). Some events are held on the golf course while others use the golf course for parking and event activations. Enterprise events typically include wedding ceremonies and receptions, corporate events, car shows, alumni events associated with football games at the Rose Bowl, parties, and celebrations, "Final Friday" events, and golf tournaments are hosted at the Brookside Golf Course. The golf course has also been host to the multi-day multi-stage Arroyo Seco Weekend event (in 2017 and 2018) and other similar events.

Historically, the Brookside Golf Complex has attracted up to 800,000 visitors each year. Each month the C.W. Koiner Course and the E.O. Nay Course receive between 10,000 to 16,000 rounds of golf, with the busiest months from May to August. As with the golf courses, the Brookside Clubhouse also attracts a similar usage in restaurant use and events. The Brookside Clubhouse has undergone extensive interior improvements on multiple occasions over the years.

The Brookside Golf Complex includes an existing driving range, which is located between the concrete-channeled Arroyo Seco Wash to the west, the Brookside Clubhouse to the east, and the C.W. Koiner Course to the north and south, as shown in **Figure 2**, *Exiting Project Site*. The driving range was developed on the Brookside Golf Course in 1929. In 1967, Hole 8 of the C.W. Koiner Course was moved across the Arroyo Seco Wash to allow for the expansion of the distance on the driving range. In 2004 the driving range was renovated with new tee lines, irrigation, mounds, and short game area. There are 20 hitting bays within the driving range that are generally oriented in a west-east direction, and practice putting greens are located adjacent to the eastern boundary of the existing driving range.

There are several paved surface parking lots in the Central Arroyo Seco to support the various active use areas. Parking lots closest to and directly serving the Brookside Golf Complex include Lots 1A and D, which are located just south of the Brookside Clubhouse and accessed from a driveway off Rosemont Avenue and Rose Bowl Drive. There are about 66 spaces in Lot 1A and 310 spaces in Lot D for a total of approximately 376 spaces within the three parking lots. Additional lots and street parking are located throughout the central arroyo area.

1.4 EXISTING PLANNING AND ZONING

Brookside Golf Complex is located within the OS (Open Space) zoning district and is designated as Open Space under the City of Pasadena's General Plan Land Use Element. This designation allows for a variety of active and passive public recreational facilities and for City-owned open space facilities. The residential neighborhoods surrounding the Brookside Golf Complex are primarily zoned single-family residential, and many are within the Hillside Development Overlay District.

1.5 DESCRIPTION OF PROJECT

1.5.1 Project Purpose

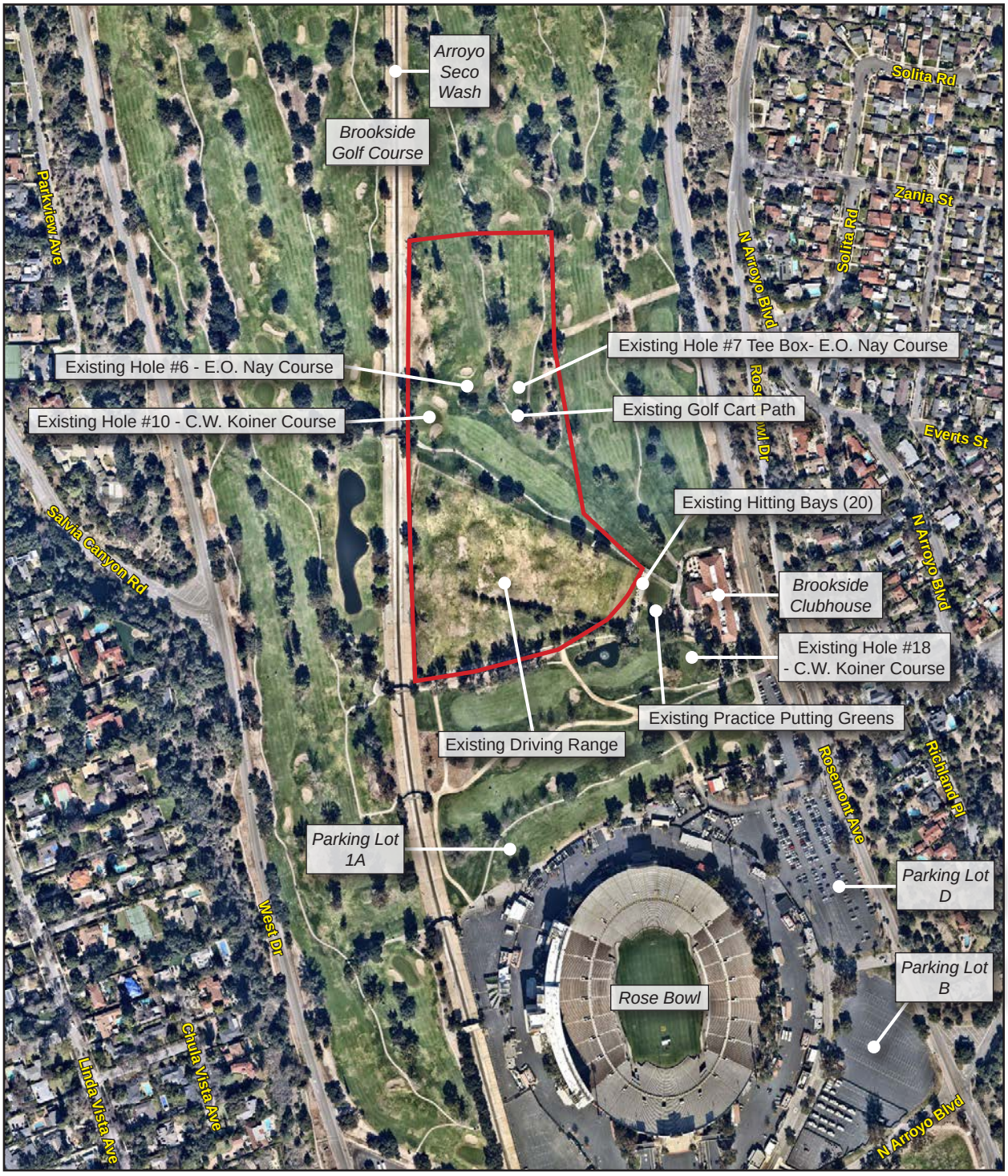
In March 2020, the State of California and City of Pasadena responded to the COVID-19 "stay–at-home" orders and recreational activity, including golf, was prohibited. The "stay-at-home" orders were lifted in part on May 8, 2020, and golfing activities were permitted to resume. Since the reopening of golf course activities, overall golf course use has surged, and the Brookside Golf Course has experienced high levels of attendance similar to peak years, such as 2015. Attendance and revenues are up approximately 22 percent from budget. Similar sized golf courses in Los Angeles County and City are seeing around a 20 percent increase as well.

There is currently an inadequate number of driving range stalls (less stalls than holes), and on most days, there is a line to use the driving range facilities. The proposed project would expand the driving range from 20 hitting bays to approximately 60 hitting bays. Expanding the number of stalls would serve the existing demand of golfers. Additionally, the Brookside Golf Course currently has over 1,300 members (known as the Players Club). It is anticipated that this membership number would increase with expansion of the driving range, as more individual golfers who already visit the golf course would take advantage of the membership benefits. Membership represents 30 percent of current play at the golf course, and the intent is to increase memberships (and therefore revenue) to existing players through the provision of these improved facilities. This increase in membership is not anticipated to increase attendance at the golf course, but rather to capture existing users.

In addition, the proposed project would add 36 family-friendly holes of miniature golf. The addition of the miniature golf would enable the golf course to further engage the youth and community that already live, recreate, and visit the Central Arroyo Seco area for recreational purposes. Based on a market study of the surrounding areas and other facilities in the area, it is anticipated that the miniature golf component of the Project will help further the engagement of youth and families into the game, the same way that the First Tee of Greater Pasadena has over the past decade.

The operation of the Rose Bowl and Brookside Golf Complex creates a critical stream of revenue that is essential to ensuring the overall maintenance and longevity of these important community resources. The RBOC has implemented other strategies to increase revenue such as increasing golfing fees in line with other golf courses in the Los Angeles Area. However, the RBOC has identified the need to ensure that the Brookside Golf Course continues to draw historical numbers of visitors. Additionally, the RBOC desires to implement these improvements to better serve existing programs for local golf programs including First Tee of Greater Pasadena that serves youth and veterans. Therefore, the RBOC has identified the need to implement improvements as described below that are intended to return the use and net revenue of the Brookside Golf Complex back to historical levels while broadening user-ship beyond individual golfers to families. In order to implement the improvements, the RBOC will initiate fundraising activities through the Rose Bowl Legacy Foundation to secure funds for final site plans and ultimately construction contractors.

Figure 2 - Existing Project Site



Project Site

0 500
Scale (Feet)

Source: Nearmap, 2021

1. Project Description

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1.5.2 Project Description

The Project consists of two main components within the approximate 16-acre Project Site: (1) reorient and expand the existing driving range toward the north; and (2) develop a new miniature golf course adjacent to the west of the proposed driving range. These elements, including operational and construction details, are described in detail below. A conceptual layout for the Project components is shown in **Figure 3**, *Driving Range and Miniature Golf Conceptual Site Plan* and would require the relocation of Hole 10 of the C.W. Koiner Course, shortening of Hole 6 and Hole 7 of the E.O. Nay Course, and relocation of an existing golf cart path.

Driving Range Improvements

The existing 9-acre driving range is situated from a generally east to west hitting experience and consists of 20 bays at the east end. It is surrounded by golf course netting on 64 poles between 20 to 50 feet high with lighting (currently nonoperational) and a row of perimeter trees on the southern side. It is an open grassy range with no ground features other than perimeter trees and several interior trees. The Project would remove existing netting, which are nearing the expected end of their lifespan, reduce the driving range to be approximately 8-acres, and reorient it in the same general location as the existing driving range (to maintain proximity to parking and the Brookside Clubhouse). A new safety net feature would be installed around the new driving range. The driving range would be bounded by Hole 10 and Hole 18 of the C.W. Koiner Course to the north and south, respectively; the proposed miniature golf course and the Arroyo Seco Channel to the west; and the existing putting greens and the Brookside Clubhouse to the east. A 6-foot golf cart path would be designated around the northern perimeter of the driving range. The proposed driving range would include 60 hitting bays at the southern end and would be reoriented to face north rather than west, as shown in Figure 3. Orientation to a south to north layout would limit disruption from sunrise/sunset. "Toptracer" technology, which provides instant shot replays and statistical feedback, would be installed within the driving range bays to enhance the golfer experience.

The proposed driving range would include 56 total poles, including 20 existing poles to remain and 36 new poles to be installed. The poles would support new netting and have a pole height ranging from 38 feet to 130 feet above ground level (increasing height with distance from the hitting bays) with an average pole height of 90.67 feet. An estimated 14 of the 56 poles would be light-mounted (at 60 feet in height) surrounding the perimeter of the driving range on the east and west sides. Poles and netting are shown in **Figure 4**, *Driving Range Poles and Netting*. LED lighting would be individually adjustable to ensure proper direction and avoidance of light spill into surrounding neighborhoods.

New turf and modified irrigation system, as well as other minor landscape modifications would be installed. Site furniture, signage, and markers would be updated. A new electrical service line with generator would be provided. The existing hitting bays would remain as a concrete pad, and no changes would occur to the existing practice putting greens.

Expansion and reorientation of the driving range would result in the shortening of Hole 6 and Hole 7 of the E.O. Nay Course, which is located approximately 60 yards north of the existing driving range. Approximately 220 yards on the golf course would be removed from play. Although the E.O. Nay Course would be reduced

1. Project Description

from a par-70 to par-69 with shortening of the two holes, the E.O. Nay Course would still cater to the less difficult experience. It is estimated that the pace of play on the golf course would be improved by five minutes (less than one golf shot). In addition, the Project would result in alterations to Hole 10 of the C.W. Koiner Course, however Hole 10 would maintain similar distance and shape. The hole would be relocated approximately 20 yards to the north; thus shortening two holes of the E.O. Nay that it would encroach upon (Hole 6 and Hole 7).

The existing golf courses, with the exception of Hole 10 of the C.W. Koiner Course, and Hole 6 and Hole 7 of the E.O. Nay Course, would remain unchanged by the Project, and no changes to the Brookside Clubhouse are proposed.

Miniature Golf Course

The Project includes development of a 36-hole miniature golf course on approximately one acre within the footprint of the existing driving range (relatively flat grassy area). The proposed miniature golf course would be located directly west of the proposed driving range and would be bounded by the Arroyo Seco Channel to the west, the proposed driving range to the east and north, and Hole 18 of the C.W. Koiner Course to the south (Figure 3 and Figure 4). The location of the miniature golf course is designed to minimize impacts to the remainder of the golf course, and to maintain proximity to the Brookside Clubhouse and parking areas.

Miniature golf is largely an exercise in putting so from a use standpoint miniature golf would continue the golf-related uses that currently occupy the Project Site. The design of the miniature golf area, however, would differ from a typical putting green, incorporating a complex arrangement of pathways and landscape elements with intermittent objects and structures. The structures are anticipated to be between 6 and 8-feet in height. The miniature golf course would be designed for family-friendly use and include topographic variation, low-level design, educational information, and low-level lighting to accentuate the player experience. The miniature golf course would include an 18-hole Americans with Disabilities Act (ADA)-accessible course with play options for 9 holes. Landscaping would include drought tolerate desert species between artificial turf.

Figure 3 - Driving Range and Miniature Golf Conceptual Site Plan

Source: Tanner Consulting, 2022

1. Project Description

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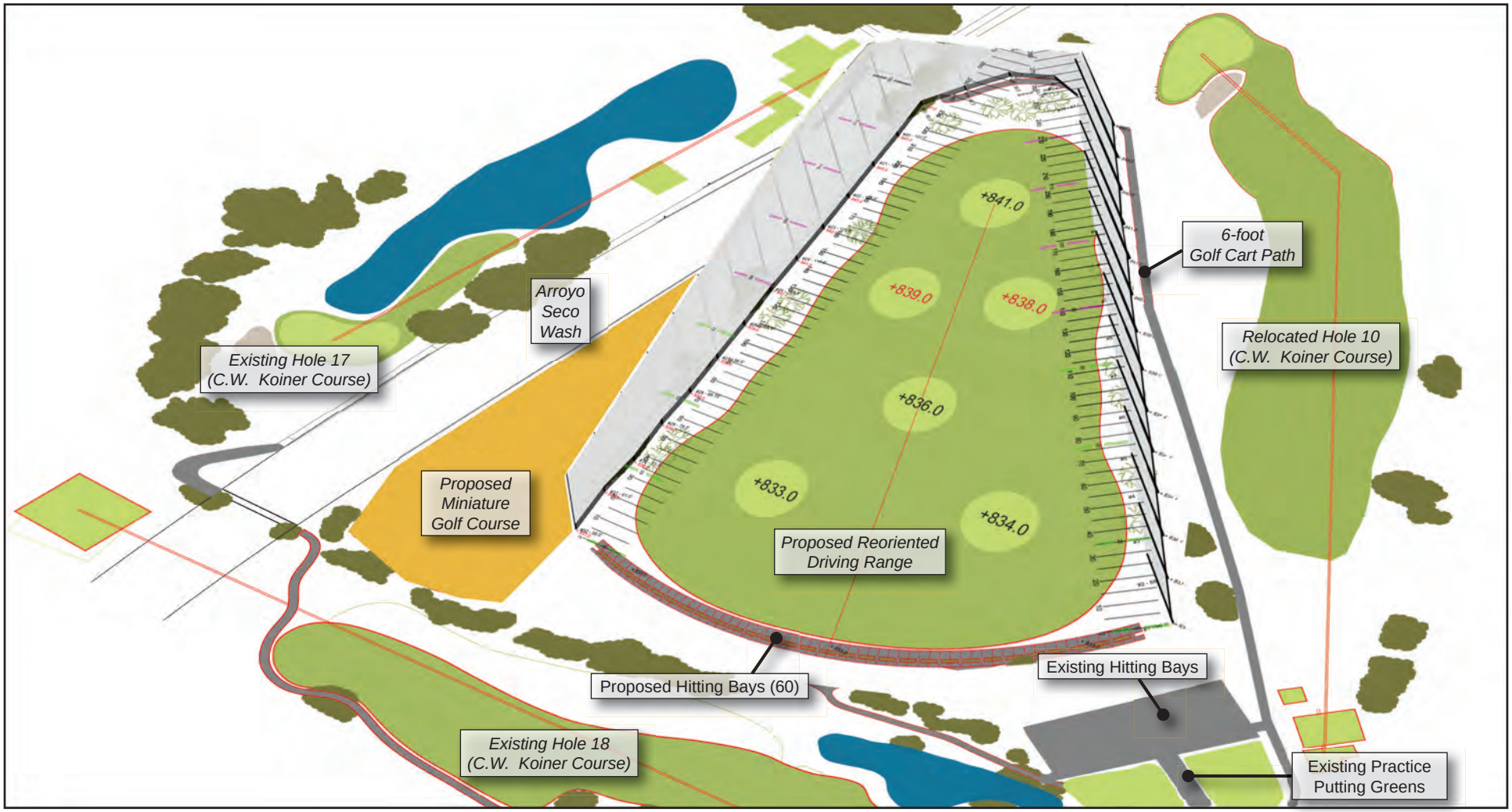
Figure 4 - Driving Range Poles and Netting



NO SCALE

Source: Tanner Consulting, 2020

1. Project Description

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1.5.3 Project Design

As described above regarding the funding process necessary for implementation, the Project is in the conceptual phase and the architect/designer and the ultimate design would be selected when funding is secured. While the location and size of the expanded driving range and proposed miniature golf course are identified and evaluated in this document, the final plans would come at a later time.

The RBOC would ensure that the design of the expanded and reoriented driving range and miniature golf course are compatible with existing design elements of the Brookside Golf Course Complex and are sensitive to the location within the Historic District, the Arroyo Seco, and the adjacent Rose Bowl. The Project would be subject to the City's Design Review process as defined in the Pasadena Municipal Code. The purpose of this process is to implement urban design goals and policies and Citywide design principles into project designs and to ensure that future developments reflect the values of the community, enhance the surrounding environment, visually harmonize with surroundings, and avoid nostalgic misrepresentations that may confuse the relationships among structures over time. This process would promote the protection and retention of landmark, native, and specimen trees and other significant landscaping of aesthetic and environmental value. Design review would also promote the conservation, enhancement, preservation, and protection of historic resources. The process would also specifically ensure that the policies and objectives of the Arroyo Seco Design Guidelines (City of Pasadena, 2003) are reflected in the design.

1.5.4 Operational Changes

The objective of the Project is to realize the existing capacity of the Brookside Golf Complex by increasing memberships and returning to historically higher levels of patronage use through the expansion of services to a broader range of visitors including families. The primary serving parking lots (1A and D) contain sufficient parking to accommodate the existing capacity of the golf course, and would be supplemented by additional parking in the various lots and street parking surrounding the Rose Bowl as in current conditions; thus, additional parking would not be necessary because visitors would not exceed the existing capacity of the golf course and sufficient existing parking is available to meet the needs of the Project.

Current operational hours of the driving range and golf course are from 6:00 a.m. to 8:00 p.m. seven days a week. The driving range and miniature golf course would be open to the public between 6:00 a.m. and 10:00 p.m. seven days a week (no change to golf course operation). Lighting could be on from dusk until closing, with lighting levels dimmed significantly (i.e., reduced to 75 percent illumination) to allow for limited cleaning/staff needs after closing. Similar to current operations, during displacement Rose Bowl events, the driving range would be used for parking and would not be in operation on special event days at the Rose Bowl. The project proposes no changes to the types and frequency of "enterprise events" that may occur on the golf course. However, it is anticipated that the miniature golf course could remain open during such events. The Brookside Golf Complex is currently served by approximately 100 employees, and operation of the Project would not require additional employees.

1.5.5 Construction Activities

As part of the reorientation of the driving range, some trees could be removed and/or relocated, which would be subject to review and approval by the City's Urban Forestry Advisory Committee (UFAC). Surficial grading would be required (no excavation) over the total approximately 16-acre Project Site. All soils would be balanced onsite, and no soil export would be required. Consistent with all other Rose Bowl construction and production delivery, any construction vehicles entering the area would use the Mountain/Seco exit off I-210 for ingress and egress.

Construction of the expanded and reoriented driving range would be implemented and operational prior to initiating construction activities on the miniature golf site, as the miniature golf would be located on a portion of the existing driving range. The exact timeline for construction activities will be dependent on the securing of sufficient funding; however, for the purposes of this analysis, it is anticipated that the construction of the driving range would take approximately eight months to complete, and for purposes of this analysis, beginning in 2023. During construction activities, closure of the existing driving range and a portion of the Brookside Golf Course would be required, and the existing driving range would not be operational. The remainder of the golf course would remain operational during construction. Once the driving range project is completed, it is anticipated that construction of the miniature golf course would begin and would take approximately four months to complete.

No road or sidewalk closures would be required during construction. Construction parking for the estimated maximum of 80 construction workers required for construction would be provided in the primary serving lots (1A and D) and would also be supplemented by additional parking in the various lots surrounding the Rose Bowl, as necessary. Construction activities would be limited between 7:00 a.m. to 7:00 p.m., Monday through Friday, 8:00 a.m. to 5:00 p.m., on Saturdays, and no construction activities are anticipated on Sundays or on federal holidays.

1.6 INTENDED USE OF THIS MND, RESPONSIBLE AGENCIES, AND PROJECT APPROVALS

Consistent with Section 15065(b) of the CEQA Guidelines, the RBOC is the Lead Agency for the Project. As such, RBOC would use this environmental document when considering whether to approve the Project. At a later date, the City of Pasadena, as a responsible agency, would also rely on this document to process the necessary Conditional Use Permit (CUP) request. In addition to the CUP process, the Project would also be subject to the City's Design Review process as defined in the Pasadena Municipal Code. There are no other responsible or trustee agencies associated with Project approval. The specific action that must be taken prior to approving the Project is:

Mitigated Negative Declaration (MND) Adoption. The Final MND would be considered for adoption by RBOC. At a later date, the City of Pasadena would use the Final MND for all land use decisions related to the Project.

The following permits and approvals would be required for the Project:

- RBOC – Allocation of initial funding, authorization to seek additional funding, and proceed with seeking bids for development of final design and construction plans, and undertaking/implementing the proposed project.
- City of Pasadena – Approval of CUP for Commercial Recreation – Outdoor Land Use for the modified driving range and miniature golf course.
- City of Pasadena – Design Review approval required for new development and alterations to all City-owned historic resources, including the Brookside Golf Course.

1. Project Description

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2. Environmental Checklist

2.1 PROJECT INFORMATION

1. **Project Title:** Brookside Golf Course Improvements Project

2. **Lead Agency**:
   Rose Bowl Operating Company
   1001 Rose Bowl Drive
   Pasadena CA 91103

3. **Contact Person and Phone Number:**
   Jenessa Castillo
   (626) 577-3104

4. **Project Location:** Brookside Golf Course, 1133 Rosemont Ave, Pasadena, CA 91103

5. **Project Sponsor's Name and Address:**
   Rose Bowl Operating Company
   1001 Rose Bowl Drive
   Pasadena CA 91103

6. **General Plan Designation:** Open Space

7. **Zoning:** Open Space

8. **Description of Project:** The Rose Bowl Operating Company (RBOC) proposes to reorient and expand the existing driving range and construct a new miniature golf facility (Project) within the existing driving range area at the Brookside Golf Course (or golf course). Project improvements would occur on approximately 16 acres within the exiting driving range, Hole 10 of the C.W. Koiner Course, and Holes 6 and 7 of the E.O. Nay Course (Project Site). See the Project Description in Section 1.5 for further details.

9. **Surrounding Land Uses and Setting:** Surrounding land uses in the immediate vicinity of the Project Site include the Rose Bowl Stadium and associated surface parking areas to the south, the remaining parts of the Brookside Golf Complex and Interstate 210 (I-210) to the north, and single-family residential on the slopes of the Arroyo Seco Canyon to the east and west. The residential neighborhoods surrounding the Brookside Golf Course are primarily zoned single-family residential, and many are within a hillside development district.

10. **Other Public Agencies Whose Approval Is Required (e.g., permits, financing approval, or participating agreement):** City of Pasadena – CUP approval and Design Review

2. Environmental Checklist

11. Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resources Code section 21080.3.1? If so, is there a plan for consultation that includes, for example, the determination of significance of impacts to tribal cultural resources, procedures regarding confidentiality, etc.?

Note: Conducting consultation early in the CEQA process allows tribal governments, lead agencies, and project proponents to discuss the level of environmental review, identify and address potential adverse impacts to tribal cultural resources, and reduce the potential for delay and conflict in the environmental review process. (See Public Resources Code section 21080.3.2.) Information may also be available from the California Native American Heritage Commission's Sacred Lands File per Public Resources Code section 5097.94 and the California Historical Resources Information System administered by the California Office of Historic Preservation. Please also note that Public Resources Code section 21082.3(c) contains provisions specific to confidentiality.

The RBOC and Gabrieleño Band of Mission Indians – Kizh Nation entered into consultation pursuant to Public Resources Code Section 21080.3.1 (AB 52) in June 2021. The results of this consultation are included in the corresponding analysis presented in this Initial Study Checklist. Consultation mutually closed on December 20, 2022.

2.2 ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact," as indicated by the checklist on the following pages.

☐ Aesthetics	☐ Agriculture / Forestry Resources	☐ Air Quality
☐ Biological Resources	☐ Cultural Resources	☐ Energy
☐ Geology/Soils	☐ Greenhouse Gas Emissions	☐ Hazards and Hazardous Materials
☐ Hydrology/Water Quality	☐ Land Use / Planning	☐ Mineral Resources
☐ Noise	☐ Population / Housing	☐ Public Services
☐ Recreation	☐ Transportation	☐ Tribal Cultural Resources
☐ Utilities / Service Systems	☐ Wildfire	☐ Mandatory Findings of Significance

2.3 DETERMINATION (TO BE COMPLETED BY THE LEAD AGENCY)

On the basis of this initial evaluation:

☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☒ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Signature

January 11, 2023
Date

Jenessa Castillo, Interim Chief Operations Officer

2. Environmental Checklist

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3. Environmental Analysis

3.1 AESTHETICS

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
I. AESTHETICS. Except as provided in Public Resources Code Section 21099, would the project:				
a) Have a substantial adverse effect on a scenic vista?			X	
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?				X
c) In nonurbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?			X	
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?		X		

Discussion

Except as provided in Public Resources Code Section 21099, would the Project:

a) Have a substantial adverse effect on a scenic vista?

Less Than Significant Impact. A scenic vista is defined as a viewpoint that provides expansive views of a highly valued landscape feature (e.g., a mountain range, lake, or coastline) or of a significant historic or architectural feature (e.g., views of a historic structure). Views from the Project Site include portions of the San Gabriel Mountains, the surrounding hillsides with residential development, the Brookside Golf Course, and the Rose Bowl Stadium. Additionally, the Project Site is located within the Pasadena Arroyo Seco Parks and Recreation District, which is a historic district in the City of Pasadena and is listed on the NRHP. Thus, areas surrounding the Project Site could contribute to a considered a scenic vista. The Project Site is situated within the Central Arroyo Seco, at elevations below the surrounding hillsides. **Figure 5**, *Photograph Location Map*, shows key view locations from areas within and surrounding the Project Site. Residential neighborhoods and roadways on the adjacent hillsides east and west of the Arroyo Seco have varied partial views of the Central Arroyo Seco, including the Brookside Golf Course (**Figure 6**, *Views of the Project Site from Offsite Locations*).

3. Environmental Analysis

The existing 9-acre driving range is situated from east to west and consists of 20 bays at the east end. It is surrounded by golf course netting on 64 poles between 20 to 50 feet high and a row of perimeter trees on the southern side (see **Figure 7**, *Views of the Project Site from within the Brookside Golf Course*). Implementation of the Project would reorient the driving range to face north rather than west, install 36 replacement poles in addition to 20 existing poles that would remain in place that would support new netting, and construct a new miniature golf course directly west of the proposed driving range. Pole height would range from 38 feet to 130 feet above ground level (increasing height with distance from the hitting bays) with an average pole height of 90.67 feet. Additionally, Project improvements would result in the relocation of Hole 10 of the C.W. Koiner Course and shortening of Holes 6 and 7 of the E.O. Nay Course which would have little to no visual change as it is a small feature at ground level and not visible from any surrounding location.

Typically, viewer sensitivity is considered high when views are provided that are commonly held as an important component of the recreational experience. In this area, views of the Rose Bowl Stadium, the canyon-like setting of the Arroyo Seco, and views of the surrounding hillsides with residential uses are considered an important part of the aesthetic backdrop. As described above, the average height of the proposed poles would be approximately 90.67 feet; each pole would be constructed with sufficient spacing throughout the perimeter of the proposed driving range similar to existing poles, and the new netting would be nearly transparent similar to existing netting. These replaced features would not block or interfere with the existing views of the surrounding areas. Thus, the reoriented driving range, including netting and poles, would not interfere with views of the San Gabriel Mountains, the Rose Bowl Stadium, or other scenic features located within the Pasadena Arroyo Seco Parks and Recreation District. Additionally, views from the surrounding hillsides of the Brookside Golf Course and Rose Bowl Stadium would not be altered as a result of the Project, since the poles and netting would not reach heights or are of a materiality or massing that could potentially block views from the hillsides, and the ample vegetation screens many views along these routes and would generally block the site from view. These changes to the driving range would be consistent with the overall existing character and features of the Brookside Golf Course and the Central Arroyo Seco and would not result in substantial adverse changes to the views of or from the Project Site.

Though ultimate design of the miniature golf course is not available at this time, once funding is secured and design is available, the Project would be required to go through the City of Pasadena's Design Review process as required by the Pasadena Municipal Code, prior to approval to ensure that the ultimate design is consistent with the Arroyo Seco Design Guidelines, reflects the values of the community, enhances the surrounding environment, and visually harmonizes with surroundings. The proposed miniature golf course would be designed to minimize impacts to the remainder of the Brookside Golf Course and would include low-level design (structures or features between 6 and 8-feet in height) and low-level lighting consistent with the existing golf uses at the Brookside Golf Course. The proposed miniature golf course would be located within the interior of the Brookside Golf Course, adjacent to the proposed driving range, and in proximity to the Brookside Clubhouse and parking areas. Thus, since the miniature golf course would only be directly visible to those visiting the driving range, Brookside Clubhouse, and golf

course, with only limited partial views from surrounding hillside areas, and it would not alter the views of the existing scenic vistas.

Additionally, to ensure that the ultimate Project design is executed to achieve a maximum level of compatibility with the Pasadena Arroyo Park and Recreational District, as required by Mitigation Measure CUL-1 (see below in Section V, *Cultural Resources*), the RBOC would retain a qualified historic preservation professional to ensure that alterations to the driving range, design of the miniature golf course, and overall modifications to the Golf Course are compatible with the existing Brookside Golf Course landscape and the Pasadena Arroyo Park and Recreational District.

Because the Project would be only partially visible from limited locations that would not result in a discernable change in the overall sweeping views of the Central Arroyo Seco, and because the ultimate Project design would go through a design review process to ensure compatibility, the Project would not result in a substantial adverse effect to scenic vistas from the Project Site, when compared to existing conditions. Additionally, the Project would not alter or obstruct views of the surrounding golf course, the Rose Bowl Stadium, the San Gabriel Mountains, or the Central Arroyo Seco from the surrounding neighborhood areas. Therefore, impacts would be less than significant.

b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

No Impact. According to the California Department of Transportation (Caltrans), a portion of I-210 that is located approximately 0.5 mile from the Project Site, is considered an eligible scenic highway, from Post Mile (PM) R0.0 to R25.0 (Caltrans 2020). However, while portions of the golf course are visible from I-210, the Project Site is not visible from the freeway. Additionally, implementation of the Project would take place entirely within the Brookside Golf Course and would not damage scenic resources located within or near I-210. Therefore, no impacts would occur.

c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?

Less than Significant Impact. The Project Site is located in the northwestern portion of Pasadena, with a land use designation of Open Space (City of Pasadena 2016), and is zoned Open Space (City of Pasadena 2018). The reoriented driving range would be situated on approximately 8 acres in the same general location of the existing driving range, to maintain proximity to parking and the Brookside Clubhouse. The Project would include reorientation and expansion of the driving range with 60 hitting bays, a new miniature golf course, relocation of Hole 10 of the C.W. Koiner Course, and shortening of Holes 6 and 7 of the E.O. Nay Course. Implementation of the Project would not require any land use or zoning changes within or near the Project Site. The Project would not interfere with view of the San Gabriel Mountains, the Rose Bowl Stadium, or any other features located within the Pasadena Arroyo Seco Parks and Recreation District.

3. Environmental Analysis

As described above, the Project would go through the City of Pasadena's Design Review process as required by the Pasadena Municipal Code, prior to approval, which would ensure that Citywide design principles are considered, that the policies and objectives of the Arroyo Seco Design Guidelines are reflected, and that the overall design reflects to values of the community and is visually compatible with its surroundings, which includes hillsides with residential development, the Brookside Golf Course, and the Rose Bowl Stadium. Objective 2 of the Green Space, Recreation and Parks Element calls for the preservation and protection of the Arroyo Seco and adjacent open space areas, which include the Brookside Golf Course; and identifies the need to recognize the importance of the history, cultural resources, and unique character of the Arroyo Seco. As described above, the Project would go through the City of Pasadena's Design Review process as required by the Pasadena Municipal Code, prior to approval, which would ensure it is consistent with the Arroyo Seco Design Guidelines. In addition, as described in Section V, *Cultural Resources*, below, the Project would not substantially affect the historical significance of the Brookside Golf Course. Thus, the Project would not conflict with applicable zoning and other regulations governing scenic quality. Therefore, impacts would be less than significant.

d) Create a new source of substantial light or glare which would adversely affect daytime or nighttime views in the area?

Less Than Significant Impact with Mitigation Incorporated. While there has been fixed lighting on the existing pole structures surrounding the driving range, they were previously decommissioned from use and there currently is no nighttime lighting of the driving range.

The Arroyo Seco Design Guidelines (City of Pasadena 2003) states that lighted facilities should be limited to designated high-use areas in the Central Arroyo sub-area and subject to environmental evaluation and approval by the Recreation and Parks Commission and Design Commission. The lights to be used in the driving range and miniature golf course would be located in the most active-use area of the Brookside Golf Course, consistent with this policy. Additionally, as stated in the City of Pasadena Zoning Code Section 17.40.080 (a):

> *Lighting shall be energy-efficient, and shielded. Lighting shall be energy-efficient, and shielded or recessed so that direct glare and reflections are confined to the maximum extent feasible within the boundaries of the site, and shall be directed downward and away from adjoining properties and public rights-of-way. No lighting on private property shall produce and illumination level greater than one foot-candle on any property within a residential zoning district except on the site of the slight source.*

Therefore, for the purposes of this analysis, the Project would have a significant impact on neighboring areas if the site lighting produces an illuminance of greater than 1.0 foot-candle on any residential property.

The Project would install pole lighting on 14 of the 36 netting poles that would be located around the reoriented driving range. The 14 light-mounted poles would include lighting structures at approximately 60 feet in height surrounding the perimeter of the driving range on the east and west sides, and from the hitting bays at the southern end of the driving range. The lighting to be installed would be a leading-edge light-emitting diode (LED) technology with wireless remote-control capability and directionality focused

downward to the driving range. The lighting technology would include spill and glare control, high-definition, and precise light targeting capabilities. Low-level lighting from the proposed miniature golf course would also be introduced on the Project Site. Lighting could be on from dusk until closing, with lighting levels dimmed significantly (i.e., reduced to 75 percent illumination) to allow for limited cleaning/staff needs after closing.

Lighting assessments of a conceptual lighting layout for the driving range, the most substantial element of proposed lighting, indicate that the light loss spill factor would be 0.95, less than the 1 foot candle threshold, at the property line (see Appendix A). Additionally, lighting for the Project would be screened from offsite residential receptors by the existing topography, mature vegetation, and the Brookside Clubhouse. All LED lighting would be individually adjustable to ensure proper direction and avoidance of light spill into surrounding neighborhoods. Additionally, to ensure that the ultimate Project design (including lighting components) is executed to achieve a maximum level of compatibility with the Pasadena Arroyo Park and Recreational District, Mitigation Measure CUL-1 requires the RBOC retain a qualified historic preservation professional to ensure that alterations to the driving range, design of the miniature golf course, and overall modifications to the Golf Course are compatible with the existing Brookside Golf Course landscape and the Pasadena Arroyo Park and Recreational District. This would ensure consistency with lighting requirements set forth in the Arroyo Seco Design Guidelines (City of Pasadena 2003), specifically Section 11.2, "Lighting".

The RBOC would ensure that the design of the relocated driving range and miniature golf course, including any new lighting elements, are compatible with existing design elements of the Brookside Golf Course and are sensitive to the location within the Historic District, the Arroyo Seco, and the adjacent Rose Bowl. The Project would also be subject to the City's Design Review process as defined in the Pasadena Municipal Code, which would further confirm that final design and lighting plans do not exceed 1.0 foot candle of light spill to offsite receptors. However, given final design of lighting features is conceptual and not known with certainty at this time, impacts related to light and glare are considered potentially significant. Therefore, Mitigation Measure AES-1 is required and would ensure further testing to ensure the 1.0 foot candle threshold is not exceeded.

MM-AES-1 Upon design of the Project, including both miniature golf and driving range lighting fixtures, RBOC shall prepare a quantified lighting study to confirm that final lighting configurations will not exceed 1.0 foot candle from the property line. Prior to installation of final lighting features, RBOC shall conduct a directional lighting test to further determine no exceedance of 1.0 foot candle of light spill.

3. Environmental Analysis

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Figure 5 - Photograph Location Map

Project Site

1 Photo Location and Direction from Golf Course

A Photo Location and Direction from Surrounding Golf Course

0 550
Scale (Feet)

Source: Nearmap, 2021

3. Environmental Analysis

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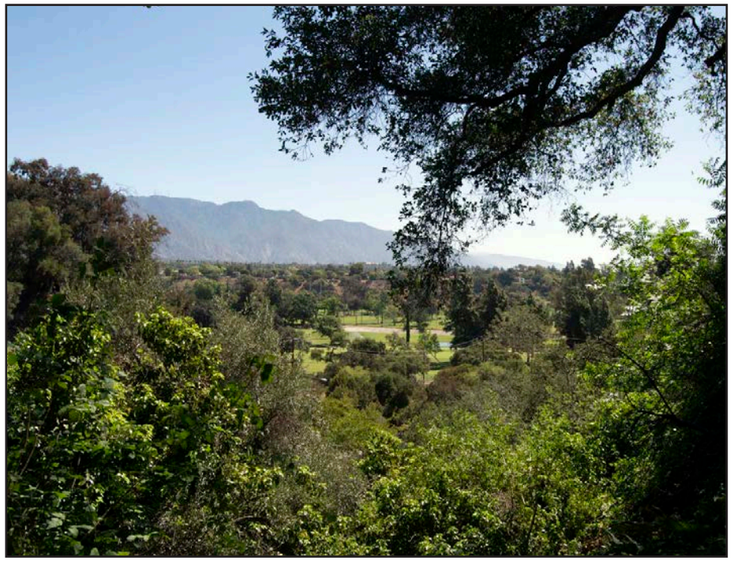
Figure 6 - Views of the Project Site from Offsite Locations

A - View from Rose Bowl Drive and Arroyo Boulevard - facing southwest.

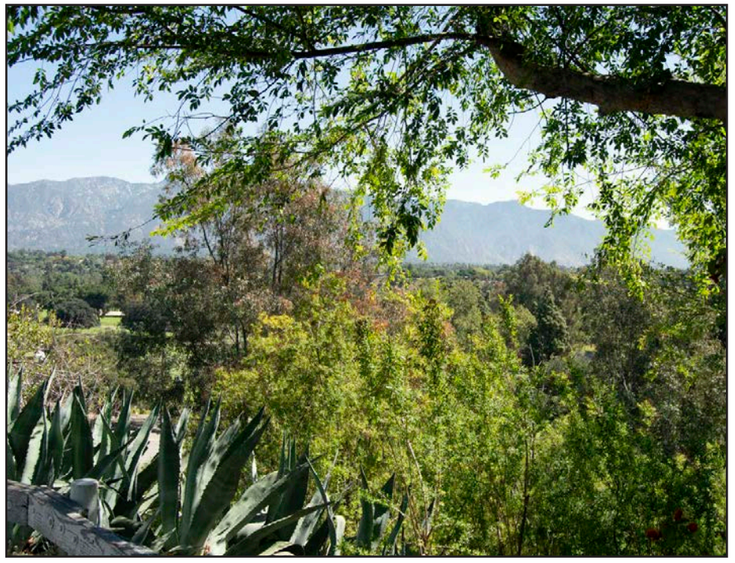
B - View from Arroyo Boulevard - facing west.

C - View from Washington Boulevard and Arroyo Boulevard - facing southwest.

D - View from Parkview Avenue - facing southeast.



E - View from Wabash Street - facing east.



F - View from Charles Street - facing east.

Source: PlaceWorks, 2021

3. Environmental Analysis

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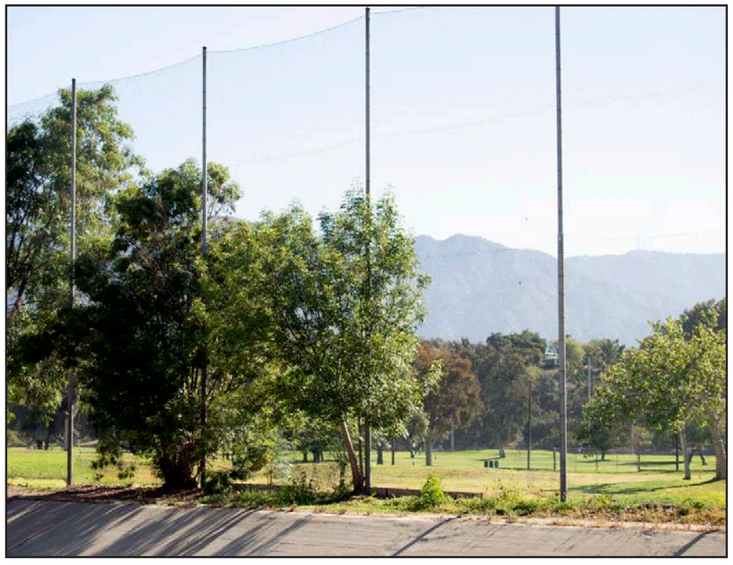
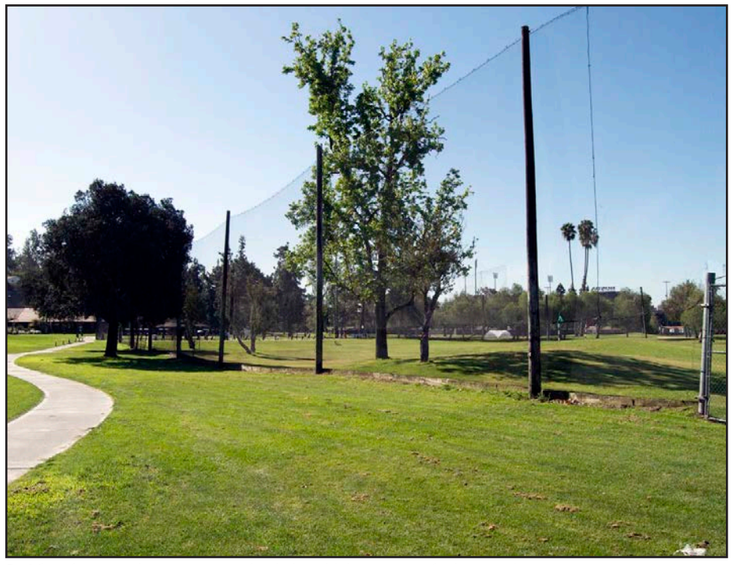
Figure 7 - Views of the Project Site from within the Brookside Golf Course

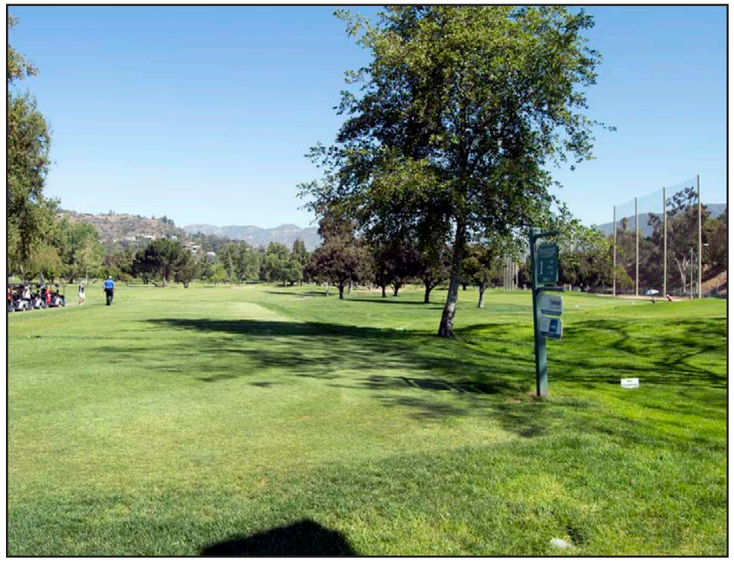
1 - View from southwest corner of existing driving range - facing northeast.



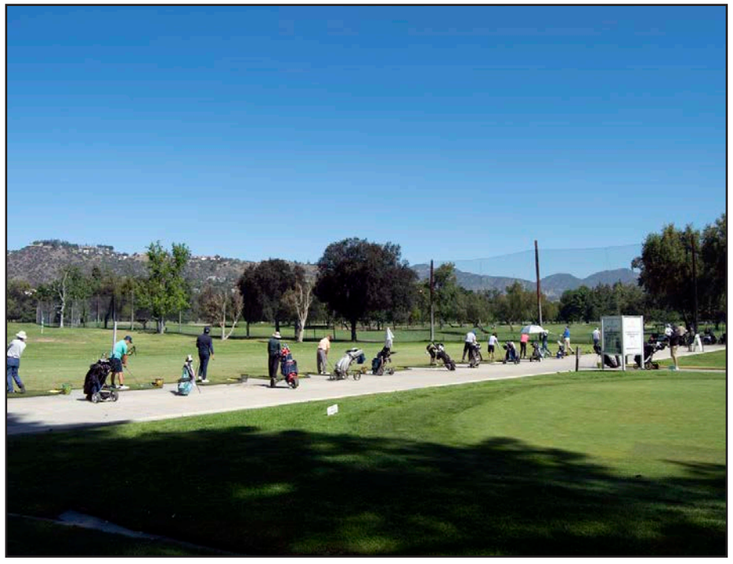
2 - View from west end of existing driving range - facing east.



3 - View from northwest corner of existing driving range - facing southwest.



4 - View from Brookside Clubhouse - facing north.



5 - View from existing practice putting greens - facing west.

6 - View from south end of existing driving range - facing east.

Source: PlaceWorks, 2021

3. Environmental Analysis

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3.2 AGRICULTURE AND FORESTRY RESOURCES

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
II. AGRICULTURE AND FORESTRY RESOURCES. In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?				X
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?				X
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?				X
d) Result in the loss of forest land or conversion of forest land to non-forest use?				X
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?				X

Discussion

Would the Project:

a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?

No Impact. The Project Site is located in the northwestern portion of Pasadena, with a land use designation of Open Space. The Project site is primarily surrounded by land uses designated as Low Density Residential (0-6 DU/Acre), and is located approximately a half-mile from land uses that include Institutional, Medium Density Residential (0-16 DU/Acre), Med-High Density Residential (0-32 DU/Acre), Low Commercial (0.0-1.0 FAR), Med Commercial (0.0-2.0 FAR), and Med Mixed Use (0.0-2.25 FAR, 0-87 DU/Acre) (City of Pasadena 2016). According to the California Department of Conservation (CDOC), pursuant to the Farmland Mapping and Monitoring Program (FMMP), the Project

Site is located within Urban and Built-Up Land, and the nearest farmland is located approximately 4.25 miles northeast of the Project Site (CDOC 2016). Thus, there are no Prime Farmland, Unique Farmland, or Farmland of Statewide Importance that would be converted to a non-agricultural use. Therefore, no impacts would occur.

b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?

No Impact. The Project Site is located within lands designated as Open Space by Pasadena General Plan Land Use Element, primarily surrounded by land uses designated as Low Density Residential (0-6 DU/Acre)(City of Pasadena 2016). According to the CDOC, pursuant to the FMMP, the Project Site is located within Urban and Built-Up Land, and the nearest farmland is located approximately 4.25 miles northeast of the Project Site (CDOC 2016). Land uses within or near the Project Area are not zoned for agricultural uses, and are not subject to a Williamson Act contract. According to the CDOC, there is no land within the City of Pasadena that is subject to a Williamson Act contract (CDOC 2018). Thus, the Project would not conflict with an agricultural use zoning or Williamson Act contract. Therefore, no impacts would occur.

c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?

No Impact. As discussed above, the Project Site has the zoning designation of Open Space primarily surrounded by developed uses. There are no forest or timberlands located within or in proximity to the Project Site. Thus, the Project would not conflict with a forest land or timberland zoning designation or result in the rezoning of forest land or timberland to non-forest uses. Therefore, no impacts would occur.

d) Result in the loss of forest land or conversion of forest land to non-forest use?

No Impact. According to the United States Department of Agriculture (USDA), the Project Site does not contain forest land, or timberland (USDA 2016). Thus, the Project would not result in the loss or conversion of forest land to non-forest uses. Therefore, no impacts would occur.

e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?

No Impact. There no farmlands located near the Project Site. The Project Site is located within Urban and Built-Up Land, and the nearest farmland is located approximately 4.25 miles northeast of the Project Site (CDOC 2016). Thus, the Project would not result in the conversion of farmland to a non-agricultural use. Therefore, no impacts would occur.

3.3 AIR QUALITY

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
III. AIR QUALITY. Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations. Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?			X	
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?			X	
c) Expose sensitive receptors to substantial pollutant concentrations?			X	
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?			X	

Discussion

The Air Quality section addresses the impacts of the Project on ambient air quality and the exposure of people, especially sensitive individuals, to unhealthful pollutant concentrations. A background discussion on the air quality regulatory setting, meteorological conditions, existing ambient air quality in the vicinity of the Project Site, and air quality modeling can be found in Appendix B.

The primary air pollutants of concern for which ambient air quality standards (AAQS) have been established are ozone (O_3), carbon monoxide (CO), coarse inhalable particulate matter (PM_{10}), fine inhalable particulate matter ($PM_{2.5}$), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), and lead (Pb). Areas are classified under the federal and California Clean Air Act as either in attainment or nonattainment for each criteria pollutant based on whether the AAQS have been achieved. The South Coast Air Basin (SoCAB), which is managed by the South Coast Air Quality Management District (South Coast AQMD), is designated nonattainment for O_3, and $PM_{2.5}$ under the California and National AAQS, nonattainment for PM_{10} under the California AAQS, and nonattainment for lead (Los Angeles County only) under the National AAQS (CARB 2021).

Furthermore, the South Coast AQMD has identified regional thresholds of significance for criteria pollutant emissions and criteria air pollutant precursors, including volatile organic compound (VOC), CO, NO_x, sulfur oxides (SO_x), PM_{10}, and $PM_{2.5}$. Development projects below the regional significance thresholds are not expected to generate sufficient criteria pollutant emissions to violate any air quality standard or contribute substantially to an existing or projected air quality violation. Where available, the significance criteria established by the South Coast AQMD may be relied upon to make the following determinations.

3. Environmental Analysis

Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations. Would the project:

a) Conflict with or obstruct implementation of the applicable air quality plan?

Less Than Significant Impact. A consistency determination plays an important role in local agency project review by linking local planning and individual projects to the air quality management plan (AQMP). It fulfills the CEQA goal of informing decision makers of the environmental efforts of the project under consideration at an early enough stage to ensure that air quality concerns are fully addressed. It also provides the local agency with ongoing information as to whether they are contributing to clean air goals in the AQMP.

The South Coast AQMD adopted the 2022 Air Quality Management Plan (AQMP) on December 2, 2022. Regional growth projections are used by South Coast AQMD to forecast future emission levels in the SoCAB. For southern California, these regional growth projections are provided by the Southern California Association of Governments (SCAG) and are partially based on land use designations included in city/county general plans. Typically, only large, regionally significant projects have the potential to affect the regional growth projections. In addition, the consistency analysis is generally only required in connection with the adoption of General Plans, specific plans, and significant projects. Changes in population, housing, or employment growth projections have the potential to affect SCAG's demographic projections and therefore the assumptions in South Coast AQMD's AQMP. These demographic trends are incorporated into SCAG's 2020–2045 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) to determine priority transportation projects and vehicle miles traveled in the SCAG region.

The Project would result in improvements to the existing Brookside Golf Course. As discussed in Section XIV, *Population and Housing*, the Project would not induce population growth as implementation of the Project would not involve the development of new housing or businesses within or adjacent to the Project Site. Additionally, as demonstrated below in Section III(b), the regional emissions that would be generated by the operational phase of the Project would be less than the South Coast AQMD emissions thresholds and would therefore not be considered by South Coast AQMD to be a substantial source of air pollutant emissions that would have the potential to affect the attainment designations in the SoCAB. Therefore, the Project would not affect the regional emissions inventory or obstruct implementation of the 2022 AQMP, and impacts would be less than significant.

b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?

Less Than Significant Impact.

The following describes project-related impacts from regional short-term construction activities and regional long-term operation of the Project.

Regional Short-Term Construction Impacts

Construction activities would result in the generation of air pollutants. These emissions would primarily be 1) exhaust from off-road diesel-powered construction equipment; 2) dust generated by construction activities; 3) exhaust from on-road vehicles; and 4) off-gassing of VOCs from paints and asphalt.

Construction activities for the Project are anticipated to disturb 11 acres on the 16-acre Project Site. The Project would involve demolition, site preparation, grading, utilities trenching, fencing, and paving. Construction of the driving range is anticipated to take approximately eight months, and for purposes of this analysis starting in 2023. Once the driving range project is completed, it is anticipated that the miniature golf project would begin and would take four months to complete. Construction emissions shown in **Table 1**, *Maximum Daily Regional Construction Emissions* were estimated using the California Emissions Estimator Model (CalEEMod), Version 2020.4, and are based on the preliminary construction duration and equipment mix provided by the RBOC. As shown in **Table 1**, *Maximum Daily Regional Construction Emissions*, and shows maximum daily emissions for VOC, NOx, CO, SO_2, PM_{10}, and $PM_{2.5}$ from construction-related activities would be less than their respective South Coast AQMD regional significance threshold values. Therefore, impacts to the regional air quality associated with construction of the Project would be less than significant.

Table 1 Maximum Daily Regional Construction Emissions

Construction Phase	Pollutants (lb./day)[1, 2, 3]					
	VOC	NO_X	CO	SO_2	PM_{10}	$PM_{2.5}$
Year 2022 (Driving Range)						
Demolition	3	26	21	<1	1	1
Site Preparation	3	33	20	<1	10	6
Grading	4	39	30	<1	6	3
Trenching and Fencing	2	14	11	<1	1	<1
Paving	1	12	16	<1	1	1
Year 2023 (Miniature Golf Course)						
Demolition	1	9	8	<1	1	<1
Site Preparation	1	9	5	<1	3	2
Grading	1	9	6	<1	3	1
Trenching and Paving	1	8	10	<1	1	<1
Paving	1	5	7	<1	<1	<1
Maximum Daily Construction Emissions						
Maximum Daily Emissions	4	39	30	<1	10	6
South Coast AQMD Regional Construction Threshold	**75**	**100**	**550**	**150**	**150**	**55**
Significant?	No	No	No	No	No	No

Source: CalEEMod Version 2020.4.

[1] Based on the preliminary information provided by the RBOC. Where specific information regarding project-related construction activities was not available, construction assumptions were based on CalEEMod defaults, which are based on construction surveys conducted by South Coast AQMD of construction equipment.

[2] Includes implementation of fugitive dust control measures required by South Coast AQMD under Rule 403, including watering disturbed areas a minimum of two times per day, reducing speed limit to 15 miles per hour on unpaved surfaces, replacing ground cover quickly, and street sweeping with Rule 1186–compliant sweepers.

[3] Modeling assumes construction would start in year 2023 for the most conservative emissions output. Later start dates would result in less emissions because CalEEMod assumes a more fuel-efficient construction equipment mix as older models are retired each year.

3. Environmental Analysis

Long-Term Operation-Related Air Quality Impact

Typical long-term air pollutant emissions are generated by area sources (e.g., landscape fuel use, aerosols, architectural coatings, and asphalt pavement), energy use (natural gas), and mobile sources (i.e., on-road vehicles). The Project would reorient and expand the driving range, install replacement poles that would support new netting, and construct a new miniature golf on the Project Site. Overall, the facility would operate consistent with the existing and past uses. The purpose of the Project is to realize the existing capacity of the Brookside Golf Complex by increasing memberships and returning to historically higher levels of patronage use through the expansion of services to a broader range of visitors including families. However, to provide a conservative analysis, and to reflect trip generation prepared by the City (see Appendix F) operational trips were assumed and modeled to calculate operational air quality emissions. As shown in **Table 2**, *Maximum Daily Regional Operation Emissions*, it is anticipated that operation of the Project would result in overall minimal emissions and would not exceed the South Coast AQMD regional operation-phase significance thresholds. Impacts to the regional air quality associated with operation of the Project would be less than significant.

Table 2 Maximum Daily Regional Operation Emissions

Source	Maximum Daily Emissions (lbs./Day)					
	VOC	NO_x	CO	SO_2	PM_{10}	$PM_{2.5}$
Max Daily Emissions						
Area	<1	<1	<1	0	<1	<1
Energy	0	0	0	0	0	0
Mobile	1	2	15	<1	3	1
Total	1	2	15	<1	3	1
South Coast AQMD Regional Threshold	**55**	**55**	**550**	**150**	**150**	**55**
Exceeds Threshold?	No	No	No	No	No	No

Source: CalEEMod Version 2020.4.
Notes: lbs.: Pounds. Highest winter or summer emissions are reported.

c) Expose sensitive receptors to substantial pollutant concentrations?

Less Than Significant Impact. The Project could expose sensitive receptors to elevated pollutant concentrations if it causes or significantly contributes to elevated pollutant concentration levels. Unlike regional emissions, localized emissions are typically evaluated in terms of air concentration rather than mass so they can be more readily correlated to potential health effects.

Construction LSTs

Localized significance thresholds (LSTs) are based on the California AAQS, which are the most stringent AAQS to provide a margin of safety in the protection of public health and welfare. They are designated to protect sensitive receptors most susceptible to further respiratory distress, such as asthmatics, the elderly, very young children, people already weakened by other disease or illness, and people engaged in strenuous work or exercise. The screening-level construction LSTs are based on the size of the Project Site, distance to the nearest sensitive receptor, and Source Receptor Area (SRA). The nearest offsite sensitive receptors are the residences along Wotkyns Drive to the east of the Project Site.

Air pollutant emissions generated by construction activities would cause temporary increases in air pollutant concentrations. **Table 3**, *Localized Construction Emissions – Driving Range*, and **Table 4**, *Localized Construction Emissions – Miniature Golf Course*, show that the maximum daily construction emissions (pounds per day) for NO_x, CO, PM_{10}, and $PM_{2.5}$ construction emissions would be less than their respective South Coast AQMD screening-level LSTs for both the driving range and miniature golf course. Therefore, air quality impacts from project-related construction activities would be less than significant.

Table 3 Localized Construction Emissions – Driving Range

Construction Activity	Pollutants(lbs./day)[a]			
	NO_X	**CO**	**PM_{10}[b]**	**$PM_{2.5}$[b]**
South Coast AQMD ≤1.00 Acre LST	69	535	19.38	5.57
Demolition	26	21	1.24	1.16
Trenching and Fencing	13	11	0.77	0.72
Paving	12	15	0.59	0.54
Exceeds LST?	No	No	No	No
South Coast AQMD 3.50 Acre LST	123	1,176	36.12	9.36
Site Preparation	33	20	10.02	5.80
Exceeds LST?	No	No	No	No
South Coast AQMD 4.00-Acre LSTs	131	1,297	39.21	10.11
Grading	39	29	5.57	3.07
Exceeds LST?	No	No	No	No

Source: CalEEMod Version 2020.4. South Coast AQMD 2008 and 2011.
Notes: In accordance with South Coast AQMD methodology, only onsite stationary sources and mobile equipment are included in the analysis. Screening level LSTs for NO_x and CO LSTs are based on 82 ft receptor (employees), while PM_{10} and $PM_{2.5}$ LSTs are based on 250 ft receptors (residences) in SRA 8 as employees would not be onsite 24hrs/day.
[a] Based on the preliminary information provided by the RBOC. Where specific information for project-related construction activities or processes was not available modeling was based on CalEEMod defaults. These defaults are based on construction surveys conducted by the South Coast AQMD.
[b] Includes fugitive dust control measures required by South Coast AQMD under Rule 403, such as watering disturbed areas a minimum of two times per day, reducing speed limit to 15 miles per hour on unpaved surfaces, replacing ground cover quickly, and street sweeping with Rule 1186–compliant sweepers.

Table 4 Localized Construction Emissions – Miniature Golf Course

Construction Activity	Pollutants(lbs./day)[a]			
	NO_X	**CO**	**PM_{10}[b]**	**$PM_{2.5}$[b]**
South Coast AQMD ≤1.00 Acre LST	69	535	19.38	5.57
Demolition	9	8	0.43	0.40
Site Preparation	9	5	3.19	1.80
Grading	9	5	2.47	1.42
Trenching and Paving	8	9	0.46	0.42
Paving	5	7	0.23	0.22
Exceeds LST?	No	No	No	No

Source: CalEEMod Version 2020.4. South Coast AQMD 2008 and 2011.
Notes: In accordance with South Coast AQMD methodology, only onsite stationary sources and mobile equipment are included in the analysis. Screening level LSTs for NO_x and CO LSTs are based on 82 ft receptor (employees), while PM_{10} and $PM_{2.5}$ LSTs are based on 250 ft receptors (residences) in SRA 8 as employees would not be onsite 24hrs/day.
[a] Based on the preliminary information provided by the RBOC. Where specific information for project-related construction activities or processes was not available modeling was based on CalEEMod defaults. These defaults are based on construction surveys conducted by the South Coast AQMD.

[b] Includes fugitive dust control measures required by South Coast AQMD under Rule 403, such as watering disturbed areas a minimum of two times per day, reducing speed limit to 15 miles per hour on unpaved surfaces, replacing ground cover quickly, and street sweeping with Rule 1186–compliant sweepers.

Construction Health Risk

Emissions from construction equipment primarily consist of diesel particulate matter (DPM). In 2015, the Office of Environmental Health Hazards Assessment (OEHHA) adopted guidance for preparation of health risk assessments, which included the development of a cancer risk factor and non-cancer chronic reference exposure level for DPM over a 30-year time frame (OEHHA 2015). Currently, South Coast AQMD does not require the evaluation of long-term excess cancer risk or chronic health impacts for a short-term project. The Project is anticipated to be completed in approximately eight months for the driving range and four months for the miniature golf course, which would limit the exposure to onsite and offsite receptors. Furthermore, construction activities would not generate onsite exhaust emissions that would exceed the screening-level construction LSTs. Thus, construction emissions would not pose a health risk to onsite and offsite receptors, and project-related construction health impacts would be less than significant.

Operation LSTs

Operation of the Project would not generate substantial emissions from onsite stationary sources. Land uses that have the potential to generate substantial stationary sources of emissions include industrial land uses, such as chemical processing and warehousing operations where truck idling would occur onsite and would require a permit from South Coast AQMD. The Project involves improvements to a portion of the Brookside Golf Course and would not fall within these categories of uses. In addition, operation of the driving range and miniature golf course would not use standard onsite mechanical equipment such as heating, ventilation, and air conditioning. Thus, localized air quality impacts related to operation-related emissions would be less than significant.

Carbon Monoxide Hotspots

Vehicle congestion has the potential to create pockets of CO called hotspots. Hotspots are typically produced at intersections, where traffic congestion is highest because vehicles are backed-up and idle for longer periods and are subject to reduced speeds. These pockets could exceed the state one-hour standard of 20 parts per million (ppm) or the eight-hour standard of 9.0 ppm. Because CO is produced in greatest quantities from vehicle combustion and does not readily disperse into the atmosphere, adherence to ambient air quality standards is typically demonstrated through an analysis of localized CO concentrations.

The SoCAB has been designated attainment under both the national and California AAQS for CO. Under existing and future vehicle emission rates, a project would have to increase traffic volumes at a single intersection by more than 44,000 vehicles per hour—or 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited—in order to generate a significant CO impact (BAAQMD 2017). The Project-related net increase of 37 PM peak hour vehicle trips would be minimal compared to the AAQS screening levels. The Project would not substantially increase CO hotspots at intersections and impacts would be less than significant.

d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

Less Than Significant Impact. The Project would not result in objectionable odors. The threshold for odor is if a project creates an odor nuisance pursuant to South Coast AQMD Rule 402, Nuisance, which states:

A person shall not discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property. The provisions of this rule shall not apply to odors emanating from agricultural operations necessary for the growing of crops or the raising of fowl or animals.

The type of facilities that are considered to have objectionable odors include wastewater treatments plants, compost facilities, landfills, solid waste transfer stations, fiberglass manufacturing facilities, paint/coating operations (e.g., auto body shops), dairy farms, petroleum refineries, asphalt batch plants, chemical manufacturing, and food manufacturing facilities. The Project involves improvements to a portion of the Brookside Golf Course and would not fall within the objectionable odors land uses. Emissions from construction equipment, such as diesel exhaust and volatile organic compounds from architectural coatings and paving activities may generate odors. However, these odors would be low in concentration, temporary, and would not affect a substantial number of people. Odor impacts would be less than significant.

3.4 BIOLOGICAL RESOURCES

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
IV. BIOLOGICAL RESOURCES. Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?		X		
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?			X	
c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?				X
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?		X		
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?		X		
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?				X

Discussion

Information contained within this discussion is based on the following documents, which can be found as appendices to the Initial Study/MND.

- Biological Resources Assessment for the Brookside Golf Course Improvement Project, ESA 2020 (Appendix C).
- Tree Report for the Brookside Golf Course Improvements Project, ESA 2020 (Appendix C)

Would the Project:

a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?

Less Than Significant Impact with Mitigation Incorporated. The Project Site is located within a landscaped and developed area within the Brookside Golf Course, which contains various paved and developed surfaces, with little to no native vegetation or soils that could support sensitive biological resources. The golf course vegetation is highly landscaped and regularly maintained and does not support sensitive species. The miniature golf course would form the western boundary of the driving range, and would be locate adjacent to the Arroyo Seco channel. The channel flows north-south and provides connectivity to the Upper Arroyo/Hahamongna Watershed Park to the north of Project Site. This segment of the Arroyo Seco is concrete lined with no vegetation and does not support sensitive species. Central Arroyo Seco could serve as a suitable corridor for native resident wildlife to move through the area, particularly medium to large mammals such as coyote (*Canis latrans*), Virginia opossum (*Didelphis virginiana*), mule deer (*Odocoileus hemionus*), and raccoon (*Procyon lotor*), which may forage within the landscaped vegetation of the golf course during nighttime hours when it is closed. Additionally, other wildlife located within or around the Project Site include Anna's hummingbird (*Calypte anna*), house finch (*Carpodacus mexicanus*), American kestrel (*Falco sparverius*), California towhee (*Melozone crissalis*), Northern mockingbird (*Mimus polyglottos*), spotted towhee (*Pipilo maculatus*), bushtit (*Psaltriparus minimus*), lesser goldfinch (*Spinus psaltria*), Bewick's wren (*Thryomanes bewickii*), mourning dove (*Zenaida macroura*), California ground squirrels (*Otospermophilus beecheyi*), and Botta's pocket gopher (*Thomomys bottae*).

One special-status species has the potential to reside in the Project Site. Cooper's hawk (*Accipiter cooperii*) (designated as being on the State Watch List and State Special Animal) has a moderate potential to forage and breed within 500 feet of the Project Site and may be affected by Project construction activities. Mitigation Measures MM-BIO-1 and MM-BIO-2 would be implemented to avoid impacts to nesting birds during construction as well as any potential indirect impacts that may be created by additional nighttime light sources during operation. Therefore, impacts would be less than significant with mitigation measures incorporated.

MM-BIO-1. If construction activities occur within the bird nesting season (generally defined as February 15 through September 15), a qualified biologist shall conduct a nesting bird survey within 3 days prior to the proposed start date, to identify any active nests (including Cooper's hawk) within 500 feet of the project site. If an active nest is found, the nest shall be avoided, and a suitable buffer zone shall be delineated in the field such that no impacts shall occur until the chicks have fledged the nest as determined by a qualified biologist. Construction buffers shall be 300 feet for passerines and up to 500 feet for any raptor species; however, avoidance buffers may be reduced at the discretion of the biologist, depending on the location of the nest and species tolerance to human presence and construction-related noises and vibrations.

MM-BIO-2. To minimize potential indirect impact to nesting birds that may utilize ornamental/landscape vegetation onsite and/or wildlife movement along the Arroyo Seco, nighttime lighting associated with the driving range and miniature golf course shall be shielded downward to limit spillage onto these sensitive receptors.

b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?

Less Than Significant Impact. No critical habitat was found within the Project Site. Three distinct communities are located within the Project Site: landscaped vegetation, developed land use, and unvegetated concrete-lined channel. The developed and landscaped areas present no riparian or other sensitive natural community. While the Arroyo Seco is located immediately adjacent to the Project Site, this segment of the channel is concrete lined, and it does not support riparian habitat. Additionally, the Project would have no impact to the channel, directly or indirectly. The golf uses are already existing along this entire segment of the Arroyo Seco and would not change conditions. Therefore, impacts would be less than significant.

c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

No Impact. Wetlands are areas where water covers the soil, or is present either at or near the surface of the soil all year or for varying periods of time during the year, including during the growing season (US EPA 2018). According to the National Wetland Inventory (NWI), the Arroyo Seco channel, which would form the western boundary of the driving range, is considered a Riverine habitat; however, the Project would not result in any construction or indirect impacts to the channel. Additionally, there are no state or federally protected wetlands near or within the Project Site (USFWS 2021). Therefore, no impacts would occur.

d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

Less Than Significant Impact with Mitigation Incorporated. The Project Site is located within a modified and landscaped area within the Brookside Golf Course, which contains various paved and developed surfaces, with little to no native vegetation or soils that could support sensitive biological resources. The Arroyo Seco channel, which would be located along the western edge of the Project Site, could serve as a suitable corridor for native resident wildlife to move through the area, particularly medium to large mammals such as coyote, bear, deer, and mountain lion.

The mature trees that occur on and adjacent to the Project Site, including within the surrounding area, provide foraging and breeding opportunities for common wildlife, such as California ground squirrels (*Otospermophilus beecheyi*), and Botta's pocket gopher (*Thomomys bottae*). In addition, the landscaping and mature trees located on and surrounding the Project Site could provide suitable nesting habitat for avian species protected under the Migratory Bird Treaty Act (MBTA), including Anna's hummingbird (*Calypte anna*), house finch (*Carpodacus mexicanus*), American kestrel (*Falco sparverius*), California towhee (*Melozone crissalis*), Northern mockingbird (*Mimus polyglottos*), spotted towhee (*Pipilo maculatus*), bushtit (*Psaltriparus minimus*), lesser goldfinch (*Spinus psaltria*), Bewick's wren (*Thryomanes bewickii*), mourning dove (*Zenaida macroura*), particularly during the nesting season that generally occurs from February through August. Disturbing or destroying active nests is a violation of the MBTA (16 U.S.C. 703 et seq.) and active nests and eggs are protected in accordance with Fish and

Game Code Section 3503. Avian species that could build a nest on the Project Site are species that would typically occur in urban environments and already occur on the golf course and would be relatively accustomed to a high level of human presence and noise and light disturbance.

As discussed below, implementation of the Project could potentially require the removal of trees located within the Project Site, which could result in direct impacts to active bird nests, as well as indirect impacts to nests that may occur in adjacent trees through noise and vibration that may be generated during construction activities. However, Mitigation Measures MM-BIO-1 and MM-BIO-2 would be implemented to avoid impacts to nesting birds during construction. Therefore, impacts are anticipated to be less than significant with mitigation incorporated.

e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

Less Than Significant Impact with Mitigation Incorporated. The City's Trees and Tree Protection Ordinance (Title 8, Chapter 8.52) (Tree Ordinance) defines a Protected tree as "a native, specimen, landmark, landmark-eligible, mature (except for the trees in RS or RM-12 Zones), or public tree". Furthermore, it defines native trees as:

> "any tree with a trunk more than 8 inches in diameter at a height of 4 ½ feet above natural grade that is one of the following species: *Quercus agrifolia* (coast live oak), *Quercus engelmanii* (Engelmann oak), *Quercus chrysolepis* (canyon oak), *Platanus racemosa* (California sycamore), *Juglans californica* (California walnut), *Quercus berberidifolia* (scrub oak), *Quercus lobata* (valley oak), *Umbellularia californica* (California bay), *Populus fremontii* (cottonwood), *Alnus rhombifolia* (California alder), *Populus trichocarpa* (black cottonwood), *Salix lasiolepis* (arroyo willow), and *Aesculus californica* (California buckeye)."

In accordance with the Tree Ordinance, public trees are defined as "a tree located in a place or area under ownership or control of the city including but without limitation streets, parkways, open space, parkland, and including city owned property under the operational control of another entity by virtue of a lease, license, operating or other agreement". Mature trees are defined as "an otherwise non-protected tree with a diameter-at-breast-height (DBH) of 19 inches or greater". The City also provides a list[1] of tree species and criteria of trees that possess distinctive form, size or age at certain trunk diameters or heights, herein referred to as 'specimen' trees. Specimen trees are also considered protected.

The Project Site is located within the Brookside Golf Course, which includes numerous trees throughout the golf course grounds. All trees located within the boundaries of the Brookside Golf Course are considered public trees and are therefore protected under the Ordinance. There are 81 trees within the Project Site that are therefore protected in accordance with Tree Ordinance. Construction of the Project would result in direct and indirect impacts to protected trees.

[1] https://www.cityofpasadena.net/wp-content/uploads/sites/52/2017/06/TPO_6-Specimen-Tree-List.pdf

3. Environmental Analysis

As described above, the ultimate design of the Project would be developed at a later date depending on timing of funding. Therefore, the final number of trees that would require removal or relocation is dependent on the final boundaries of the Project. However, it is estimated that implementation of the Project could potentially require the removal of up to 47 protected trees located within the Project Site to accommodate the reoriented driving range and miniature golf course, 16 trees could be encroached upon to accommodate project construction, and 18 protected trees within the survey area could be avoided. In addition, trees qualifying as specimen or native also exist within the grading limits of the Project and are included in the aforementioned trees that could be removed, encroached and avoided.

Protected trees located in proximity to the Project Site could be encroached upon to accommodate project construction resulting in indirect impacts. Project-related activities such as excavation, trenching, soil compaction, change of grade, drainage, pruning, mechanical damage from construction equipment, landscaping, and irrigation may negatively affect the root system of trees in the vicinity without implementing protective measures. These activities have the potential to negatively affect not only the encroached trees, but also other trees present in the vicinity of construction activities.

When the Project goes through the design development, RBOC would ensure that tree removals are limited and that as many trees are retained as part of the design to the extent that public safety and feasibility regarding golf course design allows. Additionally, the Project would be required to go through the City's Design Review process, which would promote the protection and retention of landmark, native, and specimen trees and other significant landscaping of aesthetic and environmental value. Furthermore, vegetation, including trees, would be included as part of the final design. As such, tree removals would be minimized to the extent possible and consistent with ongoing regular tree maintenance and safety requirements.

All tree removals as well as construction activities in proximity to trees that would be retained would be required to follow the City's Tree Protection Guidelines (City of Pasadena 2019). This includes the following required elements:

Regarding Tree Removals:

- For tree removals, the City Manager will notify the abutting property owners and applicant ten days prior to the removal. For three or more public trees the City Manager will also notify the City Council, Design Commission, and any known neighborhood association.

- Requests for the removal of a landmark, native and specimen tree will be denied unless one of the following findings is made:

    - There is a public benefit, or a public health, safety, or welfare benefit, to the injury or removal that outweighs the protection of the specific tree (public benefit means a public purpose, service, or use which affects residents as a community and not merely as particular individuals); or

    - The present condition of the tree is such that it is not reasonably likely to survive; or

    - There is an objective feature of the tree that makes the tree not suitable for protection; or

- There would be a substantial hardship to a private property owner in the enjoyment and use of real property if the injury or removal is not permitted; or
- To not permit the injury or removal would constitute a taking of the underlying real property; or
- The project includes a landscape design plan that will result in a tree canopy coverage of greater significance than the tree canopy coverage being removed, within a reasonable time after completion of the project.

- In addition, a request for the removal of a landmark tree will be denied unless the procedures specified for the removal of landmarks and the granting of a certificate of appropriateness is first followed. Relocation of a specimen or native tree will be treated as a removal.
- Tree removal requests with a discretionary action will be reviewed by the applicable decision-maker. Decisions on tree removal are subject to standard appeal and call-for-review procedures. Specimen and native tree removal requests, not associated with any discretionary action, will be reviewed by the City Manager or designated staff, with a decision rendered 15 days after the application has been deemed complete. In this case, the appeal process is the same as for a planning director decision.

Regarding Tree Protection for Retained Trees:

- Preparation of a Tree Protection Plan to ensure that all preserved trees within or adjacent to the property will be protected during construction activities, as well as in perpetuity following completion of the Project.
- Establishment of a Tree Protection Zone (TPZ) to the extent of the tree dripline plus four radial feet
- Protective fencing (6-foot high minimum) and subject to City staff approval
- Pre-construction meeting with City staff to discuss tree protection measures
- Inspection of rough grading, any work in TPZs, as well as periodic inspections

Additionally, any landscaping installed as part of the Project would be consistent with Section 2.2, "Landscape Improvements" of the Arroyo Seco Design Guidelines, and would preserve the historical heritage of the City of Pasadena and the Arroyo Seco, preserve and protect natural resources, use California native/drought tolerant plant species, and use turf varieties that are water conserving, tolerant of heavy use, and not dependent on chemical fertilizers for their success.

Overall, compliance with the City's Design Review process and Tree Ordinance including preparation of the required Tree Protection Plan would ensure impacts related to the protection of biological resources, such as a tree preservation policy or ordinance, to be less than significant.

3. Environmental Analysis

f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

No Impact. The Project Site is located a developed area, entirely within the Brookside Golf Course. According to the California Department of Fish and Wildlife (CDFW) the Project Site is not located within an adopted habitat conservation plan, natural community conservation plan, or similar plan (CDFW 2021). Therefore, no impact would occur.

3.5 CULTURAL RESOURCES

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
V. CULTURAL RESOURCES. Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource pursuant to § 15064.5?		X		
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5?		X		
c) Disturb any human remains, including those interred outside of dedicated cemeteries?			X	

Discussion

Information contained within this discussion is based on the following document, which can be found as Appendix D to the Initial Study/MND.

- Historical Resources Technical Report for the Brookside Golf Course Improvement Project, Historic Resources Group, 2021 (Appendix D).

Would the Project:

a) Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?

Less Than Significant Impact with Mitigation Incorporated.

History of the Brookside Golf Course

The Brookside Golf Course is one of the oldest golf courses in Los Angeles County. The City of Pasadena had planned on the development of a golf course in the Arroyo since 1918. Funding for its construction was confirmed by the City of Pasadena in 1922. While a course was staked out between Lester Avenue (now Seco Street) and Dakota Street (now Washington Boulevard), the City lacked the funds to construct it. After several false starts, the first nine holes of a golf course were constructed in 1925 and opened to the public on July 4th of that year. The completed C.W. Koiner Course was opened to the public in 1928. In 1929 the Brookside Clubhouse was completed and formally opened to the public. Later, the first half of E.O. Nay Course was completed in 1931. The two courses and clubhouse were designed by William P. Bell, a distinguished Southern California golf course architect active in the 1920s through the 1940s.

In the 1960s the golf course become known as the Brookside Golf Course. During this time, it went through substantial improvement to the facilities and the original Brookside Clubhouse was replaced with a new structure designed by architect William Randolph. Additionally, in 1967, upgrades to the golf courses were designed by distinguished golf course architect Desmond Muirhead.

3. Environmental Analysis

Historic Resource Listings

The Brookside Golf Course is considered a contributing site to the Pasadena Arroyo Park and Recreation District, which was listed in the NRHP in 2008. Because it is listed in the NRHP, the District is also listed in the California Register of Historical Resources and is considered a historical resource for the purposes of CEQA.

The Historic District was determined eligible for listing at the local level under NRHP Criterion A for its association with parks and recreation development in Pasadena. The period of significance for the Historic District is 1909–1939. It contains 24 contributing buildings, structures, and sites. On the Brookside Golf Course property, both the C.W. Koiner Course and the E.O. Nay Course are considered collectively as a contributing site. A restroom building at the northern portion of the E.O. Nay Course is also considered a contributing building.

Impact Analysis

The Project consists of two main components: (1) reorient and expand the existing driving range; and (2) develop a new miniature golf course adjacent to the proposed driving range. Potential impacts of both features are addressed below.

Driving Range

As noted above, the driving range has been in its existing location historically since at least 1930. Component parts, particularly the design, location and number of driving bays have been changed over time, but the following aspects have been largely consistent:

- The location west of the Brookside Clubhouse.
- The triangular shape widening and hitting from east to west.
- The spatial arrangement of tee line and driving bays located at the eastern end of the range and the range fairway stretching west.
- Landscape areas, putting greens and/or trees located between the Brookside Clubhouse and the driving range.
- Flanking fairways to the north and south
- Western limit defined by the flood control channel

The driving range would generally remain in its original location west of the Brookside Clubhouse, but it would be reoriented to face south-north and concede space for a new miniature golf use to the west. The overall size and dimensions of the driving range, however, have changed throughout its history, including during the late 1960s when the (then) 8th hole was moved to the west side of the flood control channel allowing for the driving range to be lengthened approximately 40 yards to the west. The location of tee lines

and putting greens have also been changed, effectively expanding and contracting the length of the driving range.

The driving range would retain its triangular shape common to driving ranges, but the triangle would be canted so that the narrow end of the triangle is to the north. More importantly, the primary orientation of the driving range (hitting east to west) would be shifted to a south-north orientation. Spatial arrangements would also be altered with the primary tee line driving bays relocated along the southern portions of the range and the driving range fairway stretching north. A south-north orientation for the driving range, however, is not without precedent. A tee line located at the southern edge of the driving range has been in existence since the late 1960s when a secondary tee line was introduced as a night range. The southern tee line (hitting south to north) has been enhanced and expanded since that time and is currently used for instructional purposes.

The Project would install a total of 36 poles to support protective netting with many of the netting support poles substantially taller than what exists today. There are currently 64 poles of which approximately 20 would remain for a total of 56 poles. Support poles and safety netting have been part of the driving range since the 1950s; lighting poles were added in the late 1960s with the introduction of a night range. In addition, tall poles and safety netting are present in many areas along the perimeter of the Golf Course Complex. As such, support poles and safety netting have been part of the Brookside Golf Course landscape for decades.

Golf course fairways would continue to flank the driving range to the north and south. C.W. Koiner Course Hole 10 to the north would be altered by an extended fairway and relocated green. E.O. Nay Course Hole 6 and Hole 7 would also be shortened to accommodate the change to the C.W. Koiner Course Hole 10. Despite these alterations, Hole 6, Hole 7, and Hole 10 would still read as a tee, fairway and green in the same locations.

When looked at in total, changes to the driving range proposed by the Project would be relatively minor. Although the primary east-west orientation of the driving range would be changed to a south-north orientation, the driving range already incorporates a southern tee line and south-to-north hitting for instruction purposes. The introduction of new and in some cases taller poles for safety netting and lighting would continue infrastructure elements that have been integral to the driving range since the 1950s. The area would continue to be used as a driving range as it has since at least 1930 and it would contain the wide expanse of fairway, tee line driving bays, safety netting, and support poles that have characterized the driving range for decades.

Miniature Golf Course

The area west of the driving range between the driving range and the flood channel would host a new 36-hole miniature golf course. Miniature golf is largely an exercise in putting so from a use standpoint miniature golf would continue the golf-related uses that currently occupy the Project Site. The design of the miniature golf area, however, would differ from a typical putting green, incorporating a complex arrangement of pathways and landscape elements with intermittent objects and structures anticipated to be between 6 and 8-feet in height.

The Brookside Golf Course has been characterized by a distinctive landscape comprising tees, fairways, greens, bunkers, lake hazards, mature trees and perimeter stone walls. The net effect is a naturalistic and unified landscape that is not only coherent to itself but seamlessly relates to the natural landscape of the arroyo and

surrounding hillsides. The miniature golf course would introduce a new design element to the Brookside Golf Course. Design of a miniature golf course is necessarily complex with many elements compiled into a relatively small area. The theme aspect of the design can also introduce an esthetic at odds with the historic character of the Golf Complex.

With the introduction of a new design element acknowledged, the proposed miniature golf course would be located at what is currently the far end of the driving range bordered by the concrete flood channel, an area that isn't generally traversed by golfers and hasn't been for decades. In addition, the entire miniature golf area would be approximately one acre in size out of the approximately 230 acres total that comprise the Brookside Golf Course. In other words, approximately 0.4 percent of the total Brookside Golf Course would be affected by the construction of the miniature golf course.

Summary

For the Project to result in a substantial adverse change, it must be shown that the integrity and/or significance of the Brookside Golf Course would be materially impaired by the proposed alteration. When looked at in total, reorienting and expanding the existing driving range would be relatively minor and it would continue to be used as a driving range as it has since at least 1930. The miniature golf course would construct a new design element at the Brookside Golf Course that can potentially present a different aesthetics than the historic character of the Brookside Golf Course. The miniature golf course would consist of approximately one acre, or 0.4 percent, of the approximately 230 acres total that comprise the Brookside Golf Course.

As described above, it is estimated that implementation of the Project could potentially require the removal of up to 47 protected trees located within the Project Site to accommodate the reoriented driving range and miniature golf course, 16 trees could be encroached upon to accommodate project construction, and 18 protected trees within the survey area could be avoided. The number and location of trees on the Brookside Golf Course have changed over the years. And even with the tree removals, the overwhelming majority of the site elements that characterize the Brookside Golf Course would continue to retain their original location, general overall boundaries, and routing; thus, the Brookside Golf Course would continue to maintain a substantial amount of integrity.

All alterations included in the Project would be in areas that have previously been altered and changed over time. Additionally, the Project would not destroy or alter the physical characteristics that make the Brookside Golf Course a historical listing as a contributing feature of the Pasadena Arroyo Park and Recreation District. Because the majority of the site elements that characterize the Brookside Golf Course would continue to retain their original location, general overall boundaries, and routing, the Brookside Golf Course would continue to convey its historic significance.

The Project would be subject to the City's Design Review process as defined in the Pasadena Municipal Code. The purpose of this process is to implement urban design goals and policies and Citywide design principles into project designs and ensure that future development reflect the values of the community, enhance the surrounding environment, visually harmonize with surroundings, and avoid nostalgic misrepresentations that may confuse the relationships among structures over time. The Design Review process would ensure consistency with the Arroyo Seco Design Guidelines, specifically Section 4.2, "Cultural Resources

Preservation". This process would promote the protection and retention of landmark, native, and specimen trees and other significant landscaping of aesthetic and environmental value. Design review would also promote the conservation, enhancement, preservation, and protection of historic resources.

However, given there is no final design available at this time, there could be a potentially significant indirect impact related to the larger Pasadena Arroyo Park and Recreational District. Therefore, Mitigation Measure CUL-1 is required and would ensure that design of the Project would avoid any impacts to the historical resource.

MM-CUL-1. To ensure that the ultimate Project design is executed to achieve a maximum level of compatibility with the Pasadena Arroyo Park and Recreational District, RBOC shall retain a qualified historic preservation professional to ensure that alterations to the driving range, design of the miniature golf course, and overall modifications to the C.W. Koiner and E.O. Nay Courses are compatible with the existing Brookside Golf Course landscape, the Pasadena Arroyo Park and Recreational District, and the policies set forth in the Arroyo Seco Design Guidelines including Section 3.2, "Public Use Structures". This will include consideration of design elements including but not limited to the form and materials of new circulation paths and driving bays; the placement, dimensions and materiality of driving range netting support poles; netting color and transparency; and lighting placement, brightness, and intensity. Design issues to be considered by the qualified historic preservation professional for the miniature golf course include but are not limited to grading and topographic changes; new plantings, trees, and vegetation; the scale, form, and materiality of theme features; perimeter fencing and security/safety elements; signage and wayfinding; and lighting placement, brightness, and intensity.

b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?

Less Than Significant Impact with Mitigation Incorporated. Archaeological resources are cultural resources of prehistoric or historic origin that reflect human activity. Archaeological resources include both structural ruins and buried resources. The term "unique archaeological resource" is defined in PRC Section 21083. 2(g).

> … 'unique archaeological resources' means an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

1) Has information needed to answer important scientific research questions and there is a demonstrable public interest in that information.

2) Has a special and particular quality such as being the oldest of its type or the best available example of its type.

3) Is directly associated with a scientifically recognized important prehistoric or historic event or person.

3. Environmental Analysis

The Project Site and all surrounding areas have been extensively modified by construction of the Brookside Golf Course, the Rose Bowl Stadium, parking lots, and roadways. The Project Site is also continuously disturbed through active use for golf, regular maintenance and landscaping, and parking during certain events at the Rose Bowl. Prior development of the Project Site and larger Brookside Golf Course has required grading and filling, which resulted in extensive ground disturbance. Additionally, limited areas of undisturbed ground surface are located within or near the Project Site, due to extensive paving and landscaping, and regular landscaping maintenance of the golf course.

Construction of the relocated and expanded driving range and miniature golf course would require some grading and limited excavation, with all disturbed soils balanced onsite. Although the potential for discovery of archaeological resources within the Project Site is minimal, implementation of MM CUL-2 would address the treatment of cultural resources that may be inadvertently discovered during construction. Therefore, impacts would be less than significant with MM CUL-2 incorporated (see also Mitigation Measures MM-TCR-1, 2, and 3 in Section XVII, *Tribal Cultural Resources*, below for more information).

MM-CUL-2. Prior to the initiation of any earthmoving activity in which native soil is disturbed (as defined in the future geotechnical investigation that will be prepared for the Project Site), the RBOC shall be responsible for retaining a qualified archaeologist to observe grading activities and to salvage and catalogue archaeological resources, as necessary. Mitigation Measure TCR-1 below also requires a Native American Monitor during all ground disturbing activity. If historical or unique archaeological resources are discovered during construction activities, all work shall stop, and a qualified archaeologist would be retained to make an evaluation of significance of the resource. If it is determined to be historical or a unique archaeological resource, or if the discovery is not historical or unique but the archaeologist determines the possibility of further discoveries, a monitoring program shall be prepared and implemented for the remainder of the earthwork activities. Additionally, if archaeological resources that could be of Native American importance, or Native American resources are discovered, Mitigation Measures MM-TCR-1, 2 and 3 would be implemented.

c) Disturb any human remains, including those interred outside of dedicated cemeteries?

Less Than Significant Impact. During construction of the current land uses, extensive earthwork (excavation and grading) occurred. Additionally, earthmoving activities required for Project construction are relatively limited. Therefore, human remains are not anticipated. In the unlikely event that human remains are uncovered during Project construction, Government Code Sections 27460 et seq. mandate that there shall be no further excavation or soil disturbance until the Los Angeles County Coroner has determined that the remains are not subject to the provisions of Section 27491 of the Government Code or any other related provisions of law concerning investigation of the circumstances, manner, and cause of death, and the required recommendations concerning the treatment and disposition of the human remains have been made to the person responsible for the excavation, or to his or her authorized representative, in the manner provided in PRC Section 5097.98.

Pursuant to California Health and Safety Code Section 7050.5, the coroner shall make his or her determination within two working days of notification of the discovery of the human remains. If the coroner determines that the remains are not subject to his or her authority and recognizes or has reason to believe that they are those of a Native American, he or she shall contact the Native American Heritage Commission within 24 hours. Compliance with existing regulations would ensure that impacts related to the discovery of human remains would be less than significant. Additionally, mitigation contained in MM-TCR-3 would be enforced with respect to human remains of tribal affiliation.

3.6 ENERGY

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
VI. ENERGY. Would the project:				
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?			X	
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?				X

Discussion

A background discussion on the energy regulatory setting and energy calculations can be found in Appendix B to this Initial Study.

Would the Project:

a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

Less Than Significant Impact. The Project would result in short-term construction and long-term operational energy consumption. The following discusses the potential energy demands from activities associated with the construction and operation of the golf course.

Short-Term Construction Impacts

Construction of the Project would create temporary increased demands for electricity and vehicle fuels compared to existing conditions and would result in short-term transportation-related energy use.

Electrical Energy

Electricity use during construction of the Project would vary during different phases of construction. The majority of construction equipment would be gas- or diesel-powered, and electricity would not be used to power most of the construction equipment. Later construction phases could result in the use of electricity-powered equipment for completing small structures and architectural coatings. However, it is anticipated that the majority of electric-powered construction equipment would be hand tools (e.g., power drills, table saws) and lighting, which would result in minimal electricity usage during construction activities. Therefore, project-related construction activities would not result in wasteful or unnecessary electricity demands, and impacts would be less than significant.

Natural Gas Energy

It is not anticipated that construction equipment used for the Project would be powered by natural gas, and no natural gas demand is anticipated during construction. Therefore, impacts would be less than significant with respect to natural gas usage.

Transportation Energy

Transportation energy use depends on the type and number of trips, vehicle miles traveled, fuel efficiency of vehicles, and travel mode. Transportation energy use during construction would come from the transport and use of construction equipment, delivery vehicles and haul trucks, and construction employee vehicles that would use diesel fuel and/or gasoline. It is anticipated that the majority of off-road construction equipment, such as those used during demolition and grading, would be gas or diesel powered. Energy consumption during construction was calculated using the CalEEMod (Version 2020.4) computer model and data from the EMFAC2017 (v. 1.0.3) and OFFROAD2017 (v. 1.0.1) databases. The results are shown in **Table 5**, *Construction-Related Fuel Usage*.

To limit wasteful and unnecessary energy consumption, the construction contractors are anticipated to minimize nonessential idling of construction equipment during construction, in accordance with 13 California Code of Regulations (CCR) Section 2449. In addition, construction trips would not result in unnecessary use of energy since the Project Site is centrally located and is served by numerous regional freeway systems (e.g., I-210, I-710, and SR-134) that provide the most direct routes from various areas of the region. Furthermore, electrical energy would be available for use during construction from existing power lines and connections, precluding the use of less efficient generators. Moreover, all construction equipment would cease operating upon completion of Project construction. Thus, energy use during construction of the Project would not be considered inefficient, wasteful, or unnecessary. Impacts would be less than significant.

Table 5 Construction-Related Fuel Usage

	Gas		Diesel		Electricity	
Project Component	**VMT**	**Gallons**	**VMT**	**Gallons**	**VMT**	**kWh**
Construction Worker Commute	71,416	2,520	518	12	1,107	364
Construction Vendor Trips	367	73	4,117	511	0	0
Construction Off-Road Equipment	N/A	1,509	N/A	36,051	N/A	0
Total	**71,783**	**4,101**	**4,635**	**36,574**	**1,107**	**364**

Source: CalEEMod Version 2020.4; EMFAC2017 Version 1.0.3; OFFROAD2017 Version 1.0.1. Modeling uses the EMFAC 2017 vehicle mix, which includes electric vehicles.
Notes: VMT = vehicle miles traveled; kWh = kilowatt hour

Long-Term Impacts During Operation

Operation of the Project would create increased demands for electricity and vehicle fuels compared to existing conditions.

3. Environmental Analysis

Electrical Energy

Operation of the Project would require additional electricity to power the new light poles and miniature golf course to be installed. Electrical service to the Project would be provided by Pasadena Water and Power (PWP) through connections to existing off-site electrical lines and new on-site infrastructure. As shown in **Table 6**, *Electricity Consumption*, implementation of the Project would result in an estimated 31,098 kilowatt hours of electricity use per year.

Table 6 Electricity Consumption

	Electricity (kWh/year)
Driving Range Lighting[1]	31,098

[1] Electricity use is based on lighting specifications for the proposed driving range as provided by the RBOC and assumes that the lighting will be operational for 4 hours per day, 365 days per year. Please see Appendix B for lighting calculations.

While the Project could result in a higher electricity demand than existing conditions, the new lighting on the Project Site would use LED lights. In addition, these lights would only be operated during the evening. Therefore, operation of the Project would not result in wasteful or unnecessary electricity demands and would not result in a significant impact related to electricity.

Natural Gas Energy

Operation of the Project would not generate additional demand for electricity and natural gas on the Project Site. Therefore, the Project would not result in wasteful or unnecessary natural gas demands and would result in a less than significant impact.

Transportation Energy

The purpose of the proposed project is to realize the existing capacity of the Brookside Golf Complex by increasing memberships and returning to historically higher levels of patronage use through the expansion of services to a broader range of visitors including families. However, to provide a conservative analysis, and to reflect trip generation prepared by the City (see Appendix F) operational trips were assumed and modeled to calculate energy consumption. Therefore, it is assumed that the Project would generate additional transportation energy use during operations from the use of motor vehicles. The efficiency of these motor vehicles is unknown, such as the average miles per gallon. Estimates of transportation energy use are based on the overall vehicle miles traveled (VMT) and associated transportation energy use. The Project-related VMT would primarily come from the visitors to the Brookside Golf Course. The VMT for the Project is estimated to be 4,364 miles daily or 1,588,536 miles annually, as shown in **Table 7**, *Project Annual Operation-Related Fuel Usage*. While implementation of the Project would result in an increase in trips to the site, the increase in capacity of the driving range and new miniature golf course would serve the local population. Serving the local community could contribute to reducing VMT by providing the local community with closer options. These features of the Project would contribute to minimizing VMT and transportation-related fuel usage (see Table 7). Thus, it is expected that operation-related fuel usage associated with the Project would not be inefficient, wasteful, or unnecessary. Therefore, impacts would be less than significant with respect to operation-related fuel usage.

Table 7 Project Annual Operation-Related Fuel Usage

	Gasoline		Diesel		Compressed Natural Gas (CNG)		Electricity	
	Annual VMT	Annual Gallons	Annual VMT	Annual Gallons	Annual VMT	Annual Gallons	Annual VMT	Annual kWh
Project	1,492,867	56,570	66,804	4,816	1,105	320	27,764	9,056

Source: CalEEMod Version 2020.4.; EMFAC2017 v. 1.0.3. Modeling uses the EMFAC 2017 vehicle mix, which includes electric vehicles.

b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

No Impact. The State's electricity grid is transitioning to renewable energy under California's Renewable Energy Program. Renewable sources of electricity include wind, small hydropower, solar, geothermal, biomass, and biogas.

Electricity production from renewable sources is generally considered carbon neutral. The State's renewable portfolio standard (RPS) require 33 percent renewable energy by 2020 (SB X1-2), 40 percent by 2024 (SB 350), 50 percent by 2026 (SB 100), 60 percent by 2030 (SB 100), 90 percent by 2035 (SB 1020), and 100 percent carbon free by 2045 (SB 100 and SB 1020). SB 100 also establishes RPS requirements for publicly owned utilities that consist of 44 percent renewable energy by 2024, 52 percent by 2027, and 60 percent by 2030. SB 1020 requires zero-carbon resources to reach 100 percent clean electricity by 2045.

The statewide RPS goal is not directly applicable to individual development projects, but to utilities and energy providers such as PWP, which is the utility that would provide all of electricity needs for the Project. Compliance of PWP in meeting the RPS goals would ensure the State meets its objective in transitioning to renewable energy. Operation of the Project would generate minimal demand for electricity from the new lighting and would not generate demand for natural gas on the Project Site. Therefore, implementation of the Project would not conflict or obstruct plans for renewable energy and energy efficiency, and no impact would occur.

City of Pasadena Climate Action Plan

Adopted by the City of Pasadena in 2018, the Climate Action Plan (CAP) was prepared to establish a framework for evaluating and mitigating Greenhouse Gas (GHG) emissions by providing an emissions inventory, emissions reduction goals, and strategies for reducing emissions, including measures to reduce energy consumption within the City (Pasadena 2018). While most of the reduction measures under each strategy within the CAP apply specifically to municipal operations, city infrastructure improvements, or existing structures, the Project is consistent with the broad strategies outlined in the CAP as they relate to energy consumption discussed below. Therefore, the Project would not interfere with implementation of the City's CAP, and no impact would occur.

- **Sustainable Mobility and Land Use.** Implementation of the Project would not result in changes to existing circulation as the reoriented and expanded driving range and miniature golf course would be accessed via existing adjacent parking lots and Brookside Golf Course pathways as during existing

conditions. In addition, these uses would reduce VMT by providing the local population with closer options for these recreation uses, thereby reducing energy consumption as a result of the Project.

- **Energy Efficiency and Conservation.** The energy efficiency and conservation measures generally pertain to construction of new buildings, energy retrofits for existing buildings, municipal operations, and residential and commercial projects. These measures would not be applicable to the Project as the project would involve reorienting and expanding the driving range and adding a miniature golf course.

3.7 GEOLOGY AND SOILS

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
VII. GEOLOGY AND SOILS. Would the project:				
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map, issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.				X
ii) Strong seismic ground shaking?			X	
iii) Seismic-related ground failure, including liquefaction?			X	
iv) Landslides?			X	
b) Result in substantial soil erosion or the loss of topsoil?			X	
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?			X	
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?			X	
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?				X
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?			X	

Discussion

Would the Project:

a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:

i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.

No Impact. According to the CDOC, the Alquist-Priolo earthquake fault zones are regulatory zones surrounding the surface traces of active faults in California. An active fault, for the purposes of the Alquist-Priolo Earthquake Fault Zoning Act (Alquist-Priolo Act), is one that has ruptured in the last

11,000 years. Wherever an active fault exists, if it has the potential for surface rupture, a structure for human occupancy cannot be placed over the fault and must be a minimum distance from the fault (generally fifty feet) (CDOC 2019).

The Project Site is not located within an Alquist-Priolo Earthquake Fault Zone. The boundaries of the nearest Fault Zones to the Project Site are the Los Angeles Fault Zone, located approximately 2.9 miles south of the Project Site, and the El Monte Fault Zone, located approximately 3.7 miles southeast of the Project Site (CDOC 2019). Thus, the likelihood of surface fault rupture at the Project Site is low. Therefore, there would be no impacts related to fault rupture.

ii) Strong seismic ground shaking?

Less Than Significant Impact. Southern California is a seismically active region. Impacts from ground shaking could occur many miles from an earthquake epicenter. The potential severity of ground shaking depends on many factors, including the distance from the originating fault, the earthquake magnitude, and the nature of the earth materials beneath a given site. Although the Project Site is not located within an active fault zone, there are several known faults in the region. The nearest fault to the Project is the Raymond fault, which is approximately 3.1 miles south of the Project Site, and the boundaries of the nearest Fault Zones to the Project Site are the Los Angeles Fault Zone, located approximately 2.9 miles south of the site, and the El Monte Fault Zone, located approximately 3.7 miles southeast of the site (CDOC 2019). The Project is not developing any new structures or habitable buildings, and proposed uses would be consistent with existing golf course uses. Therefore, seismic ground shaking impacts would be less than significant.

iii) Seismic-related ground failure, including liquefaction?

Less Than Significant Impact. According to the United States Geological Survey (USGS), liquefaction takes place when loosely packed, water-logged sediments at or near the ground surface lose their strength in response to strong ground shaking. Liquefaction occurring beneath buildings and other structures can cause major damage during earthquakes (USGS 2021). The Project Site is located within a liquefaction zone (CDOC 2019); thus, the Project Site could potentially subject to liquefaction caused by ground shaking or seismic-related ground failure. However, the Project includes the same golf uses within the existing Brookside Golf Course and would not include the construction of new permanent structures, including new housing or commercial uses, which could potentially further expose people to the risk of injury as a result of seismic related ground failure, including liquefaction. Thus, the Project would not directly or indirectly cause substantial adverse effects, including the risk of loss, injury, or death related to liquefaction. Therefore, impacts would be less than significant.

iv) Landslides?

Less Than Significant Impact. According to the USGS, a landslide is the movement of a mass of rock, debris, or earth down a slope. Slope movement occurs when forces acting down-slope (mainly due to gravity) exceed the strength of the earth materials that compose the slope. Causes include factors that increase the effects of down-slope forces and factors that contribute to low or reduced strength.

Landslides can be initiated in slopes already on the verge of movement by rainfall, snowmelt, changes in water level, stream erosion, changes in ground water, earthquakes, volcanic activity, disturbance by human activities, or any combination of these factors (USGS 2021). The Project Site is located within and adjacent to a landslide zone (CDOC 2019); however, construction and operational activities of the Project would be situated entirely within the relatively level Brookside Golf Course in the Arroyo Seco Canyon, away from sloping areas. Although the potential exists for landslides to occur in Arroyo Seco Canyon, the potential for large, deep-seated landslides in these areas surrounding the Project Site is considered low (City of Pasadena 2002). Thus, the Project would not directly or indirectly cause substantial adverse effects, including the risk of loss, injury, or death related to landslides. Therefore, impacts would be less than significant.

b) Result in substantial soil erosion or the loss of topsoil?

Less Than Significant Impact. The Project consists of reorienting and expanding the existing driving range and constructing a new miniature golf course within the existing Brookside Golf Course. Existing golf turf may be removed and replaced for the relocation of the driving range. Earth-moving activities would occur during construction of the Project, including grading of existing soils within the golf course and tree removal and relocation (all soils would be balanced onsite). Construction projects of one acre or more (such as the Project) are regulated under the National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Order No. 2012-0006-DWQ) issued by the State Water Resources Control Board. Project applicants obtain coverage by developing and implementing a Stormwater Pollution Prevention Plan (SWPPP) estimating sediment risk from construction activities to receiving waters, and specifying best management practices (BMPs) that would be incorporated into the construction plan to minimize stormwater pollution. Categories of BMPs used in SWPPPs are described in **Table 8**, *Construction BMPs*. The Project Site is approximately 16 acres; thus, Project construction would be subject to the Statewide General Construction Permit and implementation of BMPs specified in the SWPPP. With these requirements, construction-phase soil erosion impacts would be less than significant. Therefore, impacts would be less than significant.

Table 8 Construction BMPs

Category	Purpose	Examples
Erosion Controls and Wind Erosion Controls	Cover and/or bind soil surface, to prevent soil particles from being detached and transported by water or wind.	Mulch, geotextiles, mats, hydroseeding, earth dikes, swales.
Sediment Controls	Filter out soil particles that have been detached and transported in water.	Barriers such as straw bales, sandbags, fiber rolls, and gravel bag berms; desilting basin; cleaning measures such as street sweeping.
Tracking Controls	Minimize the tracking of soil off-site by vehicles.	Stabilized construction roadways and construction entrances/exits; entrance/outlet tire wash.
Non-storm Water Management Controls	Prohibit discharge of materials other than stormwater, such as discharges from the cleaning, maintenance, and fueling of vehicles and equipment. Conduct various construction operations, including paving, grinding, and concrete curing and finishing, in ways that	BMPs specifying methods for: paving and grinding operations; cleaning, fueling, and maintenance of vehicles and equipment; concrete curing; concrete finishing.

Table 8 Construction BMPs

Category	Purpose	Examples
	minimize non-stormwater discharges and contamination of any such discharges.	
Waste Management and Controls (i.e., good housekeeping practices)	Management of materials and wastes to avoid contamination of stormwater.	Spill prevention and control, stockpile management, and management of solid wastes and hazardous wastes.

Source: California Stormwater Quality Association (CASQA). 2012, July. California Construction Best Management Practices Handbook.

c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?

Less Than Significant Impact. Construction and operational activities of the Project would be situated entirely within the relatively level Brookside Golf Course in the Arroyo Seco Canyon, away from sloping/unstable areas. The Project would be located in the same location as the existing driving range within the Brookside Golf Course. The miniature golf course would also be located within the existing golf Course on turf areas.

As described above, the Project Site is located entirely within a landslide and a liquefaction zone (CDOC 2019). The Project Site could potentially be subjected to liquefaction caused by ground shaking or seismic-related ground failure. However, the Project would be located within a developed area and would not include the construction of new permanent structures, including new housing or commercial uses that could potentially further expose people to the risk of injury as a result of seismic related ground failure, including liquefaction. Additionally, although the potential exists for landslides to occur in Arroyo Seco Canyon, the potential for large, deep-seated landslides in these areas surrounding the Project Site is considered low (City of Pasadena 2002). Lateral spreading results from earthquake-induced liquefaction, causing landslides associated with gentle slopes that flow laterally, like water. Land subsidence occurs when large amounts of groundwater have been withdrawn from certain types of sediments, causing the land to subside. When the water is withdrawn the sediments collapse in on itself. Potential for lateral spreading impacts in within the Project Site would be considered low. Therefore, the impacts would be less than significant.

d) Be located on expansive soil, as defined in Table 18 1 B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?

Less Than Significant Impact. Expansive soils are fine-grained soils with variable amounts of clay minerals that can undergo significant volumetric changes as a result of changes in moisture content. The upward pressures induced by the swelling can have significant harmful effects upon structures and other surface improvements (CDOC 2015). The Project Site is underlain by Holocene Alluvium, which consists of gravel, sand, and silt. These sediments, also known as Tujunga and Ramona soils, are unconsolidated, poorly sorted, coarse sand and pebble, cobble, and boulder gravel that lacks development of a soil profile on the surface (CDOC 2015). The density of these deposits has been described as very loose to loose, and the deposits on the site are considered to have a soft profile and, as such, the underlying native soils are considered slightly

expansive. The Project would require minimal grading and excavation and would be required to comply with standard construction regulations including, but not limited to the 2019 California Building Code and Section 14.04 of Title 14 of the Pasadena Municipal Code (PMC). Any recommendations provided in a geotechnical investigation to meet those regulations would be implemented. Additionally, operation of the Project would contain golf uses as existing conditions, and no habitable structures would be present on the Project Site. Therefore, impacts would be less than significant.

e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?

No Impact. The Project would not involve the construction of any restrooms or use of potable water, and wastewater generated at the Project Site would be within similar capacities as the existing uses and utilize the existing wastewater disposal system. Thus, the Project would not require the use of septic tanks or alternative wastewater disposal systems. Therefore, no impact would occur.

f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

Less Than Significant Impact. A significant impact would occur if ground-disturbing activities (e.g., grading, excavation, etc.) associated with project construction would disturb, damage, or destroy previously unknown buried prehistoric or historic features and deposits that could be considered significant resources. According to the City of Pasadena General Plan Environmental Impact Report (EIR) (specifically Figure 5.4-2, Paleo Sensitivity), the Project Site and the Brookside Golf Course are not located within an area that is considered sensitive for paleontological resources. Native soils underlaying the Project Site include Holocene Alluvium, which consists of gravel, sand, and silt. These sediments, also known as Tujunga and Ramona soils, are unconsolidated, poorly sorted, coarse sand and pebble, cobble, and boulder gravel that lacks development of a soil profile on the surface (CDOC 2015). The density of these deposits has been described as very loose to loose, and the deposits on the site are considered to have a soft profile. Construction activities would require surficial grading and minimal excavation over the Project Site. Thus, the Project would not directly or indirectly destroy a unique paleontological resource or site or unique geologic feature. Therefore, impact would be less than significant.

3.8 GREENHOUSE GAS EMISSIONS

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
VIII. GREENHOUSE GAS EMISSIONS. Would the project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?			X	
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?			X	

Discussion

Scientists have concluded that human activities are contributing to global climate change by adding large amounts of heat-trapping gases, known as greenhouse gases (GHGs), into the atmosphere. The primary source of these GHG is fossil fuel use. The Intergovernmental Panel on Climate Change (IPCC) has identified four major GHGs—water vapor, carbon dioxide (CO2), methane (CH4), and ozone (O3)—that are the likely cause of an increase in global average temperatures observed within the 20th and 21st centuries. Other GHG identified by the IPCC that contribute to global warming to a lesser extent include nitrous oxide (N2O), sulfur hexafluoride (SF6), hydrofluorocarbons, perfluorocarbons, and chlorofluorocarbons.[2]

Information on manufacture of cement, steel, and other "life cycle" emissions that would occur as a result of the Project are not applicable and are not included in the analysis.[3] Black carbon emissions are not included in the GHG analysis because the California Air Resources Board (CARB) does not include this pollutant in the state's Senate Bill 32 (SB 32) inventory and treats this short-lived climate pollutant separately.[4] A background discussion on the GHG regulatory setting and GHG modeling can be found in Appendix B to this Initial Study.

[2] Water vapor (H2O) is the strongest GHG and the most variable in its phases (vapor, cloud droplets, ice crystals). However, water vapor is not considered a pollutant, but part of the feedback loop rather than a primary cause of change.

[3] Life cycle emissions include indirect emissions associated with materials manufacture. However, these indirect emissions involve numerous parties, each of which is responsible for GHG emissions of their particular activity. The California Resources Agency, in adopting the CEQA Guidelines Amendments on GHG emissions found that lifecycle analyses was not warranted for project-specific CEQA analysis in most situations, for a variety of reasons, including lack of control over some sources, and the possibility of double-counting emissions (CNRA 2018). Because the amount of materials consumed during the operation or construction of the Project is not known, the origin of the raw materials purchased is not known, and manufacturing information for those raw materials are also not known, calculation of life cycle emissions would be speculative. A life-cycle analysis is not warranted (OPR 2008).

[4] Black carbon emissions have sharply declined due to efforts to reduce on-road and off-road vehicle emissions, especially diesel particulate matter. The state's existing air quality policies will virtually eliminate black carbon emissions from on-road diesel engines within 10 years (CARB 2017a.).

Would the Project:

a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

Less Than Significant Impact. Global climate change is not confined to a particular project area and is generally accepted as the consequence of global industrialization over the last 200 years. A typical project, even a very large one, does not generate enough greenhouse gas emissions on its own to influence global climate change significantly; hence, the issue of global climate change is, by definition, a cumulative environmental impact.

Project-related construction and operation-phase GHG emissions are shown in **Table 9**, *Project-Related Operation GHG Emissions*. Implementation of the Project would result a reoriented driving range and new miniature golf course. The purpose of the proposed project is to realize the existing capacity of the Brookside Golf Complex by increasing memberships and returning to historically higher levels of patronage use through the expansion of services to a broader range of visitors including families. However, to provide a conservative analysis, and to reflect trip generation prepared by the City (see Appendix F) operational trips were assumed and modeled to calculate operational greenhouse gas emissions. Therefore, it is assumed that the Project would generate a net increase of 404 weekday vehicle trips from existing conditions. Furthermore, operation of the Project would result in an increase in water demand, wastewater and solid waste generation, area sources (e.g., consumer cleaning products), and energy use from lighting.

Annual average construction emissions were amortized over 30 years and included in the emissions inventory to account for one-time GHG emissions from the construction phase of the Project. Overall, development and operation of the Project would not generate annual emissions that exceed the South Coast AQMD screening threshold of 3,000 metric tons of carbon dioxide equivalent ($MTCO_2e$) per year (South Coast AQMD 2010). In addition, the Project would include sustainability features such as water conservation through the Pasadena Department of Water and Power (PWP) Non-Potable Water Project and solid waste reduction through compliance with the City's Construction and Demolition Waste Management Ordinance (PMC Chapter 8.62), as discussed in Section XIX, *Utilities and Service Systems*. Furthermore, as seen in Section I, *Aesthetics*, the lighting to be installed would be a leading-edge light-emitting diode (LED) technology and would be energy efficient, consistent with lighting requirements set forth in the Arroyo Seco Design Guidelines. Therefore, the Project's cumulative contribution to GHG emissions would be less than significant.

Table 9 Project-Related Operation GHG Emissions

Source	GHG	(MTCO2e/Year)
Area	<1	<1%
Energy (Lighting)	12	2%
Mobile (Vehicle Trips)	547	95%
Solid Waste	<1	<1%
Water	4	1%
Amortized Construction Emissions[1]	12	2%
Total	**575**	**100%**
South Coast AQMD Bright-Line Threshold	3,000 $MTCO_2e$/Yr.	NA
Exceeds Bright-Line Threshold?	**No**	**NA**

Source: CalEEMod, Version 2020.4.

Notes: MTons = metric tons; $MTCO_2e$ = metric ton of carbon dioxide equivalent

[1] Total construction emission are amortized over 30 years per South Coast AQMD methodology (South Coast AQMD 2009).

b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

Less Than Significant Impact. Applicable plans adopted for the purpose of reducing GHG emissions include CARB's Scoping Plan, SCAG's Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS), and the City's Climate Action Plan. A consistency analysis with these plans is presented below.

CARB Scoping Plan

On November 16, 2022, CARB adopted the 2022 Scoping Plan for Achieving Carbon (2022 Scoping Plan), which lays out a path to achieve carbon neutrality by 2045 or earlier and to reduce the State's anthropogenic GHG emissions (CARB 2022). The 2022 Scoping Plan is applicable to state agencies and is not directly applicable to cities/counties or individual projects (i.e., the 2022 Scoping Plan does not require the city to adopt policies, programs, or regulations to reduce GHG emissions). However, new regulations adopted by the state agencies outlined in the 2022 Scoping Plan result in GHG emissions reductions at the local level. As a result, local jurisdictions benefit from reductions in transportation emissions rates, increases in water efficiency in the building and landscape codes, and other statewide actions that affect a local jurisdiction's emissions inventory from the top down. Statewide strategies to reduce GHG emissions include the LCFS and changes in the corporate average fuel economy standards (e.g., Pavley I and Pavley California Advanced Clean Cars program).

Buildout of the Project would adhere to the programs and regulations identified by the 2022 Scoping Plan and implemented by state, regional, and local agencies to achieve the statewide GHG reduction goals of AB 32, SB 32, and AB 1279. For example, the increase in capacity of the driving range and new miniature golf course would serve the local population and could contribute to reducing VMT by providing the local community with closer options.

Therefore, the Project would be consistent with State efforts to reduce motor vehicle emissions and generate GHG emissions consistent with the reduction goals of AB 32, SB 32, and AB 1279. The Project would not obstruct implementation of the 2022 Scoping Plan, and a less than significant impact would occur.

SCAG's Regional Transportation Plan/Sustainable Communities Strategy

SCAG adopted the 2020-2045 RTP/SCS (Connect SoCal) in September 2020. Connect SoCal identifies that land use strategies that focus on new housing and job growth in areas rich with destinations and mobility options are consistent with a land use development pattern that supports and complements the proposed transportation network. The overarching strategy in Connect SoCal is to plan for the southern California region to grow in more compact communities in transit priority areas and priority growth areas; provide neighborhoods with efficient and plentiful public transit; establish abundant and safe opportunities to walk, bike, and pursue other forms of active transportation; and preserve more of the region's remaining natural lands and farmlands (SCAG 2020). Connect SoCal's transportation projects help more efficiently distribute population, housing, and employment growth, and forecast development is generally consistent with regional-level general plan data to promote active transportation and reduce GHG emissions. The projected regional development, when integrated with the proposed regional transportation network in Connect SoCal, would reduce per-capita GHG emissions related to vehicular travel and achieve the GHG reduction per capita targets for the SCAG region.

The Connect SoCal Plan does not require that local general plans, specific plans, or zoning be consistent with the SCS, but provides incentives for consistency for governments and developers. The Project involves improvements to the existing golf course, including a driving range and miniature golf course. While implementation of the Project would result in an increase in trips to the site, the increase in capacity of the driving range and new miniature golf course would serve the local population. Serving the local community could contribute to reducing VMT by providing the local community with closer options. Therefore, the Project would not interfere with SCAG's ability to implement the regional strategies outlined in the Connect SoCal Plan, and impacts would be less than significant.

City of Pasadena Climate Action Plan

Adopted by the City of Pasadena in 2018, the CAP was prepared to establish a framework for evaluating and mitigating GHG emissions by providing an emissions inventory, emissions reduction goals, and strategies for reducing emissions (Pasadena 2018). Furthermore, the CAP provides measures to meet the goal of reducing community GHG emissions to a level 15 percent below 2009 emissions for 2020, 49 percent below for 2030, 59 percent below for 2035, and 83 percent below for 2050. Cumulatively, the measures listed in the CAP are estimated to reduce emissions in the City by approximately 181,197 MTCO2e by 2020 and 458,181 MTCO2e by 2035.

The City's CAP includes five emissions reduction strategies for (1) sustainable mobility and land use, (2) energy efficiency and conservation, (3) water conservation, and (4) solid waste reduction, and (5) urban greening. **Table 10** below shows the measures associated with each of these reduction strategies. As previously stated, the Project involves improvements to the existing golf course, including a driving range and miniature golf course intended to realize the existing capacity of the Brookside Golf Complex by increasing memberships and returning to historically higher levels of patronage use through the expansion of services to a broader

range of visitors including families. The Project would not include changes to the parking lot or buildings and indoor areas. Reduction strategies that pertain to these uses would not be applicable for the proposed Project. However, as demonstrated in the table below, the Project would be consistent with the strategies pertaining to improvements to bicycle and pedestrian safety, water conservation, waste reduction, and urban greening. Overall, the Project would not interfere with implementation of the City's CAP, and impacts would be less than significant.

Table 10 City of Pasadena CAP Consistency Checklist

GHG Reduction Strategy and Sustainable Development Action		Consistency with CAP
Mandatory Actions		
T-1.2	Continue to improve bicycle and pedestrian safety: • **Bicycle Storage:** Does the project provide bicycle storage lockers, racks, or other bicycle storage facilities for residents/employees?	**Consistent.** Based on the nature of the Project in that it would reorient and expand the existing driving range and develop a new miniature golf course, this existing recently installed and improved bicycle parking facilities at Brookside Golf Club would be sufficient to serve the Project.
T-3.1	Decrease annual commuter miles traveled by single occupancy vehicles: • **Transportation Demand Management (TDM):** Does the project include a TDM plan? A TDM plan is required for the following projects: multifamily residential development that are 100 or more units; mixed-use developments with 50 or more residential units or 50,000 square feet or more of non-residential development; or non-residential projects which exceed 75,000 square feet. If applicable, please submit the TDM plan for review.	**Not Applicable.** Based on the nature of the Project in that it would reorient and expand the existing driving range and develop a new miniature golf course, this measure would not be applicable. The uses would serve existing visitors to the Brookside Golf Course and no new development is proposed.
T-4.1	Expand the availability and use of alternative fuel vehicles and fueling infrastructure • **Alternative Vehicle Fueling Wiring:** For projects with more than three parking spaces, does the project provide wiring for at least one 240V Type II electric car charger? Please include specifications on the project plans.	**Not Applicable.** The Project would only reorient and expand the existing driving range and develop a new miniature golf course. The Project does not include the addition of any new parking or changes to the existing parking areas that serve the project site. Therefore, this measure would not be applicable.
E-1.2	Encourage the use of energy conservation devices and passive design concepts that make use of the natural climate to increase energy efficiency • **Passive Design Features:** Does the project utilize passive design techniques such as awnings or overhangs on the east, west, and south facing windows which block the high summer sun but allow in lower winter sun? Please include specifications on the project plans.	**Not Applicable.** Based on the nature of the Project in that it would reorient and expand the existing driving range and develop a new miniature golf course, this measure would not be applicable. No permanent structures are proposed.
WC-1.1	Reduce potable water usage throughout Pasadena • **Irrigation Efficiency:** Will the project utilize drought tolerant landscaping and/or drip irrigation and/or weather controllers to reduce outdoor water use? Please include specifications on the project plans	**Consistent.** The Project would include utilization of a subterranean irrigation device that delivers water to the roots of the trees below ground to avoid the loss and evaporation of irrigated and above ground sprayed water, which would aid in conserving water and delivering water more efficiently to the newly planted landscaping.

Table 10 City of Pasadena CAP Consistency Checklist

WR-1.1	Continue to reduce solid waste and landfill GHG emissions • **Facilitate Recycling:** Does the project include a space for separate trash and recycling bins as well as provide informational signage/handouts for residents/employees outlining materials to be recycled? Please include specifications on the project plans.	**Consistent.** The RBOC utilizes a three-bin color-coded container system to help patrons separate paper and food waste, bottles and cans, and all other non-recyclable material.
Energy Efficiency and Conservation		
E-1.1	Increase energy efficiency requirements of new buildings to perform better than 2016 Title 24 Standards. • **Zero-Net Energy (ZNE):** Does the project generate 100% of electricity required on site? ZNE calculations must be provided. • **Energy Efficiency (Exceed 2016 Title 24):** Does the project exceed the 2016 Title 24 Efficiency Standards by at least 5%? Please include Title 24 energy model.	**Not Applicable.** The Project would only reorient and expand the existing driving range and develop a new miniature golf course. The Project does not include construction of new buildings. Therefore, this measure would not be applicable.
E-4.1	Increase city-wide use of carbon neutral energy by encouraging and/or supporting carbon-neutral technologies. • **Renewable Energy:** Does the project generate at least 60% of the building's projected electricity needs through renewable energy? Please include specifications on the project plans.	**Not Applicable.** The Project would only reorient and expand the existing driving range and develop a new miniature golf course. The Project does not include construction of new buildings. Therefore, this measure would not be applicable.
Sustainable Mobility and Land Use		
T-1.1	Continue to expand Pasadena's bicycle and pedestrian network. • **End-of-Trip Bicycle** Facilities (Commercial Development): Does the project provide at least one shower for every 50 employees? Please include these specifications on the project plans. • **Bike Share:** Does the project include a bike share station? Please include these specifications on the project plans.	**Consistent.** The Project would only reorient and expand the existing driving range and develop a new miniature golf course. The Project does not include changes to the existing recently installed and improved bicycle parking at Brookside Clubhouse, nor does it include an increase in employees.
T-3.1	Decrease annual commuter miles traveled by single occupancy vehicles. • Car Sharing: Does the project provide/facilitate car sharing by providing a designated car share space on or within the immediate vicinity of the project site? Examples of car share options include ZipCar, PitCarz, and Getaround. Please include these specifications on the project plans. • Parking De-Coupling: Does the project separate the cost of parking from the cost of commercial space and/or residential housing by charging for each individually? Please include these specifications on the project plans • Transportation Demand Management (TDM): Does the project include a TDM plan? Please submit the TDM plan for review (Note: this measure cannot be combined with the mandatory measure that requires a TDM plan for projects that meet certain size thresholds.)	**Consistent.** Based on the recreational uses of the Project and the family-oriented nature of miniature golf uses, existing and future patrons regularly carpool and are not typically single-occupancy vehicle trips, which reduces VMT.

3. Environmental Analysis

Table 10 City of Pasadena CAP Consistency Checklist

T-4.1	Expand the availability and use of alternative fuel vehicles and fueling infrastructure. • Alternative Vehicle Fueling Infrastructure: Does the proposed project include functioning 240V Type II electric car chargers at 3% of parking spaces (at least one charger) AND conduit to allow for future charger installation to 25% of spaces?	**Not Applicable.** The Project would only reorient and expand the existing driving range and develop a new miniature golf course. The Project does not include the addition of any new parking or changes to the existing parking areas that serve the project site. Therefore, this measure would not be applicable.
T-5.1	Facilitate high density, mixed-use, transit-oriented, and infill development. • Transit Oriented Development: Is the project located within 0.25 mile of a major transit stop as defined in the Zoning Code. Please include a map outlining the nearest transit stop.	**Not Applicable.** Based on the nature of the Project in that it would reorient and expand the existing driving range and develop a new miniature golf course, this measure would not be applicable. No development is proposed as part of the Project.
T-6.1	Reduce GHG emissions from heavy duty construction equipment and vehicles. • Reduce GHG emissions from heavy-construction equipment: Will the project utilize at least 30% alternative fueled construction equipment (by pieces of equipment) and implement an equipment idling limit of 3 minutes? Please provide idling limit plan including implementation strategies along with the total pieces of equipment and those utilizing alternative fuels.	**Consistent.** Construction activities will be conducted in compliance with 13 California Code of Regulations (CCR) Section 2499, which requires that nonessential idling of construction equipment is restricted to five minutes or less. There would be minimal ground disturbance beyond surficial grading and therefore minimal heavy duty construction equipment and vehicles are necessary to implement the Project.
Water Conservation		
WC-1.1	Reduce potable water use throughout Pasadena. • Indoor Water Efficiency: Will the project achieve at least a 35% reduction in indoor water use per the LEED V4 Indoor Water Use Reduction Calculator? Please attach the calculator output.	**Not Applicable.** The Project would only reorient and expand the existing driving range and develop a new miniature golf course. The Project does not include construction of new buildings, and the existing onsite restrooms and facilities would serve the Project. Therefore, this measure would not be applicable.
WC-2.1	Increase access to and use of non-potable water. • Rainwater Capture and Reuse: Does the project utilize a rainwater capture and reuse system to reduce the amount of potable water consumed on site? Please include these specifications on the project plans. • Indoor & Outdoor Recycled Water: Will the project be plumbed to utilize recycled water for either indoor or outdoor water use? Please include these specifications on the project plans. • Greywater: Will the project be plumbed to take advantage of greywater produced on site such as a laundry to landscape system or another on-site water reuse system? Please include these specifications on the project plans.	**Consistent.** The Project would include utilization of a subterranean irrigation device that delivers water to the roots of the trees below ground to avoid the loss and evaporation of irrigated and above ground sprayed water, which would aid in conserving water and delivering water more efficiently to the newly planted landscaping. The overall amount of landscaping and irrigation required would be minimal if any, given the entire site is currently irrigated turf.
WC-3.1	Improve storm water to slow, sink, and treat water run-off, recharge groundwater, and improve water quality. • Permeable Surfaces: Is at least 30% of the hardscape (e.g., surface parking lots, walkways, patios, etc.)	**Consistent**. The Project would incorporate the Rose Bowl Stadium's own compost as part of a regular landscape maintenance regime. By treating the bare grounds with compost where once turf grass existed and is now highly compacted, infiltration rates can dramatically improve. As a

Table 10 City of Pasadena CAP Consistency Checklist

	permeable to allow infiltration? Please include these specifications on the project plans. • Stormwater Capture: Is the project designed to retain stormwater resulting from the 95th percentile, 24 hour rain event as defined by the Los Angeles County 95th percentile precipitation isohyetal map? Please provide the engineered stormwater retention plan with the project plans	result of improved permeability, irrigation and water demand can be reduced and water conserved. Overall, using and applying compost helps to retain water and moisture longer which ultimately translates into reduced irrigation costs.
Waste Reduction		
WR-1.1	Continue to reduce solid waste and landfill GHG emissions. • Recycled Materials: Does the project utilize building materials and furnishings with at least 50% (pre- or post-consumer) recycled content or products which are designed for reuse? At a minimum, projects must show at least 10% of the material by cost meets the recycled content requirement. Please submit the plan for review.	**Not Applicable.** The Project would only reorient and expand the existing driving range and develop a new miniature golf course. The Project does not include construction that would require use of recycled content. Therefore, this measure would not be applicable.
WR-3.1	Implement a city-wide composting program to limit the amount of organic material entering landfills. • On-Site Composting: Does the project include an area specifically designated for on-site composting? Please include these specifications on the project plans.	**Consistent**. The Rose Bowl Stadium is currently recovering and processing its food waste from Brookside Clubhouse. Implementation of the Project would continue compost all of the food waste it recovers on a weekly basis. The food waste would contribute to the production of compost by the Rose Bowl Stadium for use on landscaping onsite. The composting footprint for Rose Bowl Stadium is approximately 18 feet by 7 feet or approximately 126 square feet and is located towards the northeast side of the yard along the fence line. The composting system also has incorporated solar panels to power a blower that is needed to maintain proper aeration and biological conditions throughout the processing period.
Urban Greening		
UG-1.1	Continue to preserve, enhance, and acquire additional green space throughout Pasadena to improve carbon sequestration, reduce the urban heat-island effect, and increase opportunities for active recreation. • Greenspace: Does the project include at least 500 sq. ft. of public use greenspace (landscaped yards, parklets, rooftop garden, etc.)? At a minimum, 50% of the required greenspace must include softscape landscaping (e.g., trees, plants, grass, etc.).	**Consistent.** The Project Site is currently greenspace with trees and grass. While the layout slightly changes upon implementation, the majority of the area remains greenspace. There is roughly 50,000 sq. ft. of space that would become artificial turf, plants and trees for miniature golf. It should be noted that the Brookside Golf Courses have been asked to reduce irrigated turf due to drought conditions. The total scale of the property is over 8 million sq. ft. of greenspace.
UG-2.1	Continue to protect existing trees and plant new ones to improve and ensure viability of Pasadena's urban forest. • Trees: Does the project result in a net gain of trees? Please include these specifications on the project plans.	**Consistent.** Any trees removed are to be replaced with approved native species by the City of Pasadena in other locations on the property.

3.9 HAZARDS AND HAZARDOUS MATERIALS

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
IX. HAZARDS AND HAZARDOUS MATERIALS. Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?			X	
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?			X	
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?				X
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code § 65962.5 and, as a result, would it create a significant hazard to the public or the environment?				X
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?				X
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?				X
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?			X	

Discussion

Would the Project:

a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

Less Than Significant Impact. Construction of the Project could potentially involve the use and disposal of hazardous materials, including fuels, lubricants, adhesives, sealers, fertilizers, pesticides, herbicides, and other materials commonly used in construction and maintenance of golf courses and related practice facilities. However, all chemical applications would be transported, handled, and disposed of in accordance with all applicable federal, state, and local laws and regulations pertaining to the management and use of hazardous materials. There would be no change in the operational routine use of these materials. Thus, the use of these materials for their intended purpose would not pose a significant risk to the public or environment. Therefore, impacts related to the routine transport, use, or disposal of hazardous materials would be less than significant.

b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

Less Than Significant Impact. As described above, construction of the Project could potentially involve the use and disposal of hazardous materials commonly used in construction and maintenance of golf courses and related practice facilities. However, all chemical applications would be transported, handled, and disposed of in accordance with all applicable federal, state, and local laws and regulations pertaining to the management and use of hazardous materials. Potentially hazardous materials would be contained, stored, and used in accordance with manufacturers' instructions and handled in compliance with applicable standards and regulations. Thus, the use of these materials for their intended purpose would not pose a significant risk to the public or environment.

In the event of a reasonably foreseeable upset and accident regarding the release of hazardous materials, procedures and policies would be followed to remove the materials in a safe and timely manner. The State of California Office of Emergency Services provides a Hazardous Material Incident Contingency Plan, which outlines the procedures and responsibilities of agencies and private organizations concerning hazardous materials emergencies (Cal OES 1991). Additionally, the City of Pasadena requires all businesses to submit a Hazardous Materials Business Plan which includes an inventory of hazardous materials, a site map, an emergency plan, and training program for employees to reduce potential risks of accidental release of hazardous materials (City of Pasadena Fire Department 2013). Implementation of the Project would follow the appropriate procedures and policies mentioned above, and other applicable federal and state regulations. Therefore, the potential for hazardous materials impacts through reasonably foreseeable upset and accident conditions to occur during construction or operation of the Project would be less than significant.

c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

No Impact. The Project is not located within one-quarter mile of an existing or proposed school. The nearest schools to the Projects Site are Chandler Middle School, which is approximately 0.47 mile southeast of the Project Site; Cleveland Elementary School, which is approximately 0.5 mile east of the site; and Roosevelt Elementary School, which is approximately 1.15 mile south of the site. Surficial grading would be required over the Project Site and all soils would be balanced onsite within limited need for hauling/truck trips passing schools. Project construction would not involve the handling or transportation of significant amounts of hazardous materials, and any such use would be subject to applicable federal, state, and local health and safety regulations. Therefore, no impacts would occur.

d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

No Impact. According to the State Water Resources Control Board's (SWRCB) GeoTracker, the Project Site is not located on or within 0.5 mile of a hazardous materials site (SWRCB 2021). Additionally, according to the Department of Toxic Substance Control's (DTSC) EnviroStor, the Project Site is not located on or within 0.5 mile of a toxic substance site (DTSC 2021). Thus, the Project Site is not included on a list of hazardous

materials sites compiled pursuant to Government Code Section 65962.5, and would not create a significant hazard to the public or the environment. Therefore, no impacts would occur.

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?

No Impact. The Project Site is not located within an airport land use plan or within two miles of a public use airport. The nearest public use airport is the San Gabriel Valley Airport located in the City of El Monte, approximately 9 miles to the southeast (Los Angeles County Department of Public Works 2020). Therefore, no impacts would occur.

f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

No Impact. The City of Pasadena maintains a citywide Emergency Operations Plan (EOP) which goes into effect at the onset of a major disaster (e.g., a major earthquake). The Fire Marshall maintains the disaster plan. In case of a disaster, the Fire Marshall is responsible for implementing the plan, and the Pasadena Police Department devises evacuation routes based on the specific circumstance of the emergency (City of Pasadena 2011). According to the City's General Plan Safety Element, the Project Site is located within a dam inundation zone (City of Pasadena 2002). The Devil's Gate Reservoir is located 1.4 miles north of the Project Site and could cause catastrophic damage to the Arroyo Seco, the Project Site, and the Rose Bowl. Although the City's EOP does not currently provide specific evacuation routes in the case of a dam failure, Chapter 2, Operations Section, identifies different agency responsibilities and the coordination and operations needed to protect life and property (City of Pasadena 2011). No changes to access or overall uses of the area would occur with the Project. Construction and operation of the Project would follow the appropriate local procedures and policies, and other applicable federal and state regulations regarding emergency response, and would not interfere with any adopted emergency response or evacuation plan. Therefore, no impacts would occur.

g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?

Less Than Significant Impact. The Project Site is not located within a state or local Fire Hazard Severity Zone (FHSZ); however, a Local Responsibility Area (LRA) Very High FHSZ is located approximately 0.10 mile west of the Project Site, within the residential neighborhoods located along West Drive.

The Project Site consists of a regularly maintained landscaped golf course with no overgrown vegetation that would place the Project Site at risk of wildfire, and there would be no physical changes to the Project Site or surrounding area as a part of the Project that would put the area at a greater risk for wildland fires. Given the Project Site's proximity to known a Very High FHSZ, the Project would be subject to Section 325.2.1 of the Los Angeles County Fire Code for properties adjoining land covered with flammable growth, which requires clearing and fuel modifications around and near properties with high fire risk (County of Los Angeles 2021). Continued compliance with these guidelines reduces the movement of a potential fire to the Project Site. Therefore, risk of exposure of people or structures to wildfires would be less than significant.

3.10 HYDROLOGY AND WATER QUALITY

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
X. HYDROLOGY AND WATER QUALITY. Would the project:				
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?			X	
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?			X	
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:				
i) result in a substantial erosion or siltation on- or off-site;			X	
ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;			X	
iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or			X	
iv) impede or redirect flood flows?			X	
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?				X
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?			X	

Discussion

Would the Project:

a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?

Less Than Significant Impact. Section 303 of the federal Clean Water Act (CWA) requires states to develop water quality standards to protect the beneficial uses of receiving waters. In accordance with California's Porter-Cologne Water Quality Control Act, the Regional Water Quality Control Boards (RWQCBs) of the State Water Resources Control Board (SWRCB) are required to develop water quality objectives that ensure their region meets the requirements of Section 303 of the Clean Water Act.

The City of Pasadena is located in the greater Los Angeles River watershed and is within the jurisdiction of the Los Angeles RWQCB. The Los Angeles RWQCB adopted water quality objectives in its Stormwater Quality Management Plan (SQMP), which is designed to ensure stormwater discharge achieves compliance

with receiving water limitations. Compliance with the SQMP is ensured by Section 402 of the Clean Water Act, which is known as the National Pollution Discharge Elimination System (NPDES). Under this section, municipalities are required to obtain permits for water pollution generated by stormwater in their jurisdiction, known as Municipal Separate Storm Sewer Systems (MS4) permits. Under this MS4 Permit, each permitted municipality is required to comply with SQMP requirements.

In addition, as required by the MS4 permit, the City of Pasadena has adopted the Stormwater Management and Discharge Control Ordinance (Chapter 8.7 of the Pasadena Municipal Code). Chapter 8.70.097 of this ordinance requires implementation of a Standard Urban Stormwater Mitigation Plan (SUSMP) ordinance to ensure new developments within the City comply with SQMP. The Stormwater Management and Discharge Control Ordinance requires most new developments to submit a plan to the City that demonstrates how a project would comply with the City's SUSMP (City of Pasadena, 2015). Additionally, Chapter 8.70.095 includes required BMPs that would apply to construction of all projects requiring a grading or building permit, including (City of Pasadena 2021):

- Sediment and construction waste from construction sites and parking areas shall not leave the site.
- Between October 15th and April 15th, any sediments or other materials which are tracked off the site shall be removed the same day as they are tracked off the site. A sediment barrier shall be installed on land exceeding 15 percent slope in accord with Chapter 14.05 of this code, and where determined necessary by the building official.
- Excavated soil shall be located on the site in a manner that eliminates the possibility of sediments running into the street or adjoining properties. Between October 15th and April 15th, soil piles shall be covered until the soil is either used or removed.
- No washing of construction or other industrial vehicles shall be allowed adjacent to a construction site. No runoff from washing vehicles on a construction site is allowed to leave the site.

The Project would result in physical changes to the Project Site that consist of reorientation and expansion the existing driving range, construction of a new miniature golf course at the Brookside Golf Course, modification to Hole 10 of the C.W. Koiner Course and shortening of Holes 6 and 7 of the E.O. Nay Course. The Arroyo Seco channel, a subgrade concrete-lined feature, crosses the Brookside Golf Course and forms the western boundary of the reoriented driving range. However, the Project would not require any construction within the channel, and would not result in indirect impacts to the channel. Although Project construction would require some grading, the majority of the Project would result in similar amounts of impervious surfaces as the existing driving range (all turf). The increase in bays within the proposed driving range, as well as limited new impervious features associated with the miniature golf course, would result in an increase of impervious surfaces; however, stormwater from the Project would flow to the existing stormwater drainage system within the Project Site, similar to current conditions. Thus, the Project would not create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.

Additionally, a General Permit for Discharges of Storm Water Associated with Construction Activity (General Permit) would be required prior to any ground disturbing activities because the construction area exceeds one acre. A SWPPP would be prepared and submitted to the City for approval, which would include identification of Project-specific BMPs that would be designed to avoid/reduce potential effects of soil erosion or siltation both on- and off-site (see Table 8 in Section VII, *Geology and Soils*, above) and ensure compliance with water quality standards. Construction of the Project would also comply with the required BMPs listed above and in Chapter 8.70.095 of the PMC including restrictions related to the protection of natural water courses and containment and notification of spills. Operation of the Project would result in no waste discharge and would be same as current golf course operations. Therefore, impacts would be less than significant.

b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?

Less Than Significant Impact. The Project Site is located within an unconfined groundwater aquifer called the Raymond Basin. The Raymond Basin is approximately 40 square miles in area and underlies much of the City of Pasadena. It is bounded to the north by the San Gabriel Mountains, to the west by the drainage divide at Pickens Canyon Wash, to the southwest by the San Rafael Hills, to the south by the Raymond Fault, and to the east by the San Gabriel Valley (Los Angeles County Waterworks District 2021). Water to the Project Site is supplied by the Pasadena Department of Water and Power (PWP). PWP water supply consists of surface water purchased from Metropolitan Water District of Southern California (MWD) and local groundwater from the Raymond Basin. PWP has 7 wells that tap into the basin at depths of 300-500 feet, drawing out 13 million gallons of groundwater or more per day, on average (Pasadena Department of Water and Power 2021).

The Project does not include any features that would directly require groundwater uses. Similar to existing conditions, the Project Site would remain mostly as landscaped pervious surfaces (turf) and would not interfere with recharge of the Raymond Basin. Although the Project would result require some water usage during construction, water consumption for irrigation as a result of the Project would be similar to current operating conditions. Therefore, impacts would be less than significant.

c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:

i) Result in substantial erosion or siltation on- or off-site;

Less Than Significant Impact. Construction of the Project would include grading and tree removal and relocation. There would be no direct or indirect modifications or activities within the adjacent Arroyo Seco channel, and this drainage pattern would not be altered. The Project would be consistent with the existing topography with all soils balanced onsite and would adhere to the City's Municipal Code Grading Standards to reduce the potential for erosion or siltation damage within the golf course and the Project Site.

The entire property is underlain by Holocene Alluvium, which consists of gravel, sand, and silt. These soils are somewhat excessively drained and have little to no runoff potential. Implementation of BMPs

as required by the City's MS4 Permit and Project-specific SWPPP would ensure that impacts from construction-related activities would not result in substantial erosion or siltation on- or off-site. Additionally, similar to current conditions, turf on the Project Site would reduce the potential for substantial on- or off-site erosion or siltation. Therefore, impacts would be less than significant.

ii) Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;

Less Than Significant Impact. According to the Federal Emergency Management Agency (FEMA), the Project Site is not located within a 100-year floodplain (FEMA 2008). As described above, the soils underlying the Project Site consist of gravel, sand, and silt, which are typically well-drained and have little to no run-off potential. Construction of the Project would require some grading; however, the Project would be consistent with the existing topography of the Brookside Golf Course with all soils balanced onsite. During construction, standard BMPs identified within the City's Municipal Code Grading Standards and Project-specific SWPPP would be incorporated to reduce potential flooding impacts. Following construction, all the turf would be replaced on the driving range. The miniature golf course would have similar landscaping and would also include hardscaped and decorative features. Incorporation of landscaping and replacement of pervious surfaces would ensure that the Project would result in similar drainage patterns as the existing golf course and would not substantially increase the rate or amount of surface run-off in which would result in flooding on- or offsite. Therefore, impacts would be less than significant.

iii) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or

Less Than Significant Impact. The Project consists of reorienting and expanding the existing driving range and constructing a new miniature golf course, within a 9-acre portion of the existing Brookside Golf Course. Stormwater collected during construction and operation of the Project would continue to discharge into municipal storm drains, and no new impervious surfaces would be introduced that would have the potential to exceed current stormwater drainage capacity. Thus, the Project would not alter the existing drainage pattern in a manner which would create or contribute runoff water which would exceed existing stormwater drainage capacity. Therefore, impacts would be less than significant.

iv) Impede or redirect flood flows?

Less Than Significant Impact. According to FEMA, the Project Site is not located within a flood zone (FEMA 2008). The Arroyo Seco channel is located adjacent to the western edge of the Project Site, and serves as western Pasadena's main storm drainage channel and a tributary to the Los Angeles River. Fencing around the existing driving range, vegetation, and topography currently separate the Arroyo Seco from the golf course, and construction and operational activities under the Project would not impede or redirect flows within this feature. The proposed grading and drainage changes would be in compliance with the City's Municipal Code Grading Standards.

Prior to any ground disturbing activities, a SWPPP would be prepared and submitted to the City for approval, which would include identification of Project-specific BMPs that would be designed to avoid/reduce potential effects of on and offsite flooding. Thus, construction and operation of the Project would not alter the existing drainage pattern in a manner which would impede or redirect flood flows. Therefore, impacts would be less than significant.

d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?

No Impact. The Project Site is not located within a flood zone (FEMA 2008). Additionally, the City of Pasadena is not located near any large bodies of water or the Pacific Ocean, which is located approximately 22 miles from the Project Site. According to the CDOC, the Project Site is not located within a tsunami hazard area (CDOC 2019). A seiche is defined as a standing wave oscillating in a body of water (NOAA 2021). As described above, the Project Site is not located near or adjacent to any large bodies of water; thus, it is not located within a seiche zone.

Significant inundation by seiches, tsunami, or mudflow on the Project Site would not be expected to occur and development of the Project would not risk the release of pollutants. Therefore, no impacts would occur.

e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

Less Than Significant Impact. The California Department of Water Resources (DWR) is required to prioritize and update California's groundwater basins in accordance with the requirements of Sustainable Groundwater Management Act (SGMA) and related laws. SGMA requires that groundwater resources be managed sustainably for long-term reliability for current and future beneficial uses. SGMA applies to all California groundwater basins and requires that high- and medium-priority groundwater basins form Groundwater Sustainability Agencies (GSAs) (CDWR 2021). DWR is required to prioritize California's 517 groundwater basins and sub-basins as either high, medium, low, or very low. Raymond Basin's adjudication in 1944 established a management that utilizes a fixed safe-yield operation. As a result, the Raymond Basin was determined by DWR to be "Very Low" priority and is therefore not subject to the requirements to form a Groundwater Sustainability Agency to develop a Groundwater Sustainability Plan.

The Water Quality Control Plan for the Central Coastal Basin (Basin Plan) is the Los Angeles RWQCB's water quality control planning document for the Los Angeles Region, which includes the City of Pasadena. The Basin Plan: (i) identifies beneficial uses for surface and groundwater, (ii) includes the narrative and numerical water quality objectives that must be attained or maintained to protect the designated beneficial uses and conform to the state's anti-degradation policy, and (iii) describes implementation programs and other actions that are necessary to achieve the water quality objectives established in the Basin Plan (LARWQCB 2020).

The Project does not include any facilities or land uses that could generate pollutants that could result in water quality impacts. Operational long-term maintenance would be the same as the existing condition. Compliance with the City's SUSMP would protect and enhance water quality of watercourses, water bodies, and wetlands in a manner pursuant to and consistent with the federal Clean Water Act, and pursuant to the City's NPDES MS4 Permit. Restrictions in the Stormwater Management and Discharge Control Ordinance, which requires

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implementation of a SUSMP, are applicable to both construction activities and operations. Additionally, compliance with the General Permit issued by the SWRCB would require implementation of BMPs during construction to address the potential for pollutants from entering the Arroyo Seco. The Project would not to violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality. Therefore, impacts would be less than significant.

3.11 LAND USE AND PLANNING

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
XI. LAND USE AND PLANNING. Would the project:				
a) Physically divide an established community?				X
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?			X	

Discussion

Would the Project:

a) Physically divide an established community?

No Impact. The Project Site is located entirely within the existing Brookside Golf Course, which does not contain any residential uses. The Project would include reorientation and expansion of the existing driving range to face north rather than west, and development of a new miniature golf course directly west of the driving range. The Project Site is located within lands designated as Open Space by Pasadena General Plan Land Use Element, primarily surrounded by land uses designated as Low Density Residential (0-6 DU/Acre)(City of Pasadena 2016). Implementation of the Project would not require the change of any land use designations within or adjacent to the Project Site and would not result in division of established communities and neighborhoods that surround the Central Arroyo. Therefore, no impacts would occur.

b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?

Less than Significant Impact. The Project Site is located within lands designated as Open Space by the Pasadena General Plan Land Use Element, primarily surrounded by land uses designated as Low Density Residential (0-6 DU/Acre)(City of Pasadena 2016). According to the Pasadena General Plan Land Use Element, the Open Space classification is intended to provide active and passive recreational opportunities for Pasadena's residents, and is characterized by a variety of public and private natural and developed open spaces including City-owned open space facilities, private golf courses, natural open spaces and areas which have been designated as environmentally and ecologically significant, and land which is publicly owned though in some instances public access may be restricted (City of Pasadena 2016). Implementation of the Project would expand the existing driving and develop and new miniature golf course within the existing Brookside Golf Course; however, the Project would continue to provide recreational uses and would continue to maintain the Open Space land use designation and zone. This is consistent with the Pasadena General Plan and the Municipal Code. Thus, the Project would not conflict with any land use plans, policies, or regulations adopted for the purpose of avoiding or mitigating an environmental effect.

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Section 4.9 of the Central Arroyo Master Plan identifies the four entities that maintain the Central Arroyo (City of Pasadena Parks and Natural Resources Division, RBOC, Rose Bowl Aquatics Center, and the County of Los Angeles) and recommends coordination of activities and intensity of activities to ensure the facilities are not damaged by overuse. The Project would be consistent with these recommendations.

Section 3.2, "Public Structures," of the Arroyo Seco Design Guidelines (City of Pasadena 2003) contains policies that apply to architectural design concepts and lighting. The Project would be required to be "of a scale and character appropriate to the Arroyo Seco and their location shall be environmentally sensitive and integrated to the site." Section 5.5, "Recreational Courses and Ranges" contains policies specific to golf course improvements and requires all improvements be made under the regulation and industry standard for the facility. The Design Review process required by the Pasadena Municipal Code as described above in Section 1.5.3, *Project Design*, would ensure consistency with the Design Guidelines. Therefore, impacts would be less than significant.

3.12 MINERAL RESOURCES

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
XII. MINERAL RESOURCES. Would the project:				
a) Result in the loss of availability of a known mineral resource that would be a value to the region and the residents of the state?				**X**
b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?				**X**

Discussion

Would the Project:

a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?

No Impact. The Project Site is located in an area classified as mineral resource zone (MRZ) MRZ-2, which are areas where adequate information indicates that significant mineral deposits are present, or where it is judged that a high likelihood exists for the presence (CDOC 1994). However, construction activities would require surficial grading and minimal excavation over the Project Site. Additionally, mining is not an allowable use in the City of Pasadena per the City's zoning code. Thus, the Project would not directly or indirectly result in the loss of a known mineral resource. Therefore, no impacts would occur.

b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?

No Impact. As described above, construction activities would require surficial grading and minimal excavation over the Project Site; thus, the Project would not directly or indirectly cause a loss of locally important mineral resource. Therefore, no impact would occur.

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3.13 NOISE

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
XIII. NOISE. Would the project result in:				
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?			X	
b) Generation of excessive groundborne vibration or groundborne noise levels?			X	
c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?				X

Discussion

Noise Fundamentals

Noise is unwanted sound, known to have several adverse effects on people, including hearing loss, speech and sleep interference, physiological responses, and annoyance. Based on these known adverse effects of noise, the federal, state, and city governments have established criteria to protect public health and safety and to prevent the disruption of certain human activities, such as classroom instruction, communication, or sleep. Appendix E provides the fundamentals of noise and vibration, additional local regulatory background information, and the construction and traffic noise modeling data for the Project.

Environmental Setting

The noise environment in the vicinity of the Project Site is primarily influenced by existing recreational activities within the Central Arroyo as well as traffic noise from Rosemont Avenue, West Drive, and to a lesser degree, Interstate 210 (I-210). The City of Pasadena's revised Noise Element has existing and future traffic noise contours. The future noise contours are based on the year 2015. Based on the Noise Element future noise contours, the Project Site is entirely within the 60 dBA CNEL noise contour. Short-term ambient noise measurements were also conducted in the Project's immediate vicinity and results are discussed below.

Sensitive Receptors

Certain land uses are particularly sensitive to noise and vibration. These uses include residences, schools, hospital facilities, houses of worship, and open space/recreation areas where quiet environments are necessary for the enjoyment, public health, and safety of the community. The Project is north of the Rose Bowl Stadium and surrounded by residential neighborhoods. The nearest sensitive receptors are the single-family homes to the east and west approximately 530 feet and 850 feet, respectively, as measured from the edge of the Project boundary to the receptor property line.

Ambient Noise Measurements

To determine noise levels at the nearest residential receptors, ambient noise monitoring was conducted at four locations on Wednesday, April 28, 2021. The primary noise source during measurements observed was roadway traffic. Secondary noises such as birds chirping and pedestrian activity also contributed to the overall noise environment. Meteorological conditions during the measurement period were favorable for outdoor sound measurements and were noted to be representative of the typical conditions for the season. Conditions included mostly clear skies with daytime temperatures of up to 81 degrees Fahrenheit (°F) and average wind speeds of 2 miles per hour (mph). The sound level meter was equipped with a windscreen during measurements.

The sound level meter used for noise monitoring (Larson Davis model LxT) satisfies the American National Standards Institute (ANSI) standard for Type 1 instrumentation. The sound level meter was set to "slow" response and "A" weighting (dBA). The meter was calibrated prior to the monitoring period. All measurements were at least 5 feet above the ground and away from reflective surfaces. Noise measurement observations are described below, monitoring results are summarized in **Table 11**, *Short-Term Noise Measurements Summary (dBA)*, and locations are shown in **Figure 8**, *Approximate Noise Monitoring Locations*.

- **Short-Term Location 1 (ST-1)** was on West Drive, south of Salvia Canyon Road, approximately 12 feet west of the nearest southbound travel lane centerline. A 15-minute noise measurement was conducted beginning at 5:20 pm. Noise levels generated by traffic generally ranged between 62 dBA to 68 dBA. Other noise sources included pedestrians walking and talking nearby. Noise levels from pedestrians were below 50 dBA.

- **Short-Term Location 2 (ST-2)** was at the intersection of Parkview Avenue and Afton Street, overlooking the Brookside Golf Course. A 15-minute noise measurement was conducted beginning at 4:42 pm. Noise levels generated by traffic generally ranged between 51 dBA to 52dBA. Other noise sources included pedestrians walking and talking.

- **Short-Term Location 3 (ST-3)** was on Rosemont Avenue, north of Rose Bowl Drive, and approximately 20 feet east of the nearest northbound travel lane centerline. A 15-minute noise measurement was conducted beginning at 5:38 pm. Noise levels from roadway traffic generally ranged between 61 dBA and 73 dBA. Other noise sources included pedestrians walking and talking nearby.

- **Short-Term Location 4 (ST-4)** was on Rosemont Avenue, south of Rose Bowl Drive, approximately 25 feet east of the nearest northbound travel lane centerline. A 15-minute noise measurement was conducted beginning at 6:31 pm. Noise levels from roadway traffic generally ranged between 58 dBA and 68 dBA except for a motorcycle which was observed to generate noise levels of up to 83 dBA. Other noise sources included pedestrians walking and talking nearby.

Table 11 Short-Term Noise Measurements Summary (dBA)

Monitoring Location	Description	15-minute Noise Level, dBA						
		L_{eq}	L_{max}	L_{min}	L_2	L_8	L_{25}	L_{50}
ST-1	West Drive, south of Salvia Canyon Road 5:20 pm, 4/28/2021	61.2	75.5	40.1	70.6	67.0	59.5	52.0
ST-2	Near Parkview Avenue and Afton Street 4:42 pm, 4/28/2021	50.9	66.7	40.8	58.6	53.5	50.5	47.7
ST-3	Rosemont Avenue, north of Rose Bowl Drive 5:38 pm, 4/28/2021	62.1	77.1	47.0	71.7	67.9	59.7	52.5
ST-4	Rosemont Avenue, south of Rose Bowl Drive 6:31 pm, 4/28/2021	62.4	87.0	44	68.2	64.4	58.9	54.4

Applicable Standards

State Regulations

The State of California regulates freeway noise, sets standards for sound transmission, provides occupational noise control criteria, identifies noise standards, and provides guidance for local land use compatibility. State law requires that each county and city adopt a general plan that includes a noise element prepared according to guidelines adopted by the Governor's Office of Planning and Research. According to these guidelines, the purpose of the noise element is to "limit the exposure of the community to excessive noise levels." However, as a result of the Supreme Court decision regarding the assessment of the environment's impacts on projects (California Building Industry Association (CBIA) v. Bay Area Air Quality Management District (BAAQMD), 62 Cal. 4th 369 (No. S 213478), issued December 17, 2015), it is generally no longer the purview of the CEQA process to evaluate the impact of existing environmental conditions on any given project. As a result, though noise from existing sources is taken into account as part of the baseline, the direct effects of exterior noise from nearby noise sources relative to land use compatibility of a future project is typically no longer a required topic for impact evaluation under CEQA. Generally, no determination of significance is required with the exception of certain school projects, projects affected by airport noise, and projects that would exacerbate existing conditions (i.e., projects that would have a significant operational impact).

City of Pasadena General Plan Noise Element

The Noise Element of the City of Pasadena General Plan establishes CNEL guidelines for land use compatibility and includes a number of objectives and policies for land use planning purposes. Applicable objectives and policies for the General Plan are summarized below. The General Plan's Noise and Land Use Compatibility Table can be found in Appendix E. The City also has regulations to control unnecessary, excessive, and annoying noise, as set forth in the PMC, Title 9, Chapter 9.36. These regulations are described further below.

- **Objective 5.** The City will balance the effects of noise associated with events held in the Central Arroyo with the benefits of events occurring at Central Arroyo facilities.

Figure 8 - Approximate Noise Monitoring Locations

Project Boundary

ST-X Approxiamte Short-Term Noise Monitoring Locations (4)

0 550
Scale (Feet)

Source: Nearmap, 2021

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- **Policy 5a.** The City will continue to seek improvements to noise generating equipment and activities at the Rose Bowl, Aquatics Center, Jackie Robinson Field, Brookside Park, Area H, and the future Kids Space Museum in order to minimize the effects of noise on nearby residents.

- **Policy 5b.** The City will continue to coordinate events in the Central Arroyo to minimize noise to the degree feasible.

City of Pasadena Municipal Code

Chapter 9.36, Noise Restrictions Ordinance, establishes acceptable ambient noise levels to regulate intrusive noises (i.e., stationary noise) within specific land use zones and provides procedures and criteria for the measurement of the sound level of noise sources. These procedures recognize and account for differences in the perceived level of different types of noise and/or noise sources. Under Section 9.36.040 and 9.36.050 of the Noise Ordinance, a noise level increase of 5 dBA over the existing or presumed ambient noise level at an adjacent property line is considered a violation with adjustments made for steady audible tones, repeated impulsive noise, and noise occurring for limited time periods. The 5-dBA increase above ambient is applicable to City-regulated noise sources and it is applicable any time of the day. The ambient noise is defined as the actual measured ambient noise level averaged over a period of 15 minutes, Leq (L25).

To account for people's increased tolerance for short-duration noise events, the City's Noise Ordinance provides the following adjustments:

- A 5 dBA allowance for noise sources occurring more than 5 minutes but less than 15 minutes in any 1-hour period (for a total of 10 dBA above the ambient),

- A 10 dBA allowance (total of 15 dBA above the ambient) for noise sources occurring 5 minutes or less in any 1-hour period,

- A 20 dBA allowance (total of 25 dBA above the ambient) for noise sources occurring less than 1 minute in any 1-hour period.

These additional allowances for short-duration noise sources are applicable to noise sources occurring during daytime (6:00 a.m. to 11:00 p.m.) periods only. Furthermore, the Noise Ordinance provides a reduction of 5 dBA for audible tone noise or repeated impulsive noises.

Construction Projects

Under Section 9336.070, Construction Projects, the following is restrictions are applicable to the Project:

- No person shall perform any construction or repair work on buildings, structures or projects within a residential district or within a radius of 500 feet therefrom in such a manner that a reasonable person of normal sensitiveness residing in the area is caused discomfort or annoyance at any time other than:

    - From 7:00 a.m. to 7:00 p.m. Monday through Friday;

    - From 8:00 a.m. to 5:00 p.m. on Saturday;

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Performance of construction or repair work is prohibited on Sundays and holidays.

- Prohibited construction activities on Sundays and holidays shall not apply under either of the following conditions:
    - The construction is actually performed by an individual who is the owner or lessor of the premises and who is assisted by not more than two individuals;
    - The person performing the construction shall have provided the building official with a petition which indicates the consent of 65 percent of the households residing within 500 feet of the construction site and the unanimous consent of the households adjacent to the construction site. Said petition shall be on a form promulgated by said building official and shall be accompanied by a fee, the amount of which shall be established by resolution by the city council.
- The prohibitions shall not apply to the performance of emergency work as defined in Section 9.36.030(E) of the Municipal Code.
- Holidays are New Year's Day, Martin Luther King Jr. Day, Lincoln's Birthday, Washington's Birthday, Memorial Day, Independence Day, Labor Day, Veterans Day, Thanksgiving Day, Day after Thanksgiving, and Christmas.

Construction Equipment

Under Section 9.36.080, Construction Equipment, the Municipal Code states that it is unlawful for any person to operate any powered construction equipment if the operation of such equipment emits noise at a level in excess of 85 dBA when measured within a radius of 100 feet from such equipment.

The following are exempt from the noise chapter under Section 9.36.170, Exemptions:

> The Noise Restrictions Chapter of the Municipal Code is not intended to regulate construction or maintenance and repair activities conducted by public agencies or their contractors necessitated by emergency conditions or deemed necessary by the city to serve the best interests of the public and to protect the public health, safety and welfare. These operations may include, but are not limited to, street sweeping, debris and limb removal, removal of downed wires, restoring electrical service, repairing traffic lights, unplugging sewers, vacuuming catch basins, repairing water hydrants and mains, gas lines, oil lines, storm drains, roads, sidewalks, etc.

The City currently does not have any adopted standards, guidelines, or thresholds relative to ground-borne vibration. As such, the Federal Transit Administration (FTA) criterion for vibration damage to non-engineered timber and masonry buildings (applicable to residential structures) of 0.2 inches per second (in/sec) peak particle velocity (PPV) is used to determine impact significance.

Would the project result in:

a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Less Than Significant Impact.

Construction Noise

Construction Vehicles

The transport of workers and materials to and from the construction site could incrementally increase noise levels along access road or roads. Individual construction vehicle pass-by trips may create momentary noise levels of up to approximately 85 dBA (Lmax) at 50 feet from the vehicle, but these occurrences would generally be infrequent and short lived.

Construction generates temporary trips from workers and vendors vehicles. Based on air quality CalEEMod modeling, Project construction is anticipated to generate a maximum of 24 worker and vendor daily trips during rough and fine grading and no haul truck trips are anticipated. The addition of 24 worker vendor trips would result in less than 0.5 dBA CNEL increase when compared to the existing 2,806 daily trips along the primary access road, Rosemont Avenue.[5] Therefore, impacts would be less than significant.

Construction Equipment

Noise generated by on-site construction equipment is dependent on the type of equipment used, its location relative to sensitive receptors, and the timing and duration of noise-generating activities. Each phase of construction involves different kinds of equipment and has distinct noise characteristics. The basis for noise levels from construction activities are typically the loudest piece or pieces of equipment. The dominant equipment noise source is typically the engine, although work-piece noise (such as dropping of materials) can also be noticeable.

The noise produced at each construction phase is determined by combining the Leq contributions from each piece of equipment used at a given time, while accounting for the ongoing time variations of noise emissions (commonly referred to as the usage factor). Heavy equipment, such as a dozer or a loader, can have maximum, short-duration noise levels of up to 85 dBA at 50 feet. However, overall noise emissions vary considerably, depending on the specific construction activity performed at any given moment. Noise attenuation due to distance, the number and type of equipment, and the load and power requirements to accomplish tasks at each construction phase would result in different noise levels from construction activities at a given receptor. Since noise from construction equipment is intermittent and diminishes at a rate of at least 6 dBA per doubling of distance (conservatively ignoring other attenuation effects from air absorption, ground effects, and shielding effects), the average noise levels at noise-sensitive receptors could vary considerably, because mobile construction equipment would move around the Project Site with different loads and power requirements. Noise levels from Project-related construction activities were calculated from the simultaneous use of the

[5] Pasadena Department of Transportation, May 2021. *Transportation Impact Analysis for 1133 Rosemont Avenue.*

three loudest construction equipment during each phase. For overlapping phases, the simultaneous use of the five loudest pieces of construction equipment was modeled. Each phase was modeled at spatially averaged distances (i.e., from the approximate acoustical center of each activity phase) to the property line of the nearest receptors to best represent potential average construction-related noise levels at the various sensitive receptors per phase.

Anticipated construction phasing activity information was used to estimate construction noise using the Federal Highway Administration (FHWA) Roadway Construction Noise Model (RCNM). Construction equipment and phasing for the driving range and the mini golf course were modeled, which assumes construction of the two Project components would not overlap.

The nearest sensitive receptors to both the driving range and miniature golf construction areas are existing residences to the west across West Drive (ST-1). **Table 12**, *Driving Range Construction Noise, Leq dBA*, highlights the noise levels generated from the driving range construction at 100 feet (per the Municipal Code requirement) and at the nearest receptors. As shown in Table 11, construction noise associated with the driving range would not exceed 85 dBA at 100 feet. Therefore, impacts would be less than significant. **Table 13**, *Miniature Golf Construction Noise, Leq dBA*, highlights the noise levels generated from the miniature golf construction at 100 feet (per the Municipal Code requirement) and at the nearest receptors. As shown, construction noise associated with the miniature golf course would not exceed 85 dBA at 100 feet. Therefore, impacts would be less than significant. RCNM modeling worksheets for both the driving range and mini golf course are included in Appendix E.

Table 12 Driving Range Construction Noise, L_{eq} dBA

Activity Phases	RCNM Reference Noise Level	Noise Levels at 100 feet per Municipal Code Requirement	Residences to the East	Residences to the West
Distance in feet	*50*	*100*	*1000*	*900*
Demolition	85	79	59	59
Distance in feet	*50*	*100*	*630*	*1,550*
Site Preparation	84	78	58	57
Grading (Driving Range Area)	85	79	59	58
Trenching	82	76	56	55
Distance in feet	*50*	*100*	*660*	*870*
Fencing	82	76	60	57
Overlapping Fencing and Trenching (Driving Range)	84	78	62	60
Distance in feet	*50*	*100*	*1,050*	*1,050*
Paving (Golf Cart Path)	84	78	58	58
Exceeds 85 dBA Municipal Code Standard at 100 feet?		**No**		

Notes:
Calculations performed with the FHWA RCNM software are included in Appendix E Distances were measured using Google Earth 2021 from the approximate acoustical center of the construction site.
Decibels rounded to the nearest whole number.

Table 13 Mini Golf Construction Noise, L_{eq} dBA

Activity Phases	RCNM Reference Noise Level	Noise Levels at 100 feet per Municipal Code Requirement	Residences to the East	Residences to the West
Distance in feet	*50*	*100*	*1000*	*900*
Demolition	85	79	59	59
Distance in feet	*50*	*100*	*1200*	*900*
Site Preparation	84	78	56	59
Grading (Mini Golf Course Area)	83	77	55	58
Trenching	82	76	54	57
Exceeds 85 dBA Municipal Code Standard at 100 feet?		**No**		

Notes:
Calculations performed with the FHWA RCNM software are included in Appendix E Distances were measured using Google Earth 2021 from the approximate acoustical center of the construction site.
Decibels rounded to the nearest whole number.

Stationary Noise during Operation

The Project would expand the existing driving range by adding 40 hitting bays and providing for 36 holes of miniature golf course. The driving range expansion would involve re-orientation from east to west (existing) to south to north (proposed). Noise associated with these additions would be similar to existing noise sources (e.g., voices, club to ball impact noise, and maintenance noise associated with the driving range). The nearest receptors to the site are single-family homes approximately 440 to 900 feet to the east and west, respectively, from the edge of the Project Site. Lastly, the Project would not include any sound amplification. At that distance, noise levels from unamplified noise sources would substantially attenuate and would not significantly increase noise levels above existing conditions. Therefore, impacts would be less than significant.

Traffic Noise

A project will normally have a significant effect on the environment related to noise if it substantially increases the ambient noise levels for adjoining areas. Most people can detect changes in sound levels of approximately 3 dBA under normal, quiet conditions, and changes of 1 to 3 dBA are detectable under quiet, controlled conditions. Changes of less than 1 dBA are usually indiscernible. A change of 5 dBA is readily discernible to most people in an exterior environment. Based on this, the following thresholds of significance similar to those recommended by the Federal Aviation Administration (FAA), are used to assess traffic noise impacts at sensitive receptor locations. A significant impact would occur if traffic noise increases would exceed:

- 1.5 dBA increase for ambient noise environments of 65 dBA CNEL and higher.
- 3 dBA increase for ambient noise environments of 60 to 64 CNEL.
- 5 dBA increase for ambient noise environments of less than 60 dBA CNEL.

The purpose of the proposed project is to realize the existing capacity of the Brookside Golf Complex by increasing memberships and returning to historically higher levels of patronage use through the expansion of

services to a broader range of visitors including families. However, to provide a conservative analysis, and to reflect trip generation prepared by the City (see Appendix F) operational trips were assumed and modeled to calculate operational noise increases from traffic. **Table 14**, *Project Traffic Noise Increases, dBA CNEL*, shows the existing baseline daily volumes and project daily volumes at study roadway segments. Traffic volume increases due to the Project as calculated by the City (see Appendix F) would result in a less than 1 dBA CNEL increase. Therefore, impacts would be less than significant.

Table 14 Project Traffic Noise Increases, dBA CNEL

Roadway Segment	Existing Baseline ADT[1]	Project ADT	Existing Baseline Plus Project ADT	Traffic Noise Increase[2]
Washington Boulevard – Forest Avenue to Lincoln Avenue	2,806	60	2,866	<0.1
Rosemont Avenue – Prospect Terrace to Freemont Drive.	5,238	101	5,339	<0.1

Source: Pasadena Department of Transportation, May 2021. Transportation Impact Analysis for 1133 Rosemont Avenue.
Notes:
1 The TIA baseline volumes were adjusted by a growth factor of 1.15.
2 Traffic noise increase calculated by the logarithmic equations: dBA CNEL Increase = 10*Log10(Existing Baseline Plus Project ADT/Existing Baseline ADT).

b) Generation of excessive groundborne vibration or groundborne noise levels?

Less Than Significant Impact.

Construction Vibration

Construction can generate varying degrees of ground vibration, depending on the construction procedures and equipment. Operation of construction equipment generates vibrations that spread through the ground and diminish with distance from the source. The effect on buildings near the construction site varies depending on soil type, ground strata, and receptor-building construction. The effects from vibration can range from no perceptible effects at the lowest vibration levels, to low rumbling sounds and perceptible vibrations at moderate levels, to slight structural damage at the highest levels. Vibration from construction activities rarely reaches the levels that can damage structures.

As previously stated, the FTA sets a vibration damage criterion of 0.2 in/sec PPV for non-engineered timber and masonry buildings (residential homes). **Table 15**, *Vibration Levels for Typical Construction Equipment*, shows vibration levels for typical construction equipment generate up to 0.21 in/sec PPV at a distance of 25 feet. The nearest off-site structures to the Project are the single-family homes to the east and west of the Project Site approximately 580 feet and 900 feet, respectively, as measured from the edge of the Project boundary to the façade (not property line) of the residentials structure. At these distances, vibration levels would not exceed the FTA criterion of 0.2 in/sec PPV. Therefore, impacts would be less than significant.

Table 15 Vibration Levels for Typical Construction Equipment

Construction Activity Phase	PPV (in/sec)		
	FTA Reference Vibration Levels at 25 feet	Residential to east at 580 feet	Residential to west at 975 feet
Vibratory Roller	0.21	0.002	0.001
Clam shovel	0.202	0.002	0.001
Hoe Ram	0.089	0.001	<0.001
Large Bulldozer	0.089	0.001	<0.001
Caisson Drilling	0.089	0.001	<0.001
Loaded Trucks	0.076	0.001	<0.001
Jackhammer	0.035	<0.001	<0.001
Small Bulldozer	0.003	<0.001	<0.001

Source: Federal Transit Administration (FTA), 2018.

Operational Vibration

Operation of the Project would not include any substantial long-term vibration sources. Thus, no significant vibration effects from operation of the Project would occur. No mitigation measures are required.

c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

No Impact. The nearest public airport is San Gabriel Valley Airport in El Monte, California, approximately 9 miles southeast of the Project. The Project would not expose people working or residing in the Project area to excessive noise levels. No impact would occur.

3.14 POPULATION AND HOUSING

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
XIV. POPULATION AND HOUSING. Would the project:				
a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?				X
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?				X

Discussion

Would the Project:

a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?

No Impact. The Project would not induce population growth. Implementation of the Project would not involve the development of new housing or businesses within or adjacent to the Project Site. The Project Site is located within a developed urbanized area, and the reoriented driving range and new miniature golf course would not be anticipated to attract new residents to the region. The Project would be served by existing roads and other infrastructure, and no new roads, expanded utility lines, and housing that could induce population growth would be constructed or required as part of the Project. Therefore, no impacts related to population growth would occur.

b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?

No Impact. The Project Site is located entirely within the Brookside Golf Course, which does not include any residential uses. Implementation of the Project would not require any right-of-way acquisitions from any adjacent residences or properties; thus, the Project would not displace any people or housing, and would not require construction of replacement housing. Therefore, no impact would occur.

3.15 PUBLIC SERVICES

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
XV. PUBLIC SERVICES. Would the project:				
a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:				
Fire protection?			X	
Police protection?			X	
Schools?				X
Parks?			X	
Other public facilities?				X

Discussion

a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the following public services:

i) Fire Protection?

Less Than Significant Impact. The Pasadena Fire Department currently provides fire protection and emergency medical services to the Project Site. The nearest fire stations to the Project Site are Station No. 38, located at 1150 Linda Vista, approximately 0.5 mile west of the Project Site; and Station No. 36, located at 1140 N. Fair Oaks Avenue, approximately 1 mile east of the Project Site. Project implementation could result in a slight increase in calls for fire protection and emergency medical service. However, considering the existing firefighting resources available in and near the City and the consistent uses proposed, Project impacts on fire protection and emergency services (including response times) are not expected to occur. Additionally, in the event of an emergency at the Project Site that would require more resources than Fire Stations 36 and 38 could provide, the Pasadena Fire Department would direct resources to the Project Site from other Los Angeles County Fire Department stations nearby and, if needed, would request assistance from other nearby fire departments.

Development of the Project would be required to comply with the most current adopted fire codes, building codes, and nationally recognized fire and life safety standards, which impose design standards and requirements that seek to minimize and mitigate fire risk. Compliance with these codes and standards

is ensured through the Pasadena Fire Department development review and building permit process. Based on the preceding, the Project would not adversely affect the Pasadena Fire Department's ability to provide adequate service and would not require new or expanded fire facilities that could result in adverse environmental impacts. Therefore, impacts would be less than significant.

ii) Police

Less Than Significant Impact. The Pasadena Police Department provides police service to the City of Pasadena including the Project Site. The nearest police station to the Project Site is located at 207 Garfield Avenue, approximately 2 miles southeast of the Project Site. Project implementation could result in a slight increase in calls for police protection service. However, considering the existing police resources available in and near the City and the consistent uses proposed, Project impacts on police services (including response times) are not expected to occur. Additionally, in the event of an emergency at the Project Site that would require more resources than the station at 207 Garfield Avenue could provide, the police department would direct resources to the Project Site from other local police/Los Angeles County Sheriff stations nearby and, if needed, would request assistance from other nearby police/sheriff departments. Thus, the Project would not adversely affect the police department's ability to provide adequate service and would not require new or expanded police facilities that could result in adverse environmental impacts. Therefore, impacts would be less than significant.

iii) Schools

No Impact. The increase in student generation and the need for new or expanded school facilities is tied to population growth. The Project does not include the development of new homes, which could increase student population and thereby, the need for additional school facilities. The Project involves the reorientation and expansion of the existing driving range and development of a new miniature golf course. Thus, Project development would not generate an increase in the student population in the area, nor result in the need for new or expanded school facilities. Therefore, no impact would occur.

iv) Parks

Less Than Significant Impact. The Project is a recreational improvement project within an existing recreational facility. The Brookside Golf Course is situated within the Central Arroyo Seco which provides for a variety of active and passive recreational opportunities. The nearest public park is the Brookside Park, which is located approximately 0.8 mile south of the Project Site. The Project is not anticipated to increase use at Brookside Park or surrounding recreational features within the Central Arroyo Seco.

Project construction would require the closure of existing driving range and a portion of the Brookside Golf Course, during the eight-month construction period. However, as shown in **Table 16**, *Local Golf Courses Near the Project Site*, there are multiple private and public golf courses and driving ranges located near the Project Site, which would be able to accommodate golfers during the Project construction period. Therefore, impacts would be less than significant.

Table 16 Local Golf Courses Near the Project Site

Golf Course	Address	Distance from Project Site
Annandale Golf Club	1 N San Rafael Ave, Pasadena, CA 91105	1 mile
Scholl Canyon Golf Course	3800 E Glenoaks Blvd, Glendale, CA 91206	1.5 mile
Chevy Chase County Club	3067 E Chevy Chase Dr, Glendale, CA 91206	2 miles
Altadena Golf Course	1456 E Mendocino St, Altadena, CA 91001	3 miles
La Cañada-Flintridge Country Club	5500 Godbey Dr, La Cañada Flintridge, CA 91011	3.5 miles
Arroyo Seco Golf Course	1055 Lohman Ln, South Pasadena, CA 91030	3.5 miles
Eaton Canyon Golf Course	1150 Sierra Madre Villa Ave, Pasadena, CA 91107	5 miles
Alhambra Golf Course	630 S Almansor St, Alhambra, CA 91801	6 miles

v) Other Public Facilities

No Impact. The Project would not result in impacts associated with the provision of other new or physically altered public facilities (e.g., libraries, hospitals, childcare, teen, or senior centers). Physical impacts to public services are usually associated with population growth, which increase the demand for public services and facilities. The Project would not result in population growth. Therefore, no impacts would occur.

3.16 RECREATION

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
XVI. RECREATION.				
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?			X	
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?			X	

Discussion

a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

Less Than Significant Impact. The Project would reorient and expand the existing driving range and construct a new miniature golf course at the Brookside Golf Course. The proposed expansion of the driving range from 20 hitting bays to approximately 60 hitting bays and the addition of a 36-hole miniature golf course would reduce the E.O. Nay Course from par-70 to par-69. The expanded driving range would serve the existing demand at the Brookside Golf Course and the Project Site would continue to have a championship layout and the course reduction would be designed to improve the pace of play. The miniature golf course would serve existing users of the Brookside Golf Course and Central Arroyo recreational users. Additionally, the Project would not construct any residential units or propose any new commercial uses that could increase the residential or employee population in the area that could utilize existing recreational facilities. Therefore, the Project would not increase the use of any existing parks or recreational facilities located near or adjacent to the Project Site, including the Rose Bowl Stadium, Brookside Park, or any cycling or pedestrian trails and impacts would be less than significant.

b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?

Less Than Significant Impact. As described above, the Project would result in orientation and expansion the existing driving range and construction of a new miniature golf course within a portion of Brookside Golf Course. Project construction would require the closure of existing driving range and a portion of the Brookside Golf Course, during the eight-month construction period. However, as shown in Table 15 above, there are multiple private and public golf courses and driving ranges located near the Project Site, which would be able to accommodate golfers during the Project construction period. Therefore, impacts would be less than significant.

3.17 TRANSPORTATION

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
XVII. TRANSPORTATION. Would the project:				
a) Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?			X	
b) Conflict or be inconsistent with CEQA Guidelines § 15064.3, subdivision (b)?				X
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?				X
d) Result in inadequate emergency access?				X

Discussion

The purpose of the proposed project is to realize the existing capacity of the Brookside Golf Complex by increasing memberships and returning to historically higher levels of patronage use through the expansion of services to a broader range of visitors including families. However, a trip generation and transportation analysis review was conducted. Information in this discussion is based on the City of Pasadena Department of Transportation's (DOT) review of the Project, which can be found in Appendix F to this Initial Study/MND. DOT has reviewed the Project and its potential traffic generation and determined a traffic study is not required pursuant to the City's Transportation Impact Analysis Current Practice and Guidelines (TIA Guidelines). DOT determined that, because the Project would not result in additional employees or a change in the service population, there would be no significant impact to any of the City's five transportation thresholds.

Would the Project:

a) Conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?

The Mobility Element of the City's General Plan sets forth goals and policies to improve overall transportation in Pasadena. The TIA Guidelines were developed, in turn, to ensure that transportation system improvements necessary to support new development, while maintaining quality of life within the community, are identified prior to project approval and funded prior to construction (Pasadena 2015c). In determining the Project is below the threshold of requiring a traffic study, the City DOT has concluded the Project would not have a significant impact on the surrounding circulation system nor would it conflict with Mobility Element policies addressing the circulation system.

Less Than Significant Impact. The City has set forth policies for public transit, bicycle, and pedestrian facilities in its General Plan. Objective 2 of the Mobility Element is to "Encourage walking, biking, transit and other alternatives to motor vehicles." This objective is supported by policies including the following: "Continue

to strengthen the marketing and promotion of non-auto transportation to residents, employees and visitors," "Ensure that secure and convenient bicycle parking is available at destinations," and "Provide convenient, safe and accessible transit stops" (City of Pasadena 2015b).

Project-related construction activities would generate temporary vehicle trips from construction equipment and construction crews coming to the Project Site. However, construction activities would be consistent with all other Rose Bowl construction and production delivery, and any construction vehicles entering the area would use the Mountain/Seco exit off I-210 for ingress and egress. The Project would not require road or sidewalk closures during construction, and parking for the estimated maximum of 80 construction workers required would be provided in the primary serving lots (1A and B) and would also be supplemented by additional parking in the various lots surrounding the Rose Bowl, as necessary. Construction-related traffic would be restricted to the hours of 9:00 a.m. to 9:00 p.m. to limit peak hour traffic conflict along the local street network. Thus, construction of the Project would not conflict with a program plan, ordinance or policy addressing the circulation systems.

Regarding operation, the reoriented and expanded driving range and miniature golf course would be accessed via existing adjacent parking lots and Brookside Golf Course pathways as during existing conditions. No changes to the existing circulation system, including the Rose Bowl Recreational Loop or equestrian trails would occur. The Project would be developed entirely within the Brookside Golf Course and would not impede the City's policies with respect to mobility. Therefore, impacts would be less than significant.

b) Would the project conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b)?

No Impact. CEQA Guidelines Section 15064.3(b)(1) describes specific considerations for evaluating a project's transportation impacts using VMT for land use projects. City's TIA Guidelines were prepared to reflect the requirements of Senate Bill 743. As discussed above, Pasadena DOT determined a traffic study is not required for the Project, as the Project would not have a significant impact on the surrounding circulation system and would not conflict with the Mobility Element policies pertaining to circulation system. As such, the Project would not conflict with or be inconsistent with Section 15064.3(b)(1) of the State CEQA Guidelines or the City's transportation plans and policies. There would be no impact.

c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

No Impact. The Project does not result in any new roadway features or alignments or otherwise alter the geometric design of an existing roadway. No access would change during Project construction or operation. As such, the project would not increase in hazards due to a geometric design feature or incompatible use. Therefore, no impacts would occur.

d) Result in inadequate emergency access?

No Impact. The City of Pasadena maintains a citywide EOP which goes into effect at the onset of a major disaster (e.g., a major earthquake). The Fire Marshall maintains the disaster plan. In case of a disaster, the Fire

Marshall is responsible for implementing the plan, and the Pasadena Police Department devises evacuation routes based on the specific circumstance of the emergency (City of Pasadena, 2011).

According to the City's General Plan Safety Element, the Project Site is located within a dam inundation zone (City of Pasadena, 2002). The Devil's Gate Reservoir is located 1.4 miles north of the Project Site and could cause catastrophic damage to the Arroyo Seco, specifically the Project Site and the Rose Bowl, which is located just south of the Project Site.

Although the City's EOP does not currently provide specific evacuation routes in the case of a dam failure, Chapter 2, Operations Section, identifies different agency responsibilities and the coordination and operations needed to protect life and property (City of Pasadena, 2011). However, the Rose Bowl, which is located immediately south of the Project Site, provides emergency evacuation routes which would be utilized by all public safety emergency vehicles to provide access to the entire Central Arroyo area, including the Project Site (RBOC, 2013). Additionally, the RBOC would be required to submit a Hazardous Materials Business Plan, which would include the establishment of an emergency evacuation plan (PFD, 2013).

Project construction would occur within the boundaries of the Project Site. Project construction would require the closure of existing driving range and a portion of the Brookside Golf Course; however, all other areas within the Brookside Golf Course would remain operational during construction. No road or sidewalk closures would be required. Further, the proposed haul route would not interfere with any emergency access routes mentioned within the Rose Bowl Evacuation Plan. As such, the Project would not result in inadequate emergency access. Therefore, no impacts would occur.

3.18 TRIBAL CULTURAL RESOURCES

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
XVIII. TRIBAL CULTURAL RESOURCES.				
a) Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code § 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or		X		
ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code § 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code § 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.			X	

Discussion

a) Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:

i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources. Code Section 5020.1(k), or

Less than Significant with Mitigation Incorporated. Assembly Bill 52 (AB 52) requires meaningful consultation with California Native American tribes on potential impacts to tribal cultural resources, as defined in PRC Section 21074. Tribal cultural resources are sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are either eligible or listed in the California Register of Historical Resources or local register of historical resources.

As specified in AB 52, lead agencies must provide notice to tribes that are traditionally and culturally affiliated with the geographic area of a project if the tribe has submitted a written request to be notified. The tribe must respond to the lead agency within 30 days of receipt of the notification if it wishes to engage in consultation on the project, and the lead agency must begin the consultation process within 30 days of receiving the request for consultation. Consultation concludes when either 1): the parties agree to

mitigation measures to avoid a significant effect on a tribal cultural resource, or 2) a party, acting in good faith and after reasonable effort, concludes mutual agreement cannot be reached.

The RBOC provided request for consultation letters to the Gabrieleño Band of Mission Indians, Kizh Nation (Kizh) and the Gabrieleño Tongva Tribe on June 11, 2021. Response and request for consultation was received by the Gabrieleño Band of Mission Indians, Kizh Nation on June 15, 2021. Consultation via phone between the RBOC and Kizh occurred on September 30, 2021, and consultation between both parties mutually closed on December 20, 2022.

As described above in Section V, *Cultural Resources*, the Project Site is within the Pasadena Arroyo Park and Recreation District (NRHP #08000579) under Criterion A in the areas of entertainment and recreation for its association with the development of Pasadena as a recreational mecca. The site has not been evaluated for listing on the California Register for tribal cultural resources.

Based on the consultation with the Kizh, there are no known tribal cultural resources within the Project Site and no tribal cultural resources listed or eligible for listing in the California Register of Historical Resources (CRHR) or other local register of historical resources. However, given the sensitivity of the area to encounter resources during ground disturbing activity as expressed by the tribe during consultation, impacts related to the potential discovery of resources that could be identified as tribal cultural resources, are considered potentially significant. Through the consultation process, the following Mitigation Measures MM-TCR-1, TCR-2, and TCR-3 would reduce impacts to less than significant.

MM-TCR-1. A. The RBOC and/or it's contractor shall retain a Native American monitor from or approved by the Gabrieleño band of Mission Indians – Kizh Nation (Kizh or Tribe). The monitor shall be retained prior to the commencement of any ground disturbing activity at all project locations (i.e., both on-site and any off-site locations that are included in the project description/definition and/or required in connection with the project, such as public improvement work). Ground disturbing work shall include but is not limited to demolition, pavement removal, potholing, auguring, grubbing, tree removal, boring, grading, excavation, drilling, and trenching.

B. A copy of the executed monitoring agreement shall be provided to the lead agency prior to the earlier of the commencement of any ground-disturbing activity for the project, or the issuance of any permit necessary to commence a ground-disturbing activity.

C. The monitor shall complete daily monitoring logs that will provide descriptions of the relevant ground disturbing activities, the type of construction activities performed, locations of ground-disturbing activities, soil types, cultural-related materials, and any other facts, conditions, materials, or discoveries of significance to the Tribe. Monitor logs shall identify and describe any discovered TCRs, including but not limited to, Native American cultural and historical artifacts, remains, places of significance, etc., (collectively, tribal cultural resources, or "TCR"), as well as any discovered Native American (ancestral) human remains and burial goods. Copies of monitor logs shall be provided to the RBOC agency upon written request.

D. Onsite tribal monitoring for the project shall conclude upon the latter of the following: (1) written confirmation to the Kizh from a designated project point of contact that all ground-disturbing activities and all phases that may involve ground-disturbing activities on the project site or in connection with the project are complete; or (2) a determination and written notification by the Kizh to the RBOC that no future, planned construction activity and/or development/construction phase at the project site possesses the potential to impact TCRs.

E. Upon discovery of any TCRs, all construction activities in the immediate vicinity of the discovery shall cease (i.e., not less than the surrounding 50 feet) and shall not resume until the discovered TCR has been fully assessed by the Kizh monitor and/or Kizh archaeologist. The Kizh will recover and retain all discovered TCRs in the form and/or manner the Tribe deems appropriate, in the Tribe's sole discretion, and for any purpose the Tribe deems appropriate, including for educational, cultural and/or historic purposes.

F. The RBOC and/or it's contractor shall provide the Tribe with a minimum of 30 days advance written notice of the commencement of any project ground-disturbing activity so that the Tribe has sufficient time to secure and schedule a monitor for the project.

G. The RBOC and/or it's contractor shall hold at least one (1) pre-construction sensitivity/educational meeting prior to the commencement of any ground-disturbing activities, where at a senior member of the Tribe will inform and educate the project's construction and managerial crew and staff members (including any project subcontractors and consultants) about the mitigation measures and compliance obligations, as well as places of significance located on the project site (if any), the appearance of potential TCRs, and other informational and operational guidance to aid in the project's compliance with the TCR mitigation measures.

MM-TCR-2. A. Native American human remains are defined in PRC 5097.98 (d)(1) as an inhumation or cremation, and in any state of decomposition or skeletal completeness. Funerary objects, called associated grave goods in Public Resources Code Section 5097.98, are also to be treated according to this statute.

B. Health and Safety Code Section 7050.5 dictates that any discoveries of human skeletal material shall be immediately reported to the County Coroner and all ground-disturbing activities shall immediately halt and shall remain halted until the coroner has determined the nature of the remains. If the coroner recognizes the human remains to be those of a Native American or has reason to believe they are Native American, he or she shall contact, by telephone within 24 hours, the Native American Heritage Commission, and Public Resources Code Section 5097.98 shall be followed.

C. Human remains and grave/burial goods shall be treated alike per California Public Resources Code section 5097.98(d)(1) and (2).

D. Construction activities may resume in other parts of the project site at a minimum of 200 feet away from discovered human remains and/or burial goods, if the Kizh determines in its sole discretion that resuming construction activities at that distance is acceptable and provides the project manager express consent of that determination (along with any other mitigation measures the Kizh monitor and/or archaeologist deems necessary). (CEQA Guidelines Section 15064.5(f).)

E. Preservation in place (i.e., avoidance) is the preferred manner of treatment for discovered human remains and/or burial goods. Any historic archaeological material that is not Native American in origin (non-TCR) shall be curated at a public, non-profit institution with a research interest in the materials, such as the Natural History Museum of Los Angeles County or the Fowler Museum, if such an institution agrees to accept the material. If no institution accepts the archaeological material, it shall be offered to a local school or historical society in the area for educational purposes.

F. Any discovery of human remains/burial goods shall be kept confidential to prevent further disturbance.

MM-TCR-3. A. If determined to be the Most Likely Descendant ("MLD"), the Koo-nas-gna Burial Policy shall be implemented. To the Tribe, the term "human remains" encompasses more than human bones. In ancient as well as historic times, Tribal Traditions included, but were not limited to, the preparation of the soil for burial, the burial of funerary objects with the deceased, and the ceremonial burning of human remains.

B. If the discovery of human remains includes four (4) or more burials, the discovery location shall be treated as a cemetery and a separate treatment plan shall be created.

C. The prepared soil and cremation soils are to be treated in the same manner as bone fragments that remain intact. Associated funerary objects are objects that, as part of the death rite or ceremony of a culture, are reasonably believed to have been placed with individual human remains either at the time of death or later, as well as other items made exclusively for burial purposes or to contain human remains. Cremations shall either be removed in bulk or by means necessary to ensure complete recovery of all sacred materials.

D. In the case where discovered human remains cannot be fully documented and recovered on the same day, the remains shall be covered with muslin cloth and a steel plate that can be moved by heavy equipment placed over the excavation opening to protect the remains. If this type of steel plate is not available, a 24-hour guard should be posted outside of working hours. The Tribe will make every effort to divert the project while keeping the remains in situ and protected. If the project cannot be diverted, it may be determined that burials shall be removed.

E. In the event preservation in place is not possible despite good faith efforts by the RBOC, before ground-disturbing activities may resume on the project site, the landowner shall arrange a designated site location within the footprint of the project for the respectful reburial of the human remains and/or ceremonial objects. The site of reburial/repatriation shall be agreed upon by the Tribe and the RBOC and shall be protected in perpetuity.

F. Each occurrence of human remains and associated funerary objects shall be stored using opaque cloth bags. All human remains, funerary objects, sacred objects and objects of cultural patrimony will be removed to a secure container on site if possible. These items shall be retained and shall be reburied within six months of recovery. The site of reburial/repatriation shall be on the project site but at a location agreed upon between the Tribe and the landowner at a site to be protected in perpetuity. There shall be no publicity regarding any cultural materials recovered.

G. The Tribe shall work closely with the project's qualified archaeologist (see MM-CUL-2) to ensure that the excavation is treated carefully, ethically and respectfully. If data recovery is approved by the Tribe, documentation shall be prepared and shall include (at a minimum) detailed descriptive notes and sketches. All data recovery data recovery-related forms of documentation shall be approved in advance by the Tribe. If any data recovery is performed, once complete, a final report shall be submitted to the Tribe and the NAHC. The Tribe does NOT authorize any scientific study or the utilization of any invasive and/or destructive diagnostics on human remains.

ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

Less Than Significant Impact. As described above, tribal consultation did not result in the determination that a tribal cultural resource is present within the Project Site. However, the RBOC, as the lead agency, did consider the significance of information shared by the tribe during consultation. Mitigation Measures MM-TCR-1 through TCR-3 would reduce any potential impacts related to the potential discovery of resources that could be identified as tribal cultural resources, to less than significant.

3.19 UTILITIES AND SERVICE SYSTEMS

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
XIX. UTILITIES AND SERVICE SYSTEMS. Would the project:				
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?				X
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?			X	
c) Result in a determination by the waste water treatment provider, which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?				X
d) Generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?			X	
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?				X

Discussion

Would the Project:

a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?

No Impact. The Project Site is in the City of Pasadena, located with the existing Brookside Golf Course. Construction activities could cause a slight increase in water use (mainly for dust control), but this would be temporary and not result in a substantial increase in water demand. Operation of the Project would be similar to that of existing conditions and similar water-demanding uses are anticipated; as such, water used for irrigation for landscaping would be largely unchanged. The Project would not require the relocation or construction of new water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities. Therefore, no impact would occur.

b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years?

Less Than Significant Impact. The Project does not propose a change of land uses on the Project Site and would continue to operate as an existing golf course. Water use for the Project Site could increase during construction of the Project; however, this would be temporary and not result in a substantial increase in water

demand. Additionally, PWP is developing the Non-Potable Water Project, which will offset up to 10 percent of the total water consumed by PWP customers by delivering non-potable water sources for public landscape irrigation use in the future (Pasadena Department of Water and Power 2021). Thus, there would be sufficient water supplies to serve the Project for the foreseeable future, including dry and multiple dry years. Therefore, impacts would be less than significant.

c) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?

No Impact. Wastewater from the City of Pasadena is currently treated at the Monk Hill Treatment Plant in Northwestern Pasadena (Pasadena Department of Water and Power 2021). The Project would not generate an increase in the regional population, or the amount of wastewater treated at the plant. The Project would not affect wastewater treatment capacity. Therefore, no impact would occur.

d) Generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?

Less Than Significant Impact. The Project may involve an increase in solid waste generation as a result of disposal of construction-related debris including landscaping and concrete present on the Project Site that would be removed as part of the Project's construction activities. This material would be disposed of at a licensed composting and landfill facility. The Project would be required to comply with the City's Construction and Demolition Waste Management Ordinance (PMC Chapter 8.62), which requires that construction projects divert at least 75 percent of waste either through recycling, salvage, or deconstruction (Pasadena Department of Public Works 2021). Thus, the Project would not generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals. Therefore, impacts would be less than significant.

e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?

No Impact. As discussed above, construction waste generated from the Project would be required to comply with the City's Construction and Demolition Waste Management Ordinance (PMC Chapter 8.62), which requires that construction projects divert at least 75 percent of waste either through recycling, salvage, or deconstruction (Pasadena Department of Public Works 2021).

Additionally, solid waste generated from operation of the Project would largely consist of typical commercial waste and would be transferred to a permitted landfill facility with capacity to accommodate the minimal amounts of solid waste that would be generated. Thus, the Project would not conflict with federal, state, and local management and reduction statutes and regulations related to solid waste. Therefore, no impacts would occur.

3.20 WILDFIRE

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
XX. WILDFIRE. If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:				
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?				X
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?			X	
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?				X
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?			X	

Discussion

Wildland fire protection in California is the responsibility of either the local government, state, or the federal government. State Responsibility Areas (SRA) are the areas in the state where the State of California has the primary financial responsibility for the prevention and suppression of wildland fires. SRA are recognized by the Board of Forestry and Fire Protection as areas where Cal Fire is the primary emergency response agency responsible for fire suppression and prevention.

Local responsibility areas (LRA) include incorporated cities, cultivated agriculture lands, and portions of the desert. LRA fire protection is typically provided by city fire departments, fire protection districts, counties, and by CAL FIRE under contract to local government. CAL FIRE uses an extension of the SRA Fire Hazard Severity Zone model, which is a science-based and field-tested model that assigns a hazard score based on the factors that influence fire likelihood and fire behavior, as the basis for evaluating fire hazard in LRAs. The LRA hazard rating reflects flame and ember intrusion from adjacent wildlands and from flammable vegetation in the urban area. The Los Angeles County Fire Department currently provides fire protection and emergency medical services to the City of Pasadena.

Fire Hazard Severity Zones (FHSZ) are identified by Moderate, High and Very High in an SRA, and Very High in an LRA. The nearest FHSZ in the SRA is a Very High FHSZ (VHFHSZ) approximately 2 miles north of the Project Site. The nearest FHSZ in the LRA is a VHFHSZ is located approximately 0.10 mile west of the Project Site, within the residential neighborhoods located along West Drive (CalFire 2023).

3. Environmental Analysis

If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:

a) Substantially impair an adopted emergency response plan or emergency evacuation plan?

No Impact. The City of Pasadena maintains a citywide EOP which goes into effect at the onset of a major disaster (e.g., a major earthquake). The Fire Marshall maintains the disaster plan. In case of a disaster, the Fire Marshall is responsible for implementing the plan, and the Pasadena Police Department devises evacuation routes based on the specific circumstance of the emergency (City of Pasadena 2011). According to the City's General Plan Safety Element, the Project Site is located within a dam inundation zone (City of Pasadena 2002). Construction and operation of the Project would be entirely within the developed Brookside Golf Course and would follow the appropriate local procedures and policies, and other applicable federal and state regulations regarding emergency response, and would not interfere with any adopted emergency response or evacuation plan. Therefore, no impacts would occur.

b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?

Less Than Significant Impact. The Brookside Golf Course varies in topography; however, the majority of the Project Site is developed as an existing golf course and is relatively flat within the Arroyo Seco canyon. The Project would consist of reorienting and expanding the existing driving range and constructing a new miniature golf course within the existing Brookside Golf Course, which would be in use daily and regularly maintained. Landscaping maintenance and irrigation would continue to prevent exacerbated risk of fires at the Project Site; thus, operation of the Project would not result in the increase of potential fire risks. Therefore, impacts would be less than significant.

c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?

No Impact. The Project Site is in a developed area surrounded by open space and residential properties. The Project would not require the installation of new infrastructure that may exacerbate fire risk. Therefore, no impact would occur.

d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?

Less Than Significant Impact. The Project Site is surrounded by open space and residential properties located on the adjacent hills. Although the Project Site is located at the bottom of the hills, the potential for the Project Site to be exposed to runoff, post-fire slope instability, or drainage changes that would expose people or structures to significant risks would be considered low. Furthermore, the proposed project does not include any habitable structures, which would also reduce the risks of exposure. Therefore, impacts would be less than significant.

3.21 MANDATORY FINDINGS OF SIGNIFICANCE

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
XXI. MANDATORY FINDINGS OF SIGNIFICANCE.				
a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?		X		
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)				X
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?				X

Discussion

As discussed above Section IV, *Biological Resources* and Section V, *Cultural Resources*, development of the Project would have the potential to disturb nesting birds and protected trees on the Project Site as well as impact important archaeological resources. Implementation of mitigation measures would be required to ensure that the Project does not degrade the quality of the environment.

a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number, or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?

As discussed above in Section IV, *Biological Resources* and Section V, *Cultural Resources*, development of the Project would have the potential to disturb nesting birds and protected trees on the Project Site as well as impact important examples of major periods of California history or prehistory. Implementation of mitigation measures would be required to ensure that the Project does not degrade the quality of the environment.

3. Environmental Analysis

b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?

The potential for cumulative impacts occurs when the independent impacts of a given project are combined with the impacts of related projects in proximity to the Project Site that would create impacts that are greater than those of the project alone. Related projects include past, current, and/or probable future projects whose development could contribute to potentially significant cumulative impacts in conjunction with a given project. The RBOC is undergoing a broad planning process to consider various improvements at the Rose Bowl and Brookside Golf Course to assist in meeting long-term revenue needs. While a variety of different options are under review, including operational changes and potentially other improvements, none of these changes are funded or considered reasonably foreseeable at this time. Therefore, there are no known reasonably foreseeable cumulative projects located in the immediate vicinity of the Project.

As shown in the analysis above, any construction or operational-related impacts would either be less than significant or mitigated to a less than significant level. As demonstrated in this analysis, there would be no long-term significant operational impacts. As such, there is no contribution to cumulative impacts from the Project. Additionally, based on the relatively small and localized scale of this Project, and that no other cumulative projects are identified in the area, the Project would not result in impacts that are individually limited but cumulatively considerable. Therefore, there would be no cumulative impacts and no mitigation is required.

c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?

As shown in the above analyses, the Project would not result in environmental effects that could cause substantial adverse effects on human beings, either directly or indirectly. Therefore, there would be no impact.

4. References

AirNav, LLC. 2021. Airport Information. http://www.airnav.com/airports.

Bay Area Air Quality Management District (BAAQMD). 2017, May. California Environmental Quality Act Air Quality Guidelines. https://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en.

California Air Pollution Control Officers Association (CAPCOA). 2021. California Emissions Estimator Model (CalEEMod). Version 2020.4. Prepared by: BREEZE Software, A Division of Trinity Consultants in collaboration with South Coast Air Quality Management District and the California Air Districts.

California Air Resources Board. 2017a, March 14. Final Proposed Short-Lived Climate Pollutant Reduction Strategy. https://ww2.arb.ca.gov/sites/default/files/2018-12/final_slcp_report%20Final%202017.pdf.

———. 2022, 2022 Scoping Plan for Achieving Carbon Neutrality, https://ww2.arb.ca.gov/sites/default/files/2022-12/2022-sp.pdf, accessed December 7, 2022.

California Natural Resources Agency (CNRA). 2018, November. Final Statement of Reasons for Regulatory Action http://resources.ca.gov/ceqa/docs/2018_CEQA_Final_Statement_of%20Reasons_111218.pdf.

Cal OES. 1991. "Hazardous Material Incident Contingency Plan." January. https://www.caloes.ca.gov/FireRescueSite/Documents/HazMat%20Incident%20Contingency%20Plan%20-%20HMICP.pdf.

Caltrans. 2020. "California State Scenic Highway System Map." California Department of Transportation. https://caltrans.maps.arcgis.com/apps/webappviewer/index.html?id=465dfd3d807c46cc8e8057116f1aacaa.

CalFire. 2023, January 11 (Accessed). FHSZ Viewer, FRAP Map. https://egis.fire.ca.gov/fhsz

CDFW. 2021. "NCCP Plan Summaries." California Department of Fish and Wildlife Natural Community Conservation Plans. https://wildlife.ca.gov/Conservation/Planning/NCCP/Plans.

CDOC. 2019. "Alquist-Priolo Earthquake Fault Zones." https://www.conservation.ca.gov/cgs/alquist-priolo.

———.2019. "California Earthquake Hazards Zone Application." https://www.conservation.ca.gov/cgs/geohazards/eq-zapp.

4. References

———. 2016. "California Important Farmland Finder." California Department of Conservation. https://maps.conservation.ca.gov/DLRP/CIFF/.

———.2015. "Geologic Map of California." https://maps.conservation.ca.gov/cgs/gmc/.

———.2019. "Los Angeles County Tsunami Hazard Area Maps." https://www.conservation.ca.gov/cgs/tsunami/maps/los-angeles.

———.1994. "Open File Report 94-14." Update of Mineral Land Classification of Portland Cement Concrete Aggregate in Ventura, Los Angeles, and Orange Counties, California, Part II - Los Angeles County. https://maps.conservation.ca.gov/cgs/informationwarehouse/index.html?map=mlc.

———.2018. "The Williamson Act Status Report 2016-2017." https://www.conservation.ca.gov/dlrp/wa/Documents/stats_reports/2018%20WA%20Status%20Report.pdf.

CDWR. 2021. "SGMA Groundwater Management." https://water.ca.gov/Programs/Groundwater-Management/SGMA-Groundwater-Management.

County of Los Angeles. 2021. "325.2.1 - Clearances." Code of Ordinances. https://library.municode.com/ca/los_angeles_county/codes/code_of_ordinances?nodeId=TIT32FICO_325.2.1CL#:~:text=Any%20person%20owning%2C%20leasing%2C%20controlling,1.

DTSC. 2021. "EnviroStor." https://www.envirostor.dtsc.ca.gov/public/map/?myaddress=Rose+Bowl.

Federal Highway Administration. 2006. Roadway Construction Noise Model (RCNM).

Federal Transit Administration. 2018, September. Transit Noise and Vibration Impact Assessment Manual. US Department of Transportation.

FEMA. 2008. "Flood Map 06037C1375F, effective on 09/26/2008." FEMA Flood Map Service. https://msc.fema.gov/portal/search?AddressQuery=1133%20Rosemont%20Ave%2C%20Pasadena%2C%20CA%2091103#searchresultsanchor.

Governor's Office of Planning and Research (OPR). 2008, June. CEQA and Climate Change: Addressing Climate Change through CEQA Review. Technical Advisory. https://opr.ca.gov/docs/june08-ceqa.pdf.

Governor's Office of Planning and Research. 2017. State of California General Plan Guidelines.

Harris, Cyril M. 1998. Handbook of Acoustical Measurements and Noise Control. 3rd edition. Woodbury, NY: Acoustical Society of America.

LARWQCB. 2020. "Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties." May 18. https://www.waterboards.ca.gov/losangeles/water_issues/programs/basin_plan/basin_plan_documentation.html.

4. References

Los Angeles County Department of Public Works. 2020. "Los Angeles County Airports." September. https://dpw.lacounty.gov/avi/airports/map.aspx.

Los Angeles County Waterworks District. 2021. "Groundwater Sustainability Agency Map Viewer." https://sgma.water.ca.gov/webgis/index.jsp?appid=gasmaster&rz=true.

NOAA. 2021. "What is a Seiche?" National Ocean Service. March. https://oceanservice.noaa.gov/facts/seiche.html.

Office of Environmental Health Hazard Assessment (OEHHA). 2015, February. Air Toxics Hot Spots Program Risk Assessment Guidelines. Guidance Manual for Preparation of Health Risk Assessments. http://oehha.ca.gov/air/hot_spots/2015/2015GuidanceManual.pdf.

Pasadena, City of. 2002. "City of Pasadena General Plan Safety Element." August. https://www.cityofpasadena.net/wp-content/uploads/sites/30/General-Plan-Safety-Element.pdf?v=1620854631699.

———.2003. "Arroyo Seco Design Guidelines". https://www.cityofpasadena.net/wp-content/uploads/sites/29/Arroyo-Seco-Design-Guidelines.pdf

———.2011. "Emergency Operations Plan." http://ww2.cityofpasadena.net/councilagendas/2012%20agendas/Jan_30_12/AR%2010%20Emergency%20Operations%20Plan%202011.pdf.

———.2015. Pasadena General Plan, Noise Element. https://www.cityofpasadena.net/planning/planning-division/community-planning/general-plan/

———.2016. "Land Use Diagram." City of Pasadena General. November 4. https://www.cityofpasadena.net/wp-content/uploads/sites/30/Land-Use-Diagram-2016-11-14.pdf?v=1620085094226.

———. 2016. "Land Use Element." Pasadena General Plan. January. https://www.cityofpasadena.net/wp-content/uploads/sites/30/Land-Use-Element-2016-01-25.pdf?v=1620767863254.

Pasadena, City of. 2018, March 5. Pasadena Climate Action Plan. https://www.cityofpasadena.net/planning/wp-content/uploads/sites/30/Final-Pasadena-Climate-Action-Plan_3.5.2018.pdf?v=1632935580716.

———.2018. "City of Pasadena Zoning Map." May 19. https://www.cityofpasadena.net/wp-content/uploads/sites/30/Zoning_Map_2018-05-19.pdf?v=1623358167966.

Pasadena, City of. August 2021. Pasadena Municipal Code, City of Pasadena. https://library.municode.com/ca/pasadena/codes/code_of_ordinances

———.2021. "City of Pasadena Municipal Code." Chapter 8.70 - Stormwater Management and Discharge Control. April.

4. References

https://library.municode.com/ca/pasadena/codes/code_of_ordinances?nodeId=TIT8HESA_CH8.70STMADICO.

Pasadena Department of Transportation, May 2021. Transportation Impact Analysis for 1133 Rosemont Avenue.

Pasadena Fire Department. 2013. "Fire Prevention - Hazardous Materials." December 10. https://www.cityofpasadena.net/fire/wp-content/uploads/sites/25/CERS_Business_User_Guide_1.2_Pasadena_2016.pdf.

Pasadena Department of Public Works. 2021. "Construction and Demolition Debris Recycling." https://www.cityofpasadena.net/public-works/recycling-resources/construction-demolition-recycling/construction-and-demolition-debris-recycling/.

Pasadena Department of Water and Power. 2021. "Where Our Water Comes From." https://ww5.cityofpasadena.net/water-and-power/water/.

Southern California Association of Governments (SCAG). 2020, September 3. Adopted Connect SoCal Plan: The 2020-2045 Regional Transportation Plan / Sustainable Communities Strategy of The Southern California Association of Governments. https://scag.ca.gov/sites/main/files/file-attachments/0903fconnectsocal-plan_0.pdf?1606001176.

South Coast Air Quality Management District (South Coast AQMD). 2008, July. Final Localized Significance Threshold Methodology. http://www.aqmd.gov/docs/default-source/ceqa/handbook/localized-significance-thresholds/final-lst-methodology-document.pdf.

———. 2009, November 19. Greenhouse Gases (GHG) CEQA Significance Thresholds Working Group Meeting 14. http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/year-2008-2009/ghg-meeting-14/ghg-meeting-14-main-presentation.pdf?sfvrsn=2.

———. 2010, September 28. Minutes for the GHG CEQA Significance Threshold Stakeholder Working Group #15. http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/year-2008-2009/ghg-meeting-15/ghg-meeting-15-minutes.pdf.

———. 2011. Fact Sheet for Applying CalEEMod to Localized Significance Thresholds. http://www.aqmd.gov/docs/default-source/ceqa/handbook/localized-significance-thresholds/caleemod-guidance.pdf?sfvrsn=2.

SWRCB. 2021. "GeoTracker." https://geotracker.waterboards.ca.gov/map/?CMD=runreport&myaddress=malibu#.

US EPA. 2018. "Wetlands." June 12. https://www.epa.gov/wetlands/what-wetland.

4. References

USDA. 2016. "California's Forest Resources: Forest Inventory and Analysis 2001-2010." February. https://www.fs.fed.us/pnw/pubs/pnw_gtr913.pdf.

USFWS. 2021. "National Wetlands Inventory." May 1. https://www.fws.gov/wetlands/data/mapper.html.

USGS. 2021. "What is a landslide and what causes one?" Natural Hazards. https://www.usgs.gov/faqs/what-a-landslide-and-what-causes-one?qt-news_science_products=0#qt-news_science_products.

———.2021. "What is Liquefaction?" Natural Hazards. https://www.usgs.gov/faqs/what-liquefaction?qt-news_science_products=0#qt-news_science_products.

4. References

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Appendix A Lighting Study

Pole	x-loc	y-loc	height	N	M	Total	kw
L01	306.1	78.2	60ft		2	2	1.3
L02	259.6	228	60ft		2	2	1.3
L03	213	377.7	60ft		2	2	1.3
L04	166.5	527.4	60ft		2	2	1.3
L05	120	677.1	60ft		2	2	1.3
L06	-130.9	690.3	60ft		2	2	1.3
L07	-174	539.5	60ft		2	2	1.3
L08	-217.8	389	60ft		2	2	1.3
L09	-260.9	238.3	60ft		2	2	1.3
L10	-304.1	87.6	60ft	1	2	3	1.9
L11	-188.6	14.4	60ft	1	2	3	1.9
L12	-61.3	-22.1	60ft	1	2	3	1.9
L13	70.6	-22.9	60ft	1	2	3	1.9
L14	196.8	5.3	60ft	1	2	3	1.9
Total				5	28	33	21.3

Driving Range
263 points at z=3, sp 30ft by 30ft
HORIZONTAL FOOTCANDLES

Average	8
Maximum	27
Minimum	1
AvgMin	7.81
MaxMin	27.00
Coef Var	0.68
UnifGrad	9.55

Tee Box
27 points at z=3, sp 20ft by 20ft
HORIZONTAL FOOTCANDLES

Average	5
Maximum	14
Minimum	2
AvgMin	2.65
MaxMin	7.00
Coef Var	0.44
UnifGrad	2.00

Putting Area (Behind L11)
63 points at z=3, sp 10ft by 10ft
HORIZONTAL FOOTCANDLES

Average	2
Maximum	5
Minimum	0
AvgMin	N/A
MaxMin	N/A
Coef Var	0.67
UnifGrad	N/A

Spill @150'
106 points
HORIZONTAL FOOTCANDLES

Average	0
Maximum	0
Minimum	0
AvgMin	N/A
MaxMin	N/A
Coef Var	0.00

M
CLIR 630 EV M

Light Loss Factor = 0.950
Watts per luminaire = 646

Number luminaires used = 28
kw these luminaires = 18.1

N
CLIR 630 EV N

Light Loss Factor = 0.950
Watts per luminaire = 646

Number luminaires used = 5
kw these luminaires = 3.2

TECHLINE SPORTS LIGHTING powered by GEOSPORT

BROOKSIDE DRIVING RANGE
PASADENA, CA
GOLF RANGE

1. THIS LIGHTING DESIGN IS BASED ON INFORMATION SUPPLIED BY OTHERS.SITE DETAILS PROVIDED HEREON ARE REPRODUCED ONLY AS A VISUALIZATION AID. FIELD DEVIATIONS MAY SIGNIFICANTLY AFFECT PREDICTED PERFORMANCE. PRIOR TO INSTALLATION, CRITICAL SITE INFORMATION (POLE LOCATIONS, ORIENTATION, MOUNTING HEIGHT, ETC.) SHOULD BE COORDINATED WITH THE CONTRACTOR AND/OR SPECIFIER RESPONSIBLE FOR THE PROJECT.
2. LUMINAIRE DATA IS TESTED TO INDUSTRY STANDARDS UNDER LABORATORY CONDITIONS. OPERATING VOLTAGE AND NORMAL MANUFACTURING TOLERANCES OF LAMP, BALLAST, AND LUMINAIRE MAY AFFECT FIELD RESULTS.
3. CONFORMANCE TO FACILITY CODE AND OTHER LOCAL REQUIREMENTS IS THE RESPONSIBILITY OF THE OWNER AND/OR THE OWNER'S REPRESENTATIVE.
4. CALCULATIONS DO NOT TAKE INTO CONSIDERATION ANY OBSTRUCTIONS OR LIGHTING POLLUTION CAUSED BY NEIGHBORING LIGHT SOURCES.

DRAWN BY:JCIE
Date:12/6/2021
SCALE:NTS
Page:1 of 1
Dwg #:21-4104

Appendix

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Appendix B Air Quality and Greenhouse Gas Background and Modeling Data

Air Quality and Greenhouse Gas Appendix

Air Quality and Greenhouse Gas Background and Modeling Data

AIR QUALITY

Climate/Meteorology

SOUTH COAST AIR BASIN

The Project Site lies in the South Coast Air Basin (SoCAB), which includes all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino Counties. The SoCAB is in a coastal plain with connecting broad valleys and low hills and is bounded by the Pacific Ocean in the southwest quadrant, with high mountains forming the remainder of the perimeter. The general region lies in the semi-permanent high-pressure zone of the eastern Pacific. As a result, the climate is mild, tempered by cool sea breezes. This usually mild weather pattern is interrupted infrequently by periods of extremely hot weather, winter storms, and Santa Ana winds (South Coast AQMD 2005).

Temperature and Precipitation

The annual average temperature varies little throughout the SoCAB, ranging from the low to middle 60s, measured in degrees Fahrenheit (°F). With a more pronounced oceanic influence, coastal areas show less variability in annual minimum and maximum temperatures than inland areas. The climatological station nearest to the Project Site with temperature data is the Pasadena Monitoring Station (ID 046719). The average low is reported at 42.6 °F in January, and the average high is 89.2 °F in August (WRCC 2021).

In contrast to a very steady pattern of temperature, rainfall is seasonally and annually highly variable. Almost all rain falls from October through April. Summer rainfall is normally restricted to widely scattered thundershowers near the coast, with slightly heavier shower activity in the east and over the mountains. Rainfall averages 20.24 inches per year in the vicinity of the area (WRCC 2021).

Humidity

Although the SoCAB has a semiarid climate, the air near the earth's surface is typically moist because of the presence of a shallow marine layer. Except for infrequent periods when dry, continental air is brought into the SoCAB by offshore winds, the "ocean effect" is dominant. Periods of heavy fog, especially along the coast, are frequent. Low clouds, often referred to as high fog, are a characteristic climatic feature. Annual average humidity is 70 percent at the coast and 57 percent in the eastern portions of the (South Coast AQMD 2005).

Wind

Wind patterns across the south coastal region are characterized by westerly or southwesterly onshore winds during the day and by easterly or northeasterly breezes at night. Wind speed is somewhat greater during the dry summer months than during the rainy winter season.

Between periods of wind, periods of air stagnation may occur, both in the morning and evening hours. Air stagnation is one of the critical determinants of air quality conditions on any given day. During the winter and fall months, surface high-pressure systems over the SoCAB, combined with other meteorological conditions, can result in very strong, downslope Santa Ana winds. These winds normally continue a few days before predominant meteorological conditions are reestablished.

The mountain ranges to the east affect the transport and diffusion of pollutants by inhibiting their eastward transport. Air quality in the SoCAB generally ranges from fair to poor and is similar to air quality in most of coastal southern California. The entire region experiences heavy concentrations of air pollutants during prolonged periods of stable atmospheric conditions (South Coast AQMD 2005).

Inversions

In conjunction with the two characteristic wind patterns that affect the rate and orientation of horizontal pollutant transport, there are two similarly distinct types of temperature inversions that control the vertical depth through which pollutants are mixed. These are the marine/subsidence inversion and the radiation inversion. The combination of winds and inversions are critical determinants in leading to the highly degraded air quality in summer and the generally good air quality in the winter in the project area (South Coast AQMD 2005).

Air Quality Regulations

The Project has the potential to release gaseous emissions of criteria pollutants and dust into the ambient air; therefore, it falls under the ambient air quality standards promulgated at the local, state, and federal levels. The Project Site is in the SoCAB and is subject to the rules and regulations imposed by the South Coast Air Quality Management District (South Coast AQMD). However, South Coast AQMD reports to California Air Resources board (CARB), and all criteria emissions are also governed by the California and national Ambient Air Quality Standards (AAQS). Federal, state, regional, and local laws, regulations, plans, or guidelines that are potentially applicable to the Project are summarized below.

AMBIENT AIR QUALITY STANDARDS

The Clean Air Act (CAA) was passed in 1963 by the US Congress and has been amended several times. The 1970 Clean Air Act amendments strengthened previous legislation and laid the foundation for the regulatory scheme of the 1970s and 1980s. In 1977, Congress again added several provisions, including nonattainment requirements for areas not meeting National AAQS and the Prevention of Significant Deterioration program. The 1990 amendments represent the latest in a series of federal efforts to regulate the protection of air quality in the United States. The CAA allows states to adopt more stringent standards or to include other pollution species. The California Clean Air Act (CCAA), signed into law in 1988, requires all areas of the state to achieve

and maintain the California AAQS by the earliest practical date. The California AAQS tend to be more restrictive than the National AAQS, based on even greater health and welfare concerns.

These National AAQS and California AAQS are the levels of air quality considered to provide a margin of safety in the protection of the public health and welfare. They are designed to protect "sensitive receptors" most susceptible to further respiratory distress, such as asthmatics, the elderly, very young children, people already weakened by other disease or illness, and persons engaged in strenuous work or exercise. Healthy adults can tolerate occasional exposure to air pollutant concentrations considerably above these minimum standards before adverse effects are observed.

Both California and the federal government have established health-based AAQS for seven air pollutants. As shown in Table 1, these pollutants include ozone (O_3), nitrogen dioxide (NO_2), carbon monoxide (CO), sulfur dioxide (SO_2), coarse inhalable particulate matter (PM_{10}), fine inhalable particulate matter ($PM_{2.5}$), and lead (Pb). In addition, the state has set standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles. These standards are designed to protect the health and welfare of the populace with a reasonable margin of safety.

Table 1 Ambient Air Quality Standards for Criteria Pollutants

Pollutant	Averaging Time	California Standard[1]	Federal Primary Standard[2]	Major Pollutant Sources
Ozone (O_3)[3]	1 hour	0.09 ppm	*	Motor vehicles, paints, coatings, and solvents.
	8 hours	0.070 ppm	0.070 ppm	
Carbon Monoxide (CO)	1 hour	20 ppm	35 ppm	Internal combustion engines, primarily gasoline-powered motor vehicles.
	8 hours	9.0 ppm	9 ppm	
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	0.030 ppm	0.053 ppm	Motor vehicles, petroleum-refining operations, industrial sources, aircraft, ships, and railroads.
	1 hour	0.18 ppm	0.100 ppm	
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean	*	0.030 ppm	Fuel combustion, chemical plants, sulfur recovery plants, and metal processing.
	1 hour	0.25 ppm	0.075 ppm	
	24 hours	0.04 ppm	0.14 ppm	
Respirable Coarse Particulate Matter (PM_{10})	Annual Arithmetic Mean	20 µg/m^3	*	Dust and fume-producing construction, industrial, and agricultural operations, combustion, atmospheric photochemical reactions, and natural activities (e.g., wind-raised dust and ocean sprays).
	24 hours	50 µg/m^3	150 µg/m^3	
Respirable Fine Particulate Matter ($PM_{2.5}$)[4]	Annual Arithmetic Mean	12 µg/m^3	12 µg/m^3	Dust and fume-producing construction, industrial, and agricultural operations, combustion, atmospheric photochemical reactions, and natural activities (e.g., wind-raised dust and ocean sprays).
	24 hours	*	35 µg/m^3	

Table 1 Ambient Air Quality Standards for Criteria Pollutants

Pollutant	Averaging Time	California Standard[1]	Federal Primary Standard[2]	Major Pollutant Sources
Lead (Pb)	30-Day Average	1.5 µg/m^3	*	Present source: lead smelters, battery manufacturing & recycling facilities. Past source: combustion of leaded gasoline.
	Calendar Quarter	*	1.5 µg/m^3	
	Rolling 3-Month Average	*	0.15 µg/m^3	
Sulfates (SO_4)[5]	24 hours	25 µg/m^3	*	Industrial processes.
Visibility Reducing Particles	8 hours	ExCo =0.23/km visibility of 10≥ miles	No Federal Standard	Visibility-reducing particles consist of suspended particulate matter, which is a complex mixture of tiny particles that consists of dry solid fragments, solid cores with liquid coatings, and small droplets of liquid. These particles vary greatly in shape, size and chemical composition, and can be made up of many different materials such as metals, soot, soil, dust, and salt.
Hydrogen Sulfide	1 hour	0.03 ppm	No Federal Standard	Hydrogen sulfide (H_2S) is a colorless gas with the odor of rotten eggs. It is formed during bacterial decomposition of sulfur-containing organic substances. Also, it can be present in sewer gas and some natural gas and can be emitted as the result of geothermal energy exploitation.
Vinyl Chloride	24 hours	0.01 ppm	No Federal Standard	Vinyl chloride (chloroethene), a chlorinated hydrocarbon, is a colorless gas with a mild, sweet odor. Most vinyl chloride is used to make polyvinyl chloride (PVC) plastic and vinyl products. Vinyl chloride has been detected near landfills, sewage plants, and hazardous waste sites, due to microbial breakdown of chlorinated solvents.

Source: CARB 2016.

Notes: ppm: parts per million; µg/m^3: micrograms per cubic meter

* Standard has not been established for this pollutant/duration by this entity.

1 California standards for O_3, CO (except 8-hour Lake Tahoe), SO_2 (1 and 24 hour), NO_2, and particulate matter (PM_{10}, $PM_{2.5}$, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

2 National standards (other than O_3, PM, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The O_3 standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM_{10}, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m^3 is equal to or less than one. For $PM_{2.5}$, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard.

3 On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm.

4 On December 14, 2012, the national annual $PM_{2.5}$ primary standard was lowered from 15 µg/m^3 to 12.0 µg/m^3. The existing national 24-hour $PM_{2.5}$ standards (primary and secondary) were retained at 35 µg/m^3, as was the annual secondary standard of 15 µg/m^3. The existing 24-hour PM_{10} standards (primary and secondary) of 150 µg/m^3 also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.

5 On June 2, 2010, a new 1-hour SO_2 standard was established and the existing 24-hour and annual primary standards were revoked. The 1-hour national standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the 1-hour national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.

California has also adopted a host of other regulations that reduce criteria pollutant emissions, including:

- AB 1493: Pavley Fuel Efficiency Standards
- Title 20 California Code of Regulations (CCR): Appliance Energy Efficiency Standards
- Title 24, Part 6, CCR: Building and Energy Efficiency Standards
- Title 24, Part 11, CCR: Green Building Standards Code

CRITERIA AIR POLLUTANTS

The air pollutants emitted into the ambient air by stationary and mobile sources are regulated by federal and state law. Air pollutants are categorized as primary or secondary pollutants. Primary air pollutants are those that are emitted directly from sources and include CO, VOC, NO_2, SO_X, PM_{10}, $PM_{2.5}$, and Pb. Of these, CO, SO_2, NO_2, PM_{10}, and $PM_{2.5}$ are "criteria air pollutants," which means that ambient air quality standards (AAQS) have been established for them. VOC and oxides of nitrogen (NO_X) are air pollutant precursors that form secondary criteria pollutants through chemical and photochemical reactions in the atmosphere. Ozone (O_3) and NO_2 are the principal secondary pollutants. A description of each of the primary and secondary criteria air pollutants and their known health effects is presented below.

Carbon Monoxide (CO) is a colorless, odorless, toxic gas produced by incomplete combustion of carbon substances, such as gasoline or diesel fuel. CO is a primary criteria air pollutant. CO concentrations tend to be the highest during winter mornings with little to no wind, when surface-based inversions trap the pollutant at ground levels. Because CO is emitted directly from internal combustion, engines and motor vehicles operating at slow speeds are the primary source of CO in the SoCAB. The highest ambient CO concentrations are generally found near traffic-congested corridors and intersections. The primary adverse health effect associated with CO is interference with normal oxygen transfer to the blood, which may result in tissue oxygen deprivation (South Coast AQMD 2005, USEPA 2021). The SoCAB is designated as being in attainment under the California AAQS and attainment (serious maintenance) under the National AAQS (CARB 2023a).

Volatile Organic Compounds (VOC) are compounds composed primarily of atoms of hydrogen and carbon. Internal combustion associated with motor vehicle usage is the major source of hydrocarbons. Other sources of VOCs include evaporative emissions associated with the use of paints and solvents, the application of asphalt paving, and the use of household consumer products such as aerosols. There are no ambient air quality standards established for VOCs. However, because they contribute to the formation of ozone (O_3), South Coast AQMD has established a significance threshold for this pollutant (South Coast AQMD 2005).

Nitrogen Oxides (NO_x) are a byproduct of fuel combustion and contribute to the formation of O_3, PM_{10}, and $PM_{2.5}$. The two major forms of NO_x are nitric oxide (NO) and nitrogen dioxide (NO_2). The principal form of NO_2 produced by combustion is NO, but NO reacts with oxygen to form NO_2, creating the mixture of NO and NO_2 commonly called NO_x. NO_2 acts as an acute irritant and, in equal concentrations, is more injurious than NO. At atmospheric concentrations, however, NO_2 is only potentially irritating. There is some indication of a relationship between NO_2 and chronic pulmonary fibrosis. Some increase in bronchitis in children (two and three years old) has also been observed at concentrations below 0.3 part per million (ppm). NO_2 absorbs blue light; the result is a brownish-red cast to the atmosphere and reduced visibility. NO is a colorless, odorless gas formed from atmospheric nitrogen and oxygen when combustion takes place under high temperature and/or high pressure (South Coast AQMD 2005, USEPA 2021). The SoCAB is designated as an attainment (maintenance) area under the National AAQS and attainment area under the California AAQS (CARB 2023a).

Sulfur Dioxide (SO_2) is a colorless, pungent, irritating gas formed by the combustion of sulfurous fossil fuels. It enters the atmosphere as a result of burning high-sulfur-content fuel oils and coal and from chemical

processes at chemical plants and refineries. Gasoline and natural gas have very low sulfur content and do not release significant quantities of SO_2 (South Coast AQMD 2005, USEPA 2021). When sulfur dioxide forms sulfates (SO_4) in the atmosphere, together these pollutants are referred to as sulfur oxides (SO_X). Thus, SO_2 is both a primary and secondary criteria air pollutant. At sufficiently high concentrations, SO_2 may irritate the upper respiratory tract. At lower concentrations and when combined with particulates, SO_2 may do greater harm by injuring lung tissue. The SoCAB is designated as attainment under the California and National AAQS (CARB 2023a).

Suspended Particulate Matter (PM_{10} and $PM_{2.5}$) consists of finely divided solids or liquids such as soot, dust, aerosols, fumes, and mists. Two forms of fine particulates are now recognized and regulated. Inhalable coarse particles, or PM_{10}, include the particulate matter with an aerodynamic diameter of 10 microns (i.e., 10 millionths of a meter or 0.0004 inch) or less. Inhalable fine particles, or $PM_{2.5}$, have an aerodynamic diameter of 2.5 microns (i.e., 2.5 millionths of a meter or 0.0001 inch) or less. Particulate discharge into the atmosphere results primarily from industrial, agricultural, construction, and transportation activities. However, wind action on arid landscapes also contributes substantially to local particulate loading (i.e., fugitive dust). Both PM_{10} and $PM_{2.5}$ may adversely affect the human respiratory system, especially in people who are naturally sensitive or susceptible to breathing problems (South Coast AQMD 2005).

The US Environmental Protection Agency's (EPA) scientific review concluded that $PM_{2.5}$, which penetrates deeply into the lungs, is more likely than PM_{10} to contribute to health effects and at concentrations that extend well below those allowed by the current PM_{10} standards. These health effects include premature death and increased hospital admissions and emergency room visits (primarily the elderly and individuals with cardiopulmonary disease); increased respiratory symptoms and disease (children and individuals with cardiopulmonary disease such as asthma); decreased lung functions (particularly in children and individuals with asthma); and alterations in lung tissue and structure and in respiratory tract defense mechanisms (South Coast AQMD 2005). There has been emerging evidence that even smaller particulates with an aerodynamic diameter of <0.1 microns or less (i.e., ≤ 0.1 millionths of a meter or <0.000004 inch), known as ultrafine particulates (UFPs), have human health implications, because UFPs toxic components may initiate or facilitate biological processes that may lead to adverse effects to the heart, lungs, and other organs (South Coast AQMD 2013). However, the EPA or CARB have yet to adopt AAQS to regulate these particulates. Diesel particulate matter (DPM) is classified by the CARB as a carcinogen (CARB 1998). Particulate matter can also cause environmental effects such as visibility impairment,[1] environmental damage,[2] and aesthetic damage[3] (South Coast AQMD 2005; USEPA 2021). The SoCAB is in nonattainment and serious nonattainment for $PM_{2.5}$ under the California

[1] $PM_{2.5}$ is the main cause of reduced visibility (haze) in parts of the United States.

[2] Particulate matter can be carried over long distances by wind and then settle on ground or water, making lakes and streams acidic; changing the nutrient balance in coastal waters and large river basins; depleting the nutrients in soil; damaging sensitive forests and farm crops; and affecting the diversity of ecosystems.

[3] Particulate matter can stain and damage stone and other materials, including culturally important objects such as statues and monuments.

and National AAQS, respectively. For PM_{10}, the SoCAB is nonattainment under the California AAQS and in attainment (serious maintenance) under the National AAQS (CARB 2023a).[4]

Ozone (O_3) is commonly referred to as "smog" and is a gas that is formed when VOCs and NO_x, both by-products of internal combustion engine exhaust, undergo photochemical reactions in the presence of sunlight. O_3 is a secondary criteria air pollutant. O_3 concentrations are generally highest during the summer months when direct sunlight, light winds, and warm temperatures create favorable conditions for the formation of this pollutant. O_3 poses a health threat to those who already suffer from respiratory diseases as well as to healthy people. Breathing O_3 can trigger a variety of health problems, including chest pain, coughing, throat irritation, and congestion. It can worsen bronchitis, emphysema, and asthma. Ground-level O_3 also can reduce lung function and inflame the linings of the lungs. Repeated exposure may permanently scar lung tissue. O_3 also affects sensitive vegetation and ecosystems, including forests, parks, wildlife refuges, and wilderness areas. In particular, O_3 harms sensitive vegetation during the growing season (South Coast AQMD 2005; USEPA 2021). The SoCAB is designated as extreme nonattainment under the National AAQS (8-hour) and as nonattainment under the California AAQS (1-hour and 8-hour). (CARB 2023a).

Lead (Pb) is a metal found naturally in the environment as well as in manufactured products. Once taken into the body, lead distributes throughout the body in the blood and accumulates in the bones. Depending on the level of exposure, lead can adversely affect the nervous system, kidney function, immune system, reproductive and developmental systems, and the cardiovascular system. Lead exposure also affects the oxygen-carrying capacity of the blood. The effects of lead most commonly encountered in current populations are neurological effects in children and cardiovascular effects in adults (e.g., high blood pressure and heart disease). Infants and young children are especially sensitive to even low levels of lead, which may contribute to behavioral problems, learning deficits, and lowered IQ (South Coast AQMD 2005; USEPA 2021). The major sources of lead emissions have historically been mobile and industrial sources. As a result of the EPA's regulatory efforts to remove lead from gasoline, emissions of lead from the transportation sector dramatically declined by 95 percent between 1980 and 1999, and levels of lead in the air decreased by 94 percent between 1980 and 1999. Today, the highest levels of lead in air are usually found near lead smelters. The major sources of lead emissions today are ore and metals processing and piston-engine aircraft operating on leaded aviation gasoline. However, in 2008 the EPA and CARB adopted stricter lead standards, and special monitoring sites immediately downwind of lead sources recorded very localized violations of the new state and federal standards.[5] As a result of these violations, the Los Angeles County portion of the SoCAB is designated nonattainment under the National AAQS for lead (South Coast AQMD 2012; CARB 2023a). Because emissions of lead are found only in projects that are permitted by South Coast AQMD, lead is not a pollutant of concern for the project.

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[4] CARB approved the South Coast AQMD's request to redesignate the SoCAB from serious nonattainment for PM_{10} to attainment for PM_{10} under the National AAQS on March 25, 2010, because the SoCAB did not violate federal 24-hour PM_{10} standards from 2004 to 2007. The EPA approved the State of California's request to redesignate the South Coast PM_{10} nonattainment area to attainment of the PM_{10} National AAQS, effective on July 26, 2013.

[5] Source-oriented monitors record concentrations of lead at lead-related industrial facilities in the SoCAB, which include Exide Technologies in the City of Commerce; Quemetco, Inc., in the City of Industry; Trojan Battery Company in Santa Fe Springs; and Exide Technologies in Vernon. Monitoring conducted between 2004 through 2007 showed that the Trojan Battery Company and Exide Technologies exceed the federal standards (South Coast AQMD 2012).

TOXIC AIR CONTAMINANTS

The public's exposure to air pollutants classified as toxic air contaminants (TACs) is a significant environmental health issue in California. In 1983, the California Legislature enacted a program to identify the health effects of TACs and to reduce exposure to these contaminants to protect the public health. The California Health and Safety Code defines a TAC as "an air pollutant which may cause or contribute to an increase in mortality or in serious illness, or which may pose a present or potential hazard to human health." A substance that is listed as a hazardous air pollutant (HAP) pursuant to Section 112(b) of the federal Clean Air Act (42 United States Code §7412[b]) is a toxic air contaminant. Under state law, the California Environmental Protection Agency (Cal/EPA), acting through CARB, is authorized to identify a substance as a TAC if it determines that the substance is an air pollutant that may cause or contribute to an increase in mortality or to an increase in serious illness, or may pose a present or potential hazard to human health.

California regulates TACs primarily through Assembly Bill (AB) 1807 (Tanner Air Toxics Act) and AB 2588 (Air Toxics "Hot Spot" Information and Assessment Act of 1987). The Tanner Air Toxics Act sets forth a formal procedure for CARB to designate substances as TACs. Once a TAC is identified, CARB adopts an "airborne toxics control measure" for sources that emit designated TACs. If there is a safe threshold for a substance (i.e., a point below which there is no toxic effect), the control measure must reduce exposure to below that threshold. If there is no safe threshold, the measure must incorporate toxics best available control technology to minimize emissions. To date, CARB has established formal control measures for 11 TACs, all of which are identified as having no safe threshold.

Air toxics from stationary sources are also regulated in California under the Air Toxics "Hot Spot" Information and Assessment Act of 1987. Under AB 2588, toxic air contaminant emissions from individual facilities are quantified and prioritized by the air quality management district or air pollution control district. High priority facilities are required to perform a health risk assessment and, if specific thresholds are exceeded, are required to communicate the results to the public in the form of notices and public meetings.

By the last update to the TAC list in December 1999, CARB had designated 244 compounds as TACs (CARB 1999). Additionally, CARB has implemented control measures for a number of compounds that pose high risks and show potential for effective control. The majority of the estimated health risks from TACs can be attributed to relatively few compounds, the most important being particulate matter from diesel-fueled engines.

Diesel Particulate Matter

In 1998, CARB identified particulate emissions from diesel-fueled engines (diesel PM) as a TAC. Previously, the individual chemical compounds in diesel exhaust were considered TACs. Almost all diesel exhaust particle mass is 10 microns or less in diameter. Because of their extremely small size, these particles can be inhaled and eventually trapped in the bronchial and alveolar regions of the lung.

CARB has promulgated the following specific rules to limit TAC emissions:

- 13 CCR Chapter 10, Section 2485, Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling

- 13 CCR Chapter 10, Section 2480, Airborne Toxic Control Measure to Limit School Bus Idling and Idling at Schools
- 13 CCR Section 2477 and Article 8, Airborne Toxic Control Measure for In-Use Diesel-Fueled Transport Refrigeration Units (TRU) and TRU Generator Sets and Facilities Where TRUs Operate

Community Risk

In addition, to reduce exposure to TACs, CARB developed and approved the *Air Quality and Land Use Handbook: A Community Health Perspective* (2005) to provide guidance regarding the siting of sensitive land uses in the vicinity of freeways, distribution centers, rail yards, ports, refineries, chrome-plating facilities, dry cleaners, and gasoline-dispensing facilities. This guidance document was developed to assess compatibility and associated health risks when placing sensitive receptors near existing pollution sources. CARB's recommendations on the siting of new sensitive land uses were based on a compilation of recent studies that evaluated data on the adverse health effects from proximity to air pollution sources. The key observation in these studies is that proximity to air pollution sources substantially increases exposure and the potential for adverse health effects. There are three carcinogenic toxic air contaminants that constitute the majority of the known health risks from motor vehicle traffic, DPM from trucks, and benzene and 1,3-butadiene from passenger vehicles. CARB recommendations are based on data that show that localized air pollution exposures can be reduced by as much as 80 percent by following CARB minimum distance separations.

Multiple Airborne Toxics Exposure Study (MATES)

The Multiple Air Toxics Exposure Study (MATES) is a monitoring and evaluation study on ambient concentrations of TACs and estimated the potential health risks from air toxics in the SoCAB. In 2008, South Coast AQMD conducted its third update to the MATES study (MATES III). The results showed that the overall risk for excess cancer from a lifetime exposure to ambient levels of air toxics was about 1,200 in a million. The largest contributor to this risk was diesel exhaust, accounting for 84 percent of the cancer risk (South Coast AQMD 2008b).

South Coast AQMD recently released the fourth update (MATES IV). The results showed that the overall monitored risk for excess cancer from a lifetime exposure to ambient levels of air toxics decreased to approximately 418 in one million. Compared to the 2008 MATES III, monitored excess cancer risks decreased by approximately 65 percent. Approximately 90 percent of the risk is attributed to mobile sources while 10 percent is attributed to TACs from stationary sources, such as refineries, metal processing facilities, gas stations, and chrome plating facilities. The largest contributor to this risk was diesel exhaust, accounting for approximately 68 percent of the air toxics risk. Compared to MATES III, MATES IV found substantial improvement in air quality and associated decrease in air toxics exposure. As a result, the estimated basin-wide population-weighted risk decreased by approximately 57 percent compared to the analysis done for the MATES III time period (South Coast AQMD 2015a).

The Office of Environmental Health Hazard Assessment (OEHHA) updated the guidelines for estimating cancer risks on March 6, 2015. The new method utilizes higher estimates of cancer potency during early life exposures, which result in a higher calculation of risk. There are also differences in the assumptions on breathing rates and length of residential exposures. When combined together, South Coast AQMD estimates

that risks for a given inhalation exposure level will be about 2.7 times higher using the proposed updated methods identified in MATES IV (e.g., 2.7 times higher than 418 in one million overall excess cancer risk) (South Coast AQMD 2015a).

Air Quality Management Planning

The South Coast AQMD is the agency responsible for preparing the air quality management plan (AQMP) for the SoCAB in coordination with the Southern California Association of Governments (SCAG). Since 1979, a number of AQMPs have been prepared.

2016 AQMP

On March 3, 2017, the South Coast AQMD adopted the 2016 AQMP as an update to the 2012 AQMP. The 2016 AQMP addresses strategies and measures to attain the following National AAQS:

- 2008 National 8-hour ozone standard by 2031,
- 2012 National annual $PM_{2.5}$ standard by 2025[6],
- 2006 National 24-hour $PM_{2.5}$ standard by 2019,
- 1997 National 8-hour ozone standard by 2023, and the
- 1979 National 1-hour ozone standard by year 2022.

It is projected that total NO_X emissions in the SoCAB would need to be reduced to 150 tons per day (tpd) by year 2023 and to 100 tpd in year 2031 to meet the 1997 and 2008 federal 8-hour ozone standards. The strategy to meet the 1997 federal 8-hour ozone standard would also lead to attaining the 1979 federal 1-hour ozone standard by year 2022 (South Coast AQMD 2017), which requires reducing NO_X emissions in the SoCAB to 250 tpd. This is approximately 45 percent additional reductions above existing regulations for the 2023 ozone standard and 55 percent additional reductions above existing regulations to meet the 2031 ozone standard.

Reducing NO_X emissions would also reduce $PM_{2.5}$ concentrations in the SoCAB. However, as the goal is to meet the 2012 federal annual $PM_{2.5}$ standard no later than year 2025, South Coast AQMD is seeking to reclassify the SoCAB from "moderate" to "serious" nonattainment under this federal standard. A "moderate" non-attainment would require meeting the 2012 federal standard by no later than 2021.

Overall, the 2016 AQMP is composed of stationary and mobile-source emission reductions from regulatory control measures, incentive-based programs, co-benefits from climate programs, mobile-source strategies, and reductions from federal sources such as aircrafts, locomotives, and ocean-going vessels. Strategies outlined in the 2016 AQMP would be implemented in collaboration between CARB and the EPA (South Coast AQMD 2017).

[6] The 2016 AQMP requests a reclassification from moderate to serious non-attainment for the 2012 National $PM_{2.5}$ standard.

2022 AQMP

On October 1, 2015, the EPA strengthened the National AAQS for ground-level ozone, lowering the primary and secondary ozone standard levels to 70 parts per billion (ppb) from 75 ppb. The SoCAB is classified as an "extreme" nonattainment area for the 2015 National AAQS for ozone. Consequently, South Coast AQMD Governing Board adopted the 2022 AQMP in December 2022 to address the requirements for meeting this standard. The 2022 AQMP builds upon measures already in place from previous AQMPs. It also includes a variety of additional strategies such as regulation, accelerated deployment of available cleaner technologies (e.g., zero emission technologies, when cost-effective and feasible, and low NO_X technologies in other applications), best management practices, co-benefits from existing programs (e.g., climate and energy efficiency), incentives, and other CAA measures to achieve the 2015 8-hour ozone standard. The 2015 8-hour ozone standard is the most stringent standard to date. Because current ozone levels in the SoCAB are so high, meeting the standard will require substantial emission reductions above and beyond current programs. South Coast AQMD forecasts that emissions of NO_X—the key pollutant controlling formation of ozone—must be reduced by 67 percent beyond what we would achieve through current programs by 2037 to meet the standard. By year 2037, 46 percent of NO_X emissions will come from federal sources, 33 percent will come from State-regulated sources, and only 20 percent will come from sources regulated by the South Coast AQMD (South Coast AQMD 2022).

LEAD STATE IMPLEMENTATION PLAN

In 2008, EPA designated the Los Angeles County portion of the SoCAB nonattainment under the federal lead (Pb) classification due to the addition of source-specific monitoring under the new federal regulation. This designation was based on two source-specific monitors in Vernon and the City of Industry exceeding the new standard. The rest of the SoCAB, outside the Los Angeles County nonattainment area remains in attainment of the new standard. On May 24, 2012, CARB approved the SIP revision for the federal lead standard, which the EPA revised in 2008. Lead concentrations in this nonattainment area have been below the level of the federal standard since December 2011. The SIP revision was submitted to EPA for approval.

AREA DESIGNATIONS

The AQMP provides the framework for air quality basins to achieve attainment of the state and federal ambient air quality standards through the State Implementation Plan (SIP). Areas are classified as attainment or nonattainment areas for particular pollutants, depending on whether they meet ambient air quality standards. Severity classifications for ozone nonattainment range in magnitude from marginal, moderate, and serious to severe and extreme.

- **Unclassified:** a pollutant is designated unclassified if the data are incomplete and do not support a designation of attainment or nonattainment.

- **Attainment:** a pollutant is in attainment if the CAAQS for that pollutant was not violated at any site in the area during a three-year period.

- **Nonattainment:** a pollutant is in nonattainment if there was at least one violation of a state AAQS for that pollutant in the area.

- **Nonattainment/Transitional:** a subcategory of the nonattainment designation. An area is designated nonattainment/transitional to signify that the area is close to attaining the AAQS for that pollutant.

The attainment status for the SoCAB is shown in Table 2, *Attainment Status of Criteria Pollutants in the South Coast Air Basin*.

Table 2 Attainment Status of Criteria Pollutants in the South Coast Air Basin

Pollutant	State	Federal
Ozone – 1-hour	Extreme Nonattainment	No Federal Standard
Ozone – 8-hour	Extreme Nonattainment	Extreme Nonattainment
PM_{10}	Serious Nonattainment	Attainment
$PM_{2.5}$	Nonattainment	Nonattainment[2]
CO	Attainment	Attainment
NO_2	Nonattainment (SR-60 Near Road only)[1]	Attainment (Maintenance)
SO_2	Attainment	Attainment
Lead	Attainment	Nonattainment (Los Angeles County only)[3]
All others	Attainment/Unclassified	Attainment/Unclassified

Source: CARB 2023a.

1 On February 21, 2019, CARB's Board approved the separation of the area that runs along State Route 60 corridor through portions of Riverside, San Bernardino, and Los Angeles counties from the remainder of the SoCAB for state nonattainment designation purposes. The Board designated this corridor as nonattainment. The remainder of the SoCAB remains in attainment for NO_2 (CARB 2019a). CARB is proposing to redesignate SR-60 Near-Road Portion of San Bernardino, Riverside, and Los Angeles Counties in the SoCAB as attainment for NO_2 at the February 24, 2022 Board Hearing (CARB 2023b). This redesignation will not be official until the Office of Administrative Law (OAL) approves the rulemaking filed with the Secretary of State, expected in the fall of 2022 (South Coast AQMD 2022).

2 The SoCAB is pending a resignation request from nonattainment to attainment for the 24-hour federal $PM_{2.5}$ standards. The *2021* $PM_{2.5}$ *Redesignation Request and Maintenance Plan* demonstrates that the South Coast meets the requirements of the CAA to allow US EPA to redesignate the SoCAB to attainment for the 65 µg/m^3 and 35 µg/m^3 24-hour $PM_{2.5}$ standards. CARB has reviewed and adopted submit the 2021 $PM_{2.5}$ Redesignation Request and Maintenance Plan to the US EPA as a revision to the California State Implementation Plan (SIP) (CARB 2021b).

3 In 2010, the Los Angeles portion of the SoCAB was designated nonattainment for lead under the new 2008 federal AAQS as a result of large industrial emitters. Remaining areas for lead in the SoCAB are unclassified. However, lead concentrations in this nonattainment area have been below the level of the federal standard since December 2011 (South Coast AQMD 2012). CARB's SIP revision was submitted to the EPA for approval.

Existing Ambient Air Quality

Existing levels of ambient air quality and historical trends and projections in the vicinity of the Project Site are best documented by measurements taken by the South Coast AQMD. The Project Site is located within Source Receptor Area (SRA) 8 – West San Gabriel Valley. The air quality monitoring station closest to the Project is the Pasadena – S Wilson Avenue Monitoring Station, which is one of 31 monitoring stations South Coast AQMD operates and maintains in the SoCAB.[7] Data from this station includes O_3, NO_x, and $PM_{2.5}$ and is summarized in Table 3, *Ambient Air Quality Monitoring Summary*. Data for PM_{10} is supplemented by the Los Angeles – North Main Street Monitoring Station. The most current five years of data from these monitoring stations are included in Table 3 and show regular violations of the state and federal O_3, state PM_{10} standards, and federal $PM_{2.5}$ standards in the last five years.

7 Locations of the SRAs and monitoring stations are shown here: http://www.aqmd.gov/docs/default-source/default-document-library/map-of-monitoring-areas.pdf.

Table 3 Ambient Air Quality Monitoring Summary

Pollutant/Standard	Number of Days Threshold Were Exceeded and Maximum Levels during Such Violations				
	2016	2017	2018	2019	2020
Ozone (O_3)[1]					
State 1-Hour ≥ 0.09 ppm (days exceed threshold)	12	18	8	11	41
State & Federal 8-hour ≥ 0.070 ppm (days exceed threshold)	18	36	19	24	60
Max. 1-Hour Conc. (ppm)	0.126	0.139	0.112	0.120	0.163
Max. 8-Hour Conc. (ppm)	0.090	0.100	0.090	0.098	0.115
Nitrogen Dioxide (NO_2)[1]					
State 1-Hour ≥ 0.18 ppm (days exceed threshold)	0	0	0	0	0
Federal 1-Hour ≥ 0.100 ppm (days exceed threshold)	0	0	0	0	0
Max. 1-Hour Conc. (ppb)	0.0719	0.0723	0.0682	0.0591	0.0612
Coarse Particulates (PM_{10})[2]					
State 24-Hour > 50 µg/m^3 (days exceed threshold)	21	40	31	15	34
Federal 24-Hour > 150 µg/m^3 (days exceed threshold)	0	0	0	0	0
Max. 24-Hour Conc. (µg/m^3)	74.6	96.2	81.2	93.9	185.2
Fine Particulates ($PM_{2.5}$)[1]					
Federal 24-Hour > 35 µg/m^3 (days exceed threshold)	0	0	0	1	2
Max. 24-Hour Conc. (µg/m^3)	29.2	22.8	32.5	41.8	67.7

Source: CARB 2021a.

Notes: ppm = parts per million; ppb = parts per billion; µg/m^3 = micrograms per cubic meter; * = Data not available

[1] Data obtained from the Pasadena – S Wilson Avenue Monitoring Station for O_3, NO_x, and $PM_{2.5}$.

[2] Data obtained from the Los Angeles – North Main Street Monitoring Station for PM_{10}.

[3] Most recent data available as of September 2021.

Sensitive Receptors

Some land uses are considered more sensitive to air pollution than others due to the types of population groups or activities involved. Sensitive population groups include children, the elderly, the acutely ill, and the chronically ill, especially those with cardio-respiratory diseases.

Residential areas are also considered to be sensitive receptors to air pollution because residents (including children and the elderly) tend to be at home for extended periods of time, resulting in sustained exposure to any pollutants present. Schools are also considered sensitive receptors, as children are present for extended durations and engage in regular outdoor activities. Recreational land uses are considered moderately sensitive to air pollution. Although exposure periods are generally short, exercise places a high demand on respiratory functions, which can be impaired by air pollution. In addition, noticeable air pollution can detract from the enjoyment of recreation. Industrial and commercial areas are considered the least sensitive to air pollution. Exposure periods are relatively short and intermittent, as the majority of the workers tend to stay indoors most of the time. In addition, the working population is generally the healthiest segment of the public. The nearest sensitive receptors to the proposed Project Site are the residences along are the residences along Wotkyns Drive to the east of the Project Site.

Methodology

Projected construction-related air pollutant emissions are calculated using the California Emissions Estimator Model (CalEEMod), Version 2020.4. CalEEMod compiles an emissions inventory of construction (fugitive dust, off-gas emissions, on-road emissions, and off-road emissions), area sources, indirect emissions from energy use, mobile sources, indirect emissions from waste disposal (annual only), and indirect emissions from water/wastewater (annual only) use. The calculated emissions of the project are compared to thresholds of significance for individual projects using the South Coast AQMD's *CEQA Air Quality Analysis Guidance Handbook*.

Thresholds of Significance

The analysis of the proposed project's air quality impacts follows the guidance and methodologies recommended in South Coast AQMD's *CEQA Air Quality Handbook* and the significance thresholds on South Coast AQMD's website (South Coast AQMD 1993). CEQA allows the significance criteria established by the applicable air quality management or air pollution control district to be used to assess impacts of a project on air quality. South Coast AQMD has established thresholds of significance for regional air quality emissions for construction activities and project operation. In addition to the daily thresholds listed above, projects are also subject to the AAQS. These are addressed though an analysis of localized CO impacts and localized significance thresholds (LSTs).

REGIONAL SIGNIFICANCE THRESHOLDS

The South Coast AQMD has adopted regional construction and operational emissions thresholds to determine a project's cumulative impact on air quality in the SoCAB. Table 4, *South Coast AQMD Significance Thresholds*, lists South Coast AQMD's regional significance thresholds that are applicable for all projects uniformly regardless of size or scope. There is growing evidence that although ultrafine particulates contribute a very small portion of the overall atmospheric mass concentration, they represent a greater proportion of the health risk from PM. However, the EPA or CARB have not yet adopted AAQS to regulate ultrafine particulates; therefore, South Coast AQMD has not developed thresholds for them.

Table 4 South Coast AQMD Significance Thresholds

Air Pollutant	Construction Phase	Operational Phase
Reactive Organic Gases (ROGs)/ Volatile Organic Compounds (VOCs)	75 lbs/day	55 lbs/day
Nitrogen Oxides (NO_X)	100 lbs/day	55 lbs/day
Carbon Monoxide (CO)	550 lbs/day	550 lbs/day
Sulfur Oxides (SO_X)	150 lbs/day	150 lbs/day
Particulates (PM_{10})	150 lbs/day	150 lbs/day
Particulates ($PM_{2.5}$)	55 lbs/day	55 lbs/day

Source: South Coast AQMD 2019.

Projects that exceed the regional significance threshold contribute to the nonattainment designation of the SoCAB. The attainment designations are based on the AAQS, which are set at levels of exposure that are determined to not result in adverse health. Exposure to fine particulate pollution and ozone causes myriad health impacts, particularly to the respiratory and cardiovascular systems:

- Linked to increased cancer risk ($PM_{2.5}$, TACs)
- Aggravates respiratory disease (O_3, $PM_{2.5}$)
- Increases bronchitis (O_3, $PM_{2.5}$)
- Causes chest discomfort, throat irritation, and increased effort to take a deep breath (O_3)
- Reduces resistance to infections and increases fatigue (O_3)
- Reduces lung growth in children ($PM_{2.5}$)
- Contributes to heart disease and heart attacks ($PM_{2.5}$)
- Contributes to premature death (O_3, $PM_{2.5}$)
- Linked to lower birth weight in newborns ($PM_{2.5}$) (South Coast AQMD 2015b)

Exposure to fine particulates and ozone aggravates asthma attacks and can amplify other lung ailments such as emphysema and chronic obstructive pulmonary disease. Exposure to current levels of $PM_{2.5}$ is responsible for an estimated 4,300 cardiopulmonary-related deaths per year in the SoCAB. In addition, University of Southern California scientists responsible for a landmark children's health study found that lung growth improved as air pollution declined for children aged 11 to 15 in five communities in the SoCAB (South Coast AQMD 2015c).

Mass emissions in Table 4 are not correlated with concentrations of air pollutants but contribute to the cumulative air quality impacts in the SoCAB. Therefore, regional emissions from a single project do not single-handedly trigger a regional health impact. South Coast AQMD is the primary agency responsible for ensuring the health and welfare of sensitive individuals to elevated concentrations of air quality in the SoCAB. To achieve the health-based standards established by the EPA, South Coast AQMD prepares an AQMP that details regional programs to attain the AAQS.

CO HOTSPOTS

Areas of vehicle congestion have the potential to create pockets of CO called hot spots. These pockets have the potential to exceed the state one-hour standard of 20 ppm or the eight-hour standard of 9 ppm. Because CO is produced in greatest quantities from vehicle combustion and does not readily disperse into the atmosphere, adherence to ambient air quality standards is typically demonstrated through an analysis of localized CO concentrations. Hot spots are typically produced at intersections, where traffic congestion is highest because vehicles queue for longer periods and are subject to reduced speeds. With the turnover of older vehicles, introduction of cleaner fuels, and implementation of control technology on industrial facilities, CO concentrations in the SoCAB and in the state have steadily declined.

In 2007, the SoCAB was designated in attainment for CO under both the California AAQS and National AAQS. The CO hotspot analysis conducted for the attainment by the South Coast AQMD for busiest intersections in

Los Angeles during the peak morning and afternoon periods plan did not predict a violation of CO standards.[8] As identified in the South Coast AQMD's 2003 AQMP and the 1992 Federal Attainment Plan for Carbon Monoxide (1992 CO Plan), peak carbon monoxide concentrations in the SoCAB in previous years, prior to redesignation, were a result of unusual meteorological and topographical conditions and not a result of congestion at a particular intersection. Under existing and future vehicle emission rates, a project would have to increase traffic volumes at a single intersection by more than 44,000 vehicles per hour—or 24,000 vehicles per hour where vertical and/or horizontal air does not mix—in order to generate a significant CO impact (BAAQMD 2017).

LOCALIZED SIGNIFICANCE THRESHOLDS

The South Coast AQMD developed LSTs for emissions of NO_2, CO, PM_{10}, and $PM_{2.5}$ generated at the project site (offsite mobile-source emissions are not included in the LST analysis). LSTs represent the maximum emissions at a project site that are not expected to cause or contribute to an exceedance of the most stringent federal or state AAQS and are shown in Table 5, *South Coast AQMD Localized Significance Thresholds*.

Table 5 South Coast AQMD Localized Significance Thresholds

Air Pollutant (Relevant AAQS)	Concentration
1-Hour CO Standard (CAAQS)	20 ppm
8-Hour CO Standard (CAAQS)	9.0 ppm
1-Hour NO_2 Standard (CAAQS)	0.18 ppm
Annual NO_2 Standard (CAAQS)	0.03 ppm
24-Hour PM_{10} Standard – Construction (South Coast AQMD)[1]	10.4 µg/m^3
24-Hour $PM_{2.5}$ Standard – Construction (South Coast AQMD)[1]	10.4 µg/m^3
24-Hour PM_{10} Standard – Operation (South Coast AQMD)[1]	2.5 µg/m^3
24-Hour $PM_{2.5}$ Standard – Operation (South Coast AQMD)[1]	2.5 µg/m^3

Source: South Coast AQMD 2019.
ppm – parts per million; µg/m^3 – micrograms per cubic meter
[1] Threshold is based on South Coast AQMD Rule 403. Since the SoCAB is in nonattainment for PM_{10} and $PM_{2.5}$, the threshold is established as an allowable change in concentration. Therefore, background concentration is irrelevant.

To assist lead agencies, South Coast AQMD developed screening-level LSTs to back-calculate the mass amount (lbs. per day) of emissions generated onsite that would trigger the levels shown in Table 5 for projects under 5-acres. These "screening-level" LSTs tables are the localized significance thresholds for all projects of five acres and less; however, it can be used as screening criteria for larger projects to determine whether or not dispersion modeling may be required to compare concentrations of air pollutants generated by the project to the localized concentrations shown in Table 5.

[8] The four intersections were: Long Beach Boulevard and Imperial Highway; Wilshire Boulevard and Veteran Avenue; Sunset Boulevard and Highland Avenue; and La Cienega Boulevard and Century Boulevard. The busiest intersection evaluated (Wilshire and Veteran) had a daily traffic volume of approximately 100,000 vehicles per day with LOS E in the morning peak hour and LOS F in the evening peak hour.

In accordance with South Coast AQMD's LST methodology, the screening-level construction LSTs are based on the acreage disturbed per day based on equipment use. The screening-level construction LSTs for the Project Site in SRA 8 are shown in Table 6, *Screening-Level Construction Localized Significance Thresholds,* for sensitive receptors within 82 feet (25 meters) of the Project Site for NO_x and CO emissions and 250 feet (76 meters) for PM_{10} and $PM_{2.5}$.

Table 6 Screening-Level Construction Localized Significance Thresholds (Driving Range)

	Threshold (lbs/day)[1]			
Acreage Disturbed	Nitrogen Oxides (NO_X)	Carbon Monoxide (CO)	Coarse Particulates (PM_{10})	Fine Particulates ($PM_{2.5}$)
≤1.00 Acres Disturbed Per Day	69	535	19.38	5.57
3.50 Acres Disturbed Per Day	123	1,176	36.12	9.36
4.00 Acres Disturbed Per Day	131	1,297	39.21	10.11

Source: South Coast AQMD 2008a and 2011.

[1] LSTs are based on sensitive receptors within 82 feet (25 meters) of the Project Site in Source Receptor Area (SRA) 8 for NO_x and CO emissions and 250 feet (76 meters) for PM_{10} and $PM_{2.5}$.

Because the Project is not an industrial project that has the potential to emit substantial sources of stationary emissions, operational LSTs are not an air quality impact of concern associated with the Project.

Health Risk

Whenever a project would require use of chemical compounds that have been identified in South Coast AQMD Rule 1401, placed on CARB's air toxics list pursuant to AB 1807, or placed on the EPA's National Emissions Standards for Hazardous Air Pollutants, a health risk assessment is required by the South Coast AQMD. Table 7, *Toxic Air Contaminants Incremental Risk Thresholds*, lists the TAC incremental risk thresholds for operation of a project. The purpose of this environmental evaluation is to identify the significant effects of the proposed project on the environment. CEQA does not require CEQA-level environmental document to analyze the environmental effects of attracting development and people to an area (*California Building Industry Association v. Bay Area Air Quality Management District (2015) 62 Cal.4th 369 (Case No. S213478)*). However, the environmental document must analyze the impacts of environmental hazards on future users, when a proposed project exacerbates an existing environmental hazard or condition. Residential, commercial, and office uses do not use substantial quantities of TACs and typically do not exacerbate existing hazards, so these thresholds are typically applied to new industrial projects.

Table 7 South Coast AQMD Toxic Air Contaminants Incremental Risk Thresholds

Maximum Incremental Cancer Risk	≥ 10 in 1 million
Hazard Index (project increment)	≥ 1.0
Cancer Burden in areas ≥ 1 in 1 million	> 0.5 excess cancer cases

Source: South Coast AQMD 2019.

GREENHOUSE GAS EMISSIONS

Scientists have concluded that human activities are contributing to global climate change by adding large amounts of heat-trapping gases, known as GHG, to the atmosphere. Climate change is the variation of Earth's climate over time, whether due to natural variability or as a result of human activities. The primary source of these GHG is fossil fuel use. The Intergovernmental Panel on Climate Change (IPCC) has identified four major GHG—water vapor,[9] carbon (CO_2), methane (CH_4), and ozone (O_3)—that are the likely cause of an increase in global average temperatures observed within the 20th and 21st centuries. Other GHG identified by the IPCC that contribute to global warming to a lesser extent include nitrous oxide (N_2O), sulfur hexafluoride (SF_6), hydrofluorocarbons, perfluorocarbons, and chlorofluorocarbons (IPCC 2001).[10] The major GHG are briefly described below.

- **Carbon dioxide (CO_2)** enters the atmosphere through the burning of fossil fuels (oil, natural gas, and coal), solid waste, trees and wood products, and respiration, and also as a result of other chemical reactions (e.g. manufacture of cement). Carbon dioxide is removed from the atmosphere (sequestered) when it is absorbed by plants as part of the biological carbon cycle.

- **Methane (CH_4)** is emitted during the production and transport of coal, natural gas, and oil. Methane emissions also result from livestock and other agricultural practices and from the decay of organic waste in municipal landfills and water treatment facilities.

- **Nitrous oxide (N_2O)** is emitted during agricultural and industrial activities as well as during combustion of fossil fuels and solid waste.

- **Fluorinated gases** are synthetic, strong GHGs that are emitted from a variety of industrial processes. Fluorinated gases are sometimes used as substitutes for ozone-depleting substances. These gases are typically emitted in smaller quantities, but because they are potent GHGs, they are sometimes referred to as high global-warming-potential (GWP) gases.

    - *Chlorofluorocarbons (CFCs*) are GHGs covered under the 1987 Montreal Protocol and used for refrigeration, air conditioning, packaging, insulation, solvents, or aerosol propellants. Since they are not destroyed in the lower atmosphere (troposphere, stratosphere), CFCs drift into the upper atmosphere where, given suitable conditions, they break down ozone. These gases are also ozone-depleting gases

[9] Water vapor (H_2O) is the strongest GHG and the most variable in its phases (vapor, cloud droplets, ice crystals). However, water vapor is not considered a pollutant, but part of the feedback loop rather than a primary cause of change.

[10] Black carbon contributes to climate change both directly, by absorbing sunlight, and indirectly, by depositing on snow (making it melt faster) and by interacting with clouds and affecting cloud formation. Black carbon is the most strongly light-absorbing component of particulate matter (PM) emitted from burning fuels such as coal, diesel, and biomass. Reducing black carbon emissions globally can have immediate economic, climate, and public health benefits. California has been an international leader in reducing emissions of black carbon, with close to 95 percent control expected by 2020 due to existing programs that target reducing PM from diesel engines and burning activities (CARB 2017a). However, state and national GHG inventories do not yet include black carbon due to ongoing work resolving the precise global warming potential of black carbon. Guidance for CEQA documents does not yet include black carbon.

and are therefore being replaced by other compounds that are GHGs covered under the Kyoto Protocol.

- ***Perfluorocarbons (PFCs)*** are a group of human-made chemicals composed of carbon and fluorine only. These chemicals (predominantly perfluoromethane [CF_4] and perfluoroethane [C_2F_6]) were introduced as alternatives, along with HFCs, to the ozone-depleting substances. In addition, PFCs are emitted as by-products of industrial processes and are used in manufacturing. PFCs do not harm the stratospheric ozone layer, but they have a high global warming potential.

- ***Sulfur Hexafluoride (SF_6)*** is a colorless gas soluble in alcohol and ether, slightly soluble in water. SF_6 is a strong GHG used primarily in electrical transmission and distribution systems as an insulator.

- ***Hydrochlorofluorocarbons (HCFCs)*** contain hydrogen, fluorine, chlorine, and carbon atoms. Although ozone-depleting substances, they are less potent at destroying stratospheric ozone than CFCs. They have been introduced as temporary replacements for CFCs and are also GHGs.

- ***Hydrofluorocarbons (HFCs)*** contain only hydrogen, fluorine, and carbon atoms. They were introduced as alternatives to ozone-depleting substances to serve many industrial, commercial, and personal needs. HFCs are emitted as by-products of industrial processes and are also used in manufacturing. They do not significantly deplete the stratospheric ozone layer, but they are strong GHGs (IPCC 2001; USEPA 2020).

GHGs are dependent on the lifetime or persistence of the gas molecule in the atmosphere. Some GHGs have stronger greenhouse effects than others. These are referred to as high GWP gases. The GWP of GHG emissions are shown in Table 8, *GHG Emissions and Their Relative Global Warming Potential Compared to CO_2*. The GWP is used to convert GHGs to CO_2-equivalence (CO_2e) to show the relative potential that different GHGs have to retain infrared radiation in the atmosphere and contribute to the greenhouse effect. For example, under IPCC's Fourth Assessment Report (AR4) GWP values for CH_4, a project that generates 10 metric tons (MT) of CH_4 would be equivalent to 250 MT of CO_2 (IPCC 2007).

Table 8 GHG Emissions and Their Relative Global Warming Potential Compared to CO_2

GHGs	Second Assessment Report (SAR) Global Warming Potential Relative to CO_2[1]	Fourth Assessment Report (AR4) Global Warming Potential Relative to CO_2[1]	Fifth Assessment Report (AR5) Global Warming Potential Relative to CO_2[1]
Carbon Dioxide (CO_2)	1	1	1
Methane[2] (CH_4)	21	25	28
Nitrous Oxide (N_2O)	310	298	265

Source: IPCC 1995, 2007, 2013.

Notes:

1 The methane GWP includes direct effects and indirect effects due to the production of tropospheric ozone and stratospheric water vapor. The indirect effect due to the production of CO_2 is not included.

2 Based on 100-year time horizon of the GWP of the air pollutant compared to CO_2.

3 The GWP values in the IPCC's Fifth Assessment Report (2013) reflect new information on atmospheric lifetimes of GHGs and an improved calculation of the radiative forcing of CO_2. However, South Coast AQMD uses the AR4 GWP values to maintain consistency in statewide GHG emissions modeling. In addition, the 2017 Scoping Plan Update was based on the AR4 GWP values.

California's Greenhouse Gas Sources and Relative Contribution

In 2020, the statewide GHG emissions inventory was updated for 2000 to 2018 emissions using the GWPs in IPCC's AR4.[11] Based on these GWPs, California produced 425.3 $MMTCO_2e$ GHG emissions in 2018. California's transportation sector was the single largest generator of GHG emissions, producing 39.9 percent of the state's total emissions. Industrial sector emissions made up 21.0 percent, and electric power generation made up 14.8 percent of the state's emissions inventory. Other major sectors of GHG emissions include commercial and residential (9.7 percent), agriculture and forestry (7.7 percent) high GWP (4.8 percent), and recycling and waste (2.1 percent) (CARB 2020).

Since the peak level in 2004, California statewide GHG emissions dropped below the 2020 GHG limit of 431 $MMCO_2e$ in 2016 and have remained below the 2020 GHG limit since then. In 2018, emissions from routine GHG emitting activities statewide were 6 $MMTCO_2e$ lower than the 2020 GHG limit. Per capita GHG emissions in California have dropped from a 2001 peak of 14.0 $MTCO_2e$ per person to 10.7 $MTCO_2e$ per person in 2018, a 24 percent decrease. Transportation emissions decreased in 2018 compared to the previous year, which is the first year over year decrease since 2013. Since 2008, California's electricity sector has followed an overall downward trend in emissions. In 2018, solar power generation has continued its rapid growth since 2013. Emissions from high-GWP gases increased 2.3 percent in 2018 (2000-2018 average year-over-year increase is 6.8 percent), continuing the increasing trend as they replace Ozone Depleting Substances (ODS) being phased out under the 1987 Montreal Protocol. Overall trends in the inventory also demonstrate that the carbon intensity of California's economy (the amount of carbon pollution per million dollars of gross domestic product (GDP)) is declining, representing a 43 percent decline since the 2001 peak, while the state's GDP has grown 59 percent during this period (CARB 2020).

Regulatory Settings

REGULATION OF GHG EMISSIONS ON A NATIONAL LEVEL

The US Environmental Protection Agency (EPA) announced on December 7, 2009, that GHG emissions threaten the public health and welfare of the American people and that GHG emissions from on-road vehicles contribute to that threat. The EPA's final findings respond to the 2007 U.S. Supreme Court decision that GHG emissions fit within the Clean Air Act definition of air pollutants. The findings do not in and of themselves impose any emission reduction requirements but allow the EPA to finalize the GHG standards proposed in 2009 for new light-duty vehicles as part of the joint rulemaking with the Department of Transportation (USEPA 2009).

To regulate GHGs from passenger vehicles, EPA was required to issue an endangerment finding. The finding identifies emissions of six key GHGs—CO_2, CH_4, N_2O, hydrofluorocarbons, perfluorocarbons, and SF_6—that have been the subject of scrutiny and intense analysis for decades by scientists in the United States and around the world. The first three are applicable to the project's GHG emissions inventory because they constitute the

[11] Methodology for determining the statewide GHG inventory is not the same as the methodology used to determine statewide GHG emissions under Assembly Bill 32 (2006).

majority of GHG emissions and, per South Coast AQMD guidance, are the GHG emissions that should be evaluated as part of a project's GHG emissions inventory.

US Mandatory Report Rule for GHGs (2009)

In response to the endangerment finding, the EPA issued the Mandatory Reporting of GHG Rule that requires substantial emitters of GHG emissions (large stationary sources, etc.) to report GHG emissions data. Facilities that emit 25,000 MT or more of CO_2 per year are required to submit an annual report.

Update to Corporate Average Fuel Economy Standards (2017 to 2026)

The federal government issued new Corporate Average Fuel Economy (CAFE) standards in 2012 for model years 2017 to 2025, which required a fleet average of 54.5 miles per gallon in 2025. On March 30, 2020, the EPA finalized an updated CAFE and GHG emissions standards for passenger cars and light trucks and established new standards covering model years 2021 through 2026, known as the Safer Affordable Fuel Efficient (SAFE) Vehicles Final Rule for Model Years 2021 to 2026. However, in May 2020, California and 22 other states; the District of Columbia; the cities of Los Angeles, Denver, and New York; and the counties of San Francisco and Denver filed a lawsuit with the U.S. Court of Appeals for the District of Columbia Circuit, challenging the SAFE Rule. To date, a ruling has not been made on the lawsuit. In addition, a consortium of automakers and California have agreed on a voluntary framework to reduce emissions that can serve as an alternative path forward for clean vehicle standards nationwide. Automakers who agreed to the framework are Ford, Honda, BMW of North America, and Volkswagen Group of America. The framework supports continued annual reductions of vehicle GHG emissions through the 2026 model year, encourages innovation to accelerate the transition to electric vehicles, and gives industry the certainty needed to make investments and create jobs. This commitment means that the auto companies which are party to the voluntary agreement will only sell cars in the United States that meet these standards (CARB 2019b). Additionally, the Biden Administration issued an Executive Order on January 21, 2021 to review and suspend the SAFE rule and for the USEPA to present a proposal for more stringent fuel economy and emissions standards by July 2021. On August 5, 2021, the Biden Administration proposed new standards that would replace the SAFE Rule, effectively reversing the previous Trump Administration's roll-back of the CAFE standards.

EPA Regulation of Stationary Sources under the Clean Air Act (Ongoing)

Pursuant to its authority under the Clean Air Act, the EPA has been developing regulations for new, large, stationary sources of emissions, such as power plants and refineries. Under former President Obama's 2013 Climate Action Plan, the EPA was directed to develop regulations for existing stationary sources as well. On June 19, 2019, the EPA issued the final Affordable Clean Energy (ACE) rule which became effective on August 19, 2019. The ACE rule was crafted under the direction of President Trump's Energy Independence Executive Order. It officially rescinded the Clean Power Plan (CPP) rule issued during the Obama Administration and sets emissions guidelines for states in developing plans to limit CO_2 emissions from coal-fired power plants. However, on January 2019, 2021, the US Court of Appeals for the District of Columbia Circuit (DC Circuit) struck down the ACE rule in its ruling under *American Lung Association v. Environmental Protection Agency*, No. 19-1140, *(D.C. Cir. 2021)*. The DC Circuit court held that the ACE rule was inconsistent with Section 111 of the Clean Air Act in that Section 111 does not limit emissions control measures to be performed at the source only. The ruling also vacated the repeal of CCP rule that resulted from issuance of the ACE rule.

REGULATION OF GHG EMISSIONS ON A STATE LEVEL

Current State of California guidance and goals for reductions in GHG emissions are generally embodied in EO S-03-05 and EO B-30-15, Assembly Bill 32 (AB 32), AB 1279, Senate Bill 32 (SB 32), and SB 375.

Executive Order S-3-05

Executive Order S-3-05, signed June 1, 2005. Executive Order S-3-05 set the following GHG reduction targets for the State:

- 2000 levels by 2010
- 1990 levels by 2020
- 80 percent below 1990 levels by 2050

Assembly Bill 32, the Global Warming Solutions Act (2006)

AB 32 was passed by the California state legislature on August 31, 2006, to place the state on a course toward reducing its contribution of GHG emissions. AB 32 follows the 2020 tier of emissions reduction targets established in Executive Order S-03-05. CARB prepared the 2008 Scoping Plan to outline a plan to achieve the GHG emissions reduction targets of AB 32.

Executive Order B-30-15

Executive Order B-30-15, signed April 29, 2015, set a goal of reducing GHG emissions in the state to 40 percent of 1990 levels by year 2030. Executive Order B-30-15 also directed CARB to update the Scoping Plan to quantify the 2030 GHG reduction goal for the state and requires state agencies to implement measures to meet the interim 2030 goal as well as the long-term goal for 2050 in Executive Order S-03-05. It also requires the Natural Resources Agency to conduct triennial updates of the California adaption strategy, Safeguarding California, in order to ensure climate change is accounted for in state planning and investment decisions.

Senate Bill 32 and Assembly Bill 197

In September 2016, Governor Brown signed SB 32 and AB 197 into law, making the Executive Order goal for year 2030 into a statewide mandated legislative target. AB 197 established a joint legislative committee on climate change policies and requires the CARB to prioritize direction emissions reductions rather than the market-based cap-and-trade program for large stationary, mobile, and other sources.

2017 Climate Change Scoping Plan Update

Executive Order B-30-15 and SB 32 required CARB to prepare another update to the Scoping Plan to address the 2030 target for the state. On December 24, 2017, CARB adopted the 2017 Climate Change Scoping Plan Update, which outlined potential regulations and programs, including strategies consistent with AB 197 requirements, to achieve the 2030 target. The 2017 Scoping Plan established a new emissions limit of 260 $MMTCO_2e$ for the year 2030, which corresponds to a 40 percent decrease in 1990 levels by 2030 (CARB 2017b).

California's climate strategy will require contributions from all sectors of the economy, including enhanced focus on zero- and near-zero emission (ZE/NZE) vehicle technologies; continued investment in renewables, such as solar roofs, wind, and other types of distributed generation; greater use of low carbon fuels; integrated land conservation and development strategies; coordinated efforts to reduce emissions of short-lived climate pollutants (methane, black carbon, and fluorinated gases); and an increased focus on integrated land use planning, to support livable, transit-connected communities and conservation of agricultural and other lands. Requirements for GHG reductions at stationary sources complement local air pollution control efforts by the local air districts to tighten criteria air pollutants and TACs emissions limits on a broad spectrum of industrial sources. Major elements of the 2017 Scoping Plan framework include:

- Implementing and/or increasing the standards of the Mobile Source Strategy, which include increasing ZEV buses and trucks;
- Low Carbon Fuel Standard (LCFS), with an increased stringency (18 percent by 2030).
- Implementation of SB 350, which expands the Renewables Portfolio Standard (RPS) to 50 percent RPS and doubles energy efficiency savings by 2030.
- California Sustainable Freight Action Plan, which improves freight system efficiency, utilizes near-zero emissions technology, and deployment of ZEV trucks.
- Implementing the Short-Lived Climate Pollutant Strategy (SLPS), which focuses on reducing methane and hydrofluorocarbon emissions by 40 percent and anthropogenic black carbon emissions by 50 percent by year 2030.
- Post-2020 Cap-and-Trade Program that includes declining caps.
- Continued implementation of SB 375.
- Development of a Natural and Working Lands Action Plan to secure California's land base as a net carbon sink.

In addition to the statewide strategies listed above, the 2017 Climate Change Scoping Plan also identified local governments as essential partners in achieving the State's long-term GHG reduction goals and identified local actions to reduce GHG emissions. As part of the recommended actions, CARB recommends statewide targets of no more than 6 $MTCO_2e$ or less per capita by 2030 and 2 $MTCO_2e$ or less per capita by 2050. CARB recommends that local governments evaluate and adopt robust and quantitative locally-appropriate goals that align with the statewide per capita targets and the State's sustainable development objectives and develop plans to achieve the local goals. The statewide per capita goals were developed by applying the percent reductions necessary to reach the 2030 and 2050 climate goals (i.e., 40 percent and 80 percent, respectively) to the State's 1990 emissions limit established under AB 32. For CEQA projects, CARB states that lead agencies have discretion to develop evidenced-based numeric thresholds (mass emissions, per capita, or per service population)—consistent with the Scoping Plan and the state's long-term GHG goals. To the degree a project

relies on GHG mitigation measures, CARB recommends that lead agencies prioritize on-site design features that reduce emissions, especially from VMT, and direct investments in GHG reductions within the project's region that contribute potential air quality, health, and economic co-benefits. Where further project design or regional investments are infeasible or not proven to be effective, CARB recommends mitigating potential GHG impacts through purchasing and retiring carbon credits.

The 2017 Scoping Plan scenario is set against what is called the business-as-usual (BAU) yardstick—that is, what would the GHG emissions look like if the State did nothing at all beyond the existing policies that are required and already in place to achieve the 2020 limit, as shown in Table 9, *2017 Climate Change Scoping Plan Emissions Reductions Gap*. It includes the existing renewables requirements, advanced clean cars, the "10 percent" Low Carbon Fuel Standard (LCFS), and the SB 375 program for more vibrant communities, among others. However, it does not include a range of new policies or measures that have been developed or put into statute over the past two years. Also shown in the table, the known commitments are expected to result in emissions that are 60 $MMTCO_2e$ above the target in 2030. If the estimated GHG reductions from the known commitments are not realized due to delays in implementation or technology deployment, the post-2020 Cap-and-Trade Program would deliver the additional GHG reductions in the sectors it covers to ensure the 2030 target is achieved.

Table 9 2017 Climate Change Scoping Plan Emissions Reductions Gap

Modeling Scenario	2030 GHG Emissions $MMTCO_2e$
Reference Scenario (Business-as-Usual)	389
With Known Commitments	320
2030 GHG Target	**260**
Gap to 2030 Target	**60**

Source: CARB 2017b.

Table 10, *2017 Climate Change Scoping Plan Emissions Change by Sector*, provides estimated GHG emissions by sector, compared to 1990 levels, and the range of GHG emissions for each sector estimated for 2030.

Table 10 2017 Climate Change Scoping Plan Emissions Change by Sector

Scoping Plan Sector	1990 $MMTCO_2e$	2030 Proposed Plan Ranges $MMTCO_2e$	% Change from 1990
Agricultural	26	24-25	-8% to -4%
Residential and Commercial	44	38-40	-14% to -9%
Electric Power	108	30-53	-72% to -51%
High GWP	3	8-11	267% to 367%
Industrial	98	83-90	-15% to -8%
Recycling and Waste	7	8-9	14% to 29%
Transportation (including TCU)	152	103-111	-32% to -27%
Net Sink[1]	-7	TBD	TBD
Sub Total	431	294-339	-32% to -21%
Cap-and-Trade Program	NA	24-79	NA
Total	**431**	**260**	**-40%**

Table 10 2017 Climate Change Scoping Plan Emissions Change by Sector

Scoping Plan Sector	1990 $MMTCO_2e$	2030 Proposed Plan Ranges $MMTCO_2e$	% Change from 1990

Source: CARB 2017b.
Notes: TCU = Transportation, Communications, and Utilities; TBD: To Be Determined.
[1] Work is underway through 2017 to estimate the range of potential sequestration benefits from the natural and working lands sector.

Executive Order B-55-18

Executive Order B-55-18, signed September 10, 2018, sets a goal "to achieve carbon neutrality as soon as possible, and no later than 2045, and achieve and maintain net negative emissions thereafter." Executive Order B-55-18 directs CARB to work with relevant state agencies to ensure future Scoping Plans identify and recommend measures to achieve the carbon neutrality goal. The goal of carbon neutrality by 2045 is in addition to other statewide goals, meaning not only should emissions be reduced to 80 percent below 1990 levels by 2050, but that, by no later than 2045, the remaining emissions be offset by equivalent net removals of CO_2e from the atmosphere, including through sequestration in forests, soils, and other natural landscapes.

2022 Climate Change Scoping Plan

CARB adopted the 2022 Scoping Plan for Achieving Carbon Neutrality (2022 Scoping Plan) on December 15, 2022, which lays out a path to achieve carbon neutrality by 2045 or earlier and to reduce the State's anthropogenic GHG emissions (CARB 2022). The Scoping Plan was updated to address the carbon neutrality goals of EO B-55-18 (discussed below) and the ambitious GHG reduction target as directed by AB 1279. Previous Scoping Plans focused on specific GHG reduction targets for our industrial, energy, and transportation sectors—to meet 1990 levels by 2020, and then the more aggressive 40 percent below that for the 2030 target. This plan expands upon earlier Scoping Plans with a target of reducing anthropogenic emissions to 85 percent below 1990 levels by 2045. Carbon neutrality takes it one step further by expanding actions to capture and store carbon including through natural and working lands and mechanical technologies, while drastically reducing anthropogenic sources of carbon pollution at the same time.

The path forward was informed by the recent Sixth Assessment Report (AR6) of the IPCC and the measures would achieve 85 percent below 1990 levels by 2045 in accordance AB 1279. CARB's 2022 Scoping Plan identifies strategies as shown in Table 11, *Priority Strategies for Local Government Climate Action Plans*, that would be most impactful at the local level for ensuring substantial process towards the State's carbon neutrality goals (see Table 4.8-4, *Priority Strategies for Local Government Climate Action Plans*).

Table 11 Priority Strategies for Local Government Climate Action Plans

Priority Area	Priority Strategies
Transportation Electrification	Convert local government fleets to zero-emission vehicles (ZEV) and provide EV charging at public sites.
	Create a jurisdiction-specific ZEV ecosystem to support deployment of ZEVs statewide (such as building standards that exceed state building codes, permit streamlining, infrastructure siting, consumer education, preferential parking policies, and ZEV readiness plans).
VMT Reduction	Reduce or eliminate minimum parking standards.

Table 11 Priority Strategies for Local Government Climate Action Plans

Priority Area	Priority Strategies
	Implement Complete Streets policies and investments, consistent with general plan circulation element requirements.
	Increase access to public transit by increasing density of development near transit, improving transit service by increasing service frequency, creating bus priority lanes, reducing or eliminating fares, microtransit, etc.
	Increase public access to clean mobility options by planning for and investing in electric shuttles, bike share, car share, and walking.
	Implement parking pricing or transportation demand management pricing strategies.
	Amend zoning or development codes to enable mixed-use, walkable, transit-oriented, and compact infill development (such as increasing allowable density of the neighborhood).
	Preserve natural and working lands by implementing land use policies that guide development toward infill areas and do not convert "greenfield" land to urban uses (e.g., green belts, strategic conservation easements)
Building Decarbonization	Adopt all-electric new construction reach codes for residential and commercial uses.
	Adopt policies and incentive programs to implement energy efficiency retrofits for existing buildings, such as weatherization, lighting upgrades, and replacing energy-intensive appliances and equipment with more efficient systems (such as Energy Star-rated equipment and equipment controllers).
	Adopt policies and incentive programs to electrify all appliances and equipment in existing buildings such as appliance rebates, existing building reach codes, or time of sale electrification ordinances
	Facilitate deployment of renewable energy production and distribution and energy storage on privately owned land uses (e.g., permit streamlining, information sharing)
	Deploy renewable energy production and energy storage directly in new public projects and on existing public facilities (e.g., solar photovoltaic systems on rooftops of municipal buildings and on canopies in public parking lots, battery storage systems in municipal buildings).

Source: CARB 2022

For residential and mixed-use development projects, CARB recommends this first approach to demonstrate that these land use development projects are aligned with State climate goals based on the attributes of land use development that reduce operational GHG emissions while simultaneously advancing fair housing. Attributes that accommodate growth in a manner consistent with the GHG and equity goals of SB 32 have all the following attributes:

Transportation Electrification

- Provide EV charging infrastructure that, at a minimum, meets the most ambitious voluntary standards in the California Green Building Standards Code at the time of project approval.

VMT Reduction

- Is located on infill sites that are surrounded by existing urban uses and reuses or redevelops previously undeveloped or underutilized land that is presently served by existing utilities and essential public services (e.g., transit, streets, water, sewer).

- Does not result in the loss or conversion of the State's natural and working lands;

- Consists of transit-supportive densities (minimum of 20 residential dwelling units/acre), or is in proximity to existing transit stops (within a half mile), or satisfies more detailed and stringent criteria specified in the region's Sustainable Communities Strategy (SCS);
- Reduces parking requirements by:
    - Eliminating parking requirements or including maximum allowable parking ratios (i.e., the ratio of parking spaces to residential units or square feet); or
    - Providing residential parking supply at a ratio of <1 parking space per dwelling unit; or
    - For multifamily residential development, requiring parking costs to be unbundled from costs to rent or own a residential unit.
- At least 20 percent of the units are affordable to lower-income residents;
- Result in no net loss of existing affordable units.

Building Decarbonization

- Use all electric appliances without any natural gas connections and does not use propane or other fossil fuels for space heating, water heating, or indoor cooking.

The second approach to project-level alignment with State climate goals is net zero GHG emissions, especially for new residential development. The third approach to demonstrating project-level alignment with State climate goals is to align with GHG thresholds of significance, which many local air quality management (AQMDs) and air pollution control districts (APCDs) have developed or adopted (CARB 2022).

Assembly Bill 1279

On August 31, 2022, the California Legislature passed AB 1279, which requires California to achieve net-zero GHG emissions no later than 2045 and to achieve and maintain negative GHG emissions thereafter. Additionally, AB 1279 also establishes a GHG emissions reduction goal of 85 percent below 1990 levels by 2045. CARB will be required to update the scoping plan to identify and recommend measures to achieve the net-zero and GHG emissions-reduction goals.

Senate Bill 375

In 2008, SB 375, the Sustainable Communities and Climate Protection Act, was adopted to connect the GHG emissions reductions targets established in the 2008 Scoping Plan for the transportation sector to local land use decisions that affect travel behavior. Its intent is to reduce GHG emissions from light-duty trucks and automobiles (excludes emissions associated with goods movement) by aligning regional long-range transportation plans, investments, and housing allocations to local land use planning to reduce VMT and vehicle trips. Specifically, SB 375 required CARB to establish GHG emissions reduction targets for each of the

18 metropolitan planning organizations (MPO). The Southern California Association of Governments (SCAG) is the MPO for the Southern California region, which includes the counties of Los Angeles, Orange, San Bernardino, Riverside, Ventura, and Imperial.

Pursuant to the recommendations of the Regional Transportation Advisory Committee, CARB adopted per capita reduction targets for each of the MPOs rather than a total magnitude reduction target. SCAG's targets are an 8 percent per capita reduction from 2005 GHG emission levels by 2020 and a 13 percent per capita reduction from 2005 GHG emission levels by 2035 (CARB 2010). The 2020 targets are smaller than the 2035 targets because a significant portion of the built environment in 2020 is defined by decisions that have already been made. In general, the 2020 scenarios reflect that more time is needed for large land use and transportation infrastructure changes. Most of the reductions in the interim are anticipated to come from improving the efficiency of the region's transportation network. The targets would result in 3 $MMTCO_2e$ of reductions by 2020 and 15 $MMTCO_2e$ of reductions by 2035. Based on these reductions, the passenger vehicle target in CARB's Scoping Plan (for AB 32) would be met (CARB 2010).

2017 Update to the SB 375 Targets

CARB is required to update the targets for the MPOs every eight years. In June 2017, CARB released updated targets and technical methodology and recently released another update in February 2018. The updated targets consider the need to further reduce VMT, as identified in the 2017 Scoping Plan Update, while balancing the need for additional and more flexible revenue sources to incentivize positive planning and action toward sustainable communities. Like the 2010 targets, the updated SB 375 targets are in units of percent per capita reduction in GHG emissions from automobiles and light trucks compared to 2005. This excludes reductions anticipated from implementation of state technology and fuels strategies and any potential future state strategies such as statewide road user pricing. The proposed targets call for greater per capita GHG emission reductions from SB 375 than are currently in place, which for 2035, translates into proposed targets that either match or exceed the emission reduction levels in the MPOs' currently adopted sustainable communities strategies (SCS). As proposed, CARB staff's proposed targets would result in an additional reduction of over 8 $MMTCO_2e$ in 2035 compared to the current targets. For the next round of SCS updates, CARB's updated targets for the SCAG region are an 8 percent per capita GHG reduction in 2020 from 2005 levels (unchanged from the 2010 target) and a 19 percent per capita GHG reduction in 2035 from 2005 levels (compared to the 2010 target of 13 percent) (CARB 2018). CARB adopted the updated targets and methodology on March 22, 2018. All SCSs adopted after October 1, 2018, are subject to these new targets.

SCAG's Regional Transportation Plan / Sustainable Communities Strategy

SB 375 requires each MPO to prepare a sustainable communities strategy in its regional transportation plan. For the SCAG region, the 2020-2045 RTP/SCS (Connect SoCal) was adopted on September 3, 2020, and is an update to the 2016-2040 RTP/SCS. In general, the SCS outlines a development pattern for the region that, when integrated with the transportation network and other transportation measures and policies, would reduce vehicle miles traveled from automobiles and light duty trucks and thereby reduce GHG emissions from these sources.

Connect SoCal focuses on the continued efforts of the previous RTP/SCSs to integrate transportation and land use strategies in development of the SCAG region through horizon year 2045 (SCAG 2020). Connect SoCal forecasts that the SCAG region will meet its GHG per capita reduction targets of 8 percent by 2020 and 19 percent by 2035. Additionally, Connect SoCal also forecasts that implementation of the plan will reduce VMT per capita in year 2045 by 4.1 percent compared to baseline conditions for that year. Connect SoCal includes a "Core Vision" that centers on maintaining and better managing the transportation network for moving people and goods while expanding mobility choices by locating housing, jobs, and transit closer together and increasing investments in transit and complete streets (SCAG 2020).

Transportation Sector Specific Regulations

Assembly Bill 1493

California vehicle GHG emission standards were enacted under AB 1493 (Pavley I). Pavley I is a clean-car standard that reduces GHG emissions from new passenger vehicles (light-duty auto to medium-duty vehicles) from 2009 through 2016 and is anticipated to reduce GHG emissions from new passenger vehicles by 30 percent in 2016. California implements the Pavley I standards through a waiver granted to California by the EPA. In 2012, the EPA issued a Final Rulemaking that sets even more stringent fuel economy and GHG emissions standards for model years 2017 through 2025 light-duty vehicles. (See also the discussion on the update to the Corporate Average Fuel Economy standards at the beginning of this Section 5.5.2 under "Federal.") In January 2012, CARB approved the Advanced Clean Cars program (formerly known as Pavley II) for model years 2017 through 2025. The program combines the control of smog, soot, and GHGs with requirements for greater numbers of ZE vehicles into a single package of standards. Under California's Advanced Clean Car program, by 2025 new automobiles will emit 34 percent less GHG emissions and 75 percent less smog-forming emissions.

Executive Order S-01-07

On January 18, 2007, the state set a new LCFS for transportation fuels sold in the state. Executive Order S-01-07 sets a declining standard for GHG emissions measured in CO_2e gram per unit of fuel energy sold in California. The LCFS required a reduction of 2.5 percent in the carbon intensity of California's transportation fuels by 2015 and a reduction of at least 10 percent by 2020. The standard applies to refiners, blenders, producers, and importers of transportation fuels, and uses market-based mechanisms to allow these providers to choose how they reduce emissions during the "fuel cycle" using the most economically feasible methods.

Executive Order B-16-2012

On March 23, 2012, the state identified that CARB, the California Energy Commission (CEC), the Public Utilities Commission, and other relevant agencies worked with the Plug-in Electric Vehicle Collaborative and the California Fuel Cell Partnership to establish benchmarks to accommodate ZE vehicles in major metropolitan areas, including infrastructure to support them (e.g., electric vehicle charging stations). The executive order also directed the number of ZE vehicles in California's state vehicle fleet to increase through the normal course of fleet replacement so that at least 10 percent of fleet purchases of light-duty vehicles are

ZE by 2015 and at least 25 percent by 2020. The executive order also establishes a target for the transportation sector of reducing GHG emissions to 80 percent below 1990 levels.

Executive Order N-79-20

On September 23, 2020, Governor Newsom signed Executive Order N-79-20, whose goal is that 100 percent of in-state sales of new passenger cars and trucks will be ZE by 2035. Additionally, the fleet goals for trucks are that 100 percent of drayage trucks are ZE by 2035, and 100 percent of medium- and heavy-duty vehicles in the state are ZE by 2045, where feasible. The Executive Order's goal for the State is to transition to 100 percent ZE off-road vehicles and equipment by 2035, where feasible.

Renewables Portfolio: Carbon Neutrality Regulations

Senate Bills 1078, 107, and X1-2 and Executive Order S-14-08

A major component of California's Renewable Energy Program is the renewables portfolio standard established under Senate Bills 1078 (Sher) and 107 (Simitian). Under the RPS, certain retail sellers of electricity were required to increase the amount of renewable energy each year by at least 1 percent in order to reach at least 20 percent by December 30, 2010. Executive Order S-14-08, signed in November 2008, expanded the state's renewable energy standard to 33 percent renewable power by 2020. This standard was adopted by the legislature in 2011 (SB X1-2). Renewable sources of electricity include wind, small hydropower, solar, geothermal, biomass, and biogas. The increase in renewable sources for electricity production will decrease indirect GHG emissions from development projects because electricity production from renewable sources is generally considered carbon neutral.

Senate Bill 350

Senate Bill 350 (de Leon) was signed into law September 2015 and establishes tiered increases to the RPS—40 percent by 2024, 45 percent by 2027, and 50 percent by 2030. SB 350 also set a new goal to double the energy-efficiency savings in electricity and natural gas through energy efficiency and conservation measures.

Senate Bill 100

On September 10, 2018, Governor Brown signed SB 100. Under SB 100, the RPS for public-owned facilities and retail sellers consist of 44 percent renewable energy by 2024, 52 percent by 2027, and 60 percent by 2030. SB 100 also established a new RPS requirement of 50 percent by 2026. Furthermore, the bill establishes an overall state policy that eligible renewable energy resources and zero-carbon resources supply 100 percent of all retail sales of electricity to California end-use customers and 100 percent of electricity procured to serve all state agencies by December 31, 2045. Under the bill, the state cannot increase carbon emissions elsewhere in the western grid or allow resource shuffling to achieve the 100 percent carbon-free electricity target.

Energy Efficiency Regulations

California Building Code: Building Energy Efficiency Standards

Energy conservation standards for new residential and nonresidential buildings were adopted by the California Energy Resources Conservation and Development Commission (now the CEC) in June 1977 and most recently revised in 2019 (Title 24, Part 6, of the California Code of Regulations [CCR]). Title 24 requires the design of building shells and building components to conserve energy. The standards are updated periodically to allow for consideration and possible incorporation of new energy efficiency technologies and methods.

The 2019 Building Energy Efficiency Standards, which were adopted on May 9, 2018, went into effect starting January 1, 2020. The 2019 standards move toward cutting energy use in new homes by more than 50 percent and require installation of solar photovoltaic systems for single-family homes and multifamily buildings of three stories and less. The 2019 standards focus on four key areas: 1) smart residential photovoltaic systems; 2) updated thermal envelope standards (preventing heat transfer from the interior to exterior and vice versa); 3) residential and nonresidential ventilation requirements; 4) and nonresidential lighting requirements (CEC 2018a). Under the 2019 standards, nonresidential buildings are 30 percent more energy efficient compared to the 2016 standards, and single-family homes are 7 percent more energy efficient (CEC 2018b). When accounting for the electricity generated by the solar photovoltaic system, single-family homes would use 53 percent less energy compared to homes built to the 2016 standards (CEC 2018b).

The CEC is currently amending the Building and Energy Efficiency Standards. The 2022 Building and Energy Efficiency Standards are anticipated to be adopted in December 2021 and will go into effect on January 1, 2023.

California Building Code: CALGreen

On July 17, 2008, the California Building Standards Commission adopted the nation's first green building standards. The California Green Building Standards Code (24 CCR, Part 11, known as "CALGreen") was adopted as part of the California Building Standards Code. CALGreen established planning and design standards for sustainable site development, energy efficiency (in excess of the California Energy Code requirements), water conservation, material conservation, and internal air contaminants.[12] The mandatory provisions of CALGreen became effective January 1, 2011, and were last updated in 2019. The 2019 CALGreen standards became effective January 1, 2020.

2006 Appliance Efficiency Regulations

The 2006 Appliance Efficiency Regulations (20 CCR §§ 1601–1608) were adopted by the CEC on October 11, 2006, and approved by the California Office of Administrative Law on December 14, 2006. The regulations include standards for both federally regulated appliances and non–federally regulated appliances. Though these regulations are now often viewed as "business as usual," they exceed the standards imposed by all other states, and they reduce GHG emissions by reducing energy demand.

[12] The green building standards became mandatory in the 2010 edition of the code.

Solid Waste Diversion Regulations

AB 939: Integrated Waste Management Act of 1989

California's Integrated Waste Management Act of 1989 (AB 939, Public Resources Code §§ 40050 et seq.) set a requirement for cities and counties throughout the state to divert 50 percent of all solid waste from landfills by January 1, 2000, through source reduction, recycling, and composting. In 2008, the requirements were modified to reflect a per capita requirement rather than tonnage. To help achieve this, the act requires that each city and county prepare and submit a source reduction and recycling element. AB 939 also established the goal for all California counties to provide at least 15 years of ongoing landfill capacity.

AB 341

AB 341 (Chapter 476, Statutes of 2011) increased the statewide goal for waste diversion to 75 percent by 2020 and requires recycling of waste from commercial and multifamily residential land uses. Section 5.408 of CALGreen also requires that at least 65 percent of the nonhazardous construction and demolition waste from nonresidential construction operations be recycled and/or salvaged for reuse.

AB 1327

The California Solid Waste Reuse and Recycling Access Act (AB 1327, Public Resources Code §§ 42900 et seq.) requires areas to be set aside for collecting and loading recyclable materials in development projects. The act required the California Integrated Waste Management Board to develop a model ordinance for adoption by any local agency requiring adequate areas for collection and loading of recyclable materials as part of development projects. Local agencies are required to adopt the model or an ordinance of their own.

AB 1826

In October of 2014, Governor Brown signed AB 1826 requiring businesses to recycle their organic waste on and after April 1, 2016, depending on the amount of waste they generate per week. This law also requires that on and after January 1, 2016, local jurisdictions across the state implement an organic waste recycling program to divert organic waste generated by businesses and multifamily residential dwellings with five or more units. Organic waste means food waste, green waste, landscape and pruning waste, nonhazardous wood waste, and food-soiled paper waste that is mixed with food waste.

Water Efficiency Regulations

SBX7-7

The 20x2020 Water Conservation Plan was issued by the Department of Water Resources (DWR) in 2010 pursuant to Senate Bill 7, which was adopted during the 7th Extraordinary Session of 2009–2010 and therefore dubbed "SBX7-7." SBX7-7 mandated urban water conservation and authorized the DWR to prepare a plan implementing urban water conservation requirements (20x2020 Water Conservation Plan). In addition, it required agricultural water providers to prepare agricultural water management plans, measure water deliveries to customers, and implement other efficiency measures. SBX7-7 required urban water providers to adopt a water conservation target of 20 percent reduction in urban per capita water use by 2020 compared to 2005 baseline use.

AB 1881: Water Conservation in Landscaping Act

The Water Conservation in Landscaping Act of 2006 (AB 1881) requires local agencies to adopt the updated DWR model ordinance or an equivalent. AB 1881 also requires the CEC to consult with the DWR to adopt, by regulation, performance standards and labeling requirements for landscape irrigation equipment, including irrigation controllers, moisture sensors, emission devices, and valves to reduce the wasteful, uneconomic, inefficient, or unnecessary consumption of energy or water.

Short-Lived Climate Pollutant Reduction Strategy

Senate Bill 1383

On September 19, 2016, the Governor signed SB 1383 to supplement the GHG reduction strategies in the Scoping Plan to consider short-lived climate pollutants, including black carbon and methane. Black carbon is the light-absorbing component of fine particulate matter produced during incomplete combustion of fuels. SB 1383 required the state board, no later than January 1, 2018, to approve and begin implementing a comprehensive strategy to reduce emissions of short-lived climate pollutants to achieve a reduction in methane by 40 percent, hydrofluorocarbon gases by 40 percent, and anthropogenic black carbon by 50 percent below 2013 levels by 2030. The bill also established targets for reducing organic waste in landfills. On March 14, 2017, CARB adopted the Short-Lived Climate Pollutant Reduction Strategy, which identifies the state's approach to reducing anthropogenic and biogenic sources of short-lived climate pollutants. Anthropogenic sources of black carbon include on- and off-road transportation, residential wood burning, fuel combustion (charbroiling), and industrial processes. According to CARB, ambient levels of black carbon in California are 90 percent lower than in the early 1960s, despite the tripling of diesel fuel use (CARB 2017a). In-use on-road rules were expected to reduce black carbon emissions from on-road sources by 80 percent between 2000 and 2020.

Local Regulations

City of Pasadena Climate Action Plan

The City of Pasadena prepared a Climate Action Plan (CAP) to establish a framework for evaluating and mitigating GHG emissions by providing an emissions inventory, emissions reduction goals, and strategies for reducing emissions (Pasadena 2018). The Pasadena Climate Action Plan identifies a reduction target for the City to reduce GHG emissions to 15 percent below 2009 emissions for 2020, 49 percent below for 2030, 59 percent below for 2035, and 83 percent below for 2050. In addition, the purpose of the CAP is to analyze GHG emissions at a programmatic-level, outline a strategy to reduce and mitigate municipal and community-wide GHG emissions, demonstrate Pasadena's commitment to achieving the state-wide emissions reduction targets, and serve as a qualified GHG reduction plan consistent with the California Environmental Quality Act (CEQA) Guidelines Section 15183.5. The CAP includes five emissions reduction strategies for sustainable mobility and land use, energy efficiency and conservation, water conservation, and solid waste reduction, and urban greening.

Thresholds of Significance

The CEQA Guidelines recommend that a lead agency consider the following when assessing the significance of impacts from GHG emissions on the environment:

1. The extent to which the project may increase (or reduce) GHG emissions as compared to the existing environmental setting;

2. Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project;

3. The extent to which the project complies with regulations or requirements adopted to implement an adopted statewide, regional, or local plan for the reduction or mitigation of GHG emissions.[13]

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

To provide guidance to local lead agencies on determining significance for GHG emissions in their CEQA documents, South Coast AQMD has convened a GHG CEQA Significance Threshold Working Group (Working Group). Based on the last Working Group meeting (Meeting No. 15) held in September 2010, South Coast AQMD is proposing to adopt a tiered approach for evaluating GHG emissions for development projects where South Coast AQMD is not the lead agency (South Coast AQMD 2010):

- **Tier 1.** If a project is exempt from CEQA, project-level and cumulative GHG emissions are less than significant.

- **Tier 2.** If the project complies with a GHG emissions reduction plan or mitigation program that avoids or substantially reduces GHG emissions in the project's geographic area (i.e., city or county), project-level and cumulative GHG emissions are less than significant.

- **Tier 3.** If GHG emissions are less than the screening-level threshold, project-level and cumulative GHG emissions are less than significant.

  For projects that are not exempt or where no qualifying GHG reduction plans are directly applicable, South Coast AQMD requires an assessment of GHG emissions. South Coast AQMD is proposing a screening-level threshold of 3,000 $MTCO_2e$ annually for all land use types or the following land-use-specific thresholds: 1,400 $MTCO_2e$ for commercial projects, 3,500 $MTCO_2e$ for residential projects, or 3,000 $MTCO_2e$ for mixed-use projects. These bright-line thresholds are based on a review of the Governor's Office of Planning and Research database of CEQA projects. Based on their review of 711 CEQA projects, 90 percent of CEQA projects would exceed the bright-line thresholds identified above. Therefore,

[13] The Governor's Office of Planning and Research recommendations include a requirement that such a plan must be adopted through a public review process and include specific requirements that reduce or mitigate the project's incremental contribution of GHG emissions. If there is substantial evidence that the possible effects of a particular project are still cumulatively considerable, notwithstanding compliance with the adopted regulations or requirements, an EIR must be prepared for the project.

projects that do not exceed the bright-line threshold would have a nominal, and therefore, less than cumulatively considerable impact on GHG emissions:

- **Tier 4.** If emissions exceed the screening threshold, a more detailed review of the project's GHG emissions is warranted.

  The South Coast AQMD Working Group has identified an efficiency target for projects that exceed the screening threshold of 4.8 $MTCO_2e$ per year per service population ($MTCO_2e$/year/SP) for project-level analyses and 6.6 $MTCO_2e$/year/SP for plan level projects (e.g., program-level projects such as general plans) for the year 2020.[14] The per capita efficiency targets are based on the AB 32 GHG reduction target and 2020 GHG emissions inventory prepared for CARB's 2008 Scoping Plan.

The bright-line screening-level criterion of 3,000 $MTCO_2e$/yr is used as the significance threshold for this project. Therefore, if the project operation-phase emissions exceed the 3,000 $MTCO_2e$/yr threshold, GHG emissions would be considered potentially significant in the absence of mitigation measures.

[14] It should be noted that the Working Group also considered efficiency targets for 2035 for the first time in this Working Group meeting.

BIBLIOGRAPHY

Bay Area Air Quality Management District (BAAQMD). 2017, May. California Environmental Quality Act Air Quality Guidelines. https://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en.

California Air Pollution Control Officers Association (CAPCOA). 2021. California Emissions Estimator Model (CalEEMod). Version 2020.4. Prepared by: BREEZE Software, A Division of Trinity Consultants in collaboration with South Coast Air Quality Management District and the California Air Districts.

California Air Resources Board (CARB). 1998, April 22. The Report on Diesel Exhaust. http://www.arb.ca.gov/toxics/dieseltac/de-fnds.htm.

———. 1999. California Air Resources Board (CARB). Final Staff Report: Update to the Toxic Air Contaminant List. https://www.arb.ca.gov/toxics/finalreport.pdf

———. 2005, April. Air Quality and Land Use Handbook: A Community Health Perspective. https://www.arb.ca.gov/ch/handbook.pdf.

———. 2008, October. Climate Change Proposed Scoping Plan, a Framework for Change. https://ww2.arb.ca.gov/sites/default/files/classic//cc/scopingplan/document/psp.pdf.

———. 2010, September. Staff Report Proposed Regional Greenhouse Gas Emission Reduction Targets for Automobiles and Light Trucks Pursuant to Senate Bill 375. https://ww3.arb.ca.gov/board/res/2010/res10-31.pdf.

———. 2016, October 1. Ambient Air Quality Standards. https://ww2.arb.ca.gov/sites/default/files/2020-07/aaqs2.pdf.

———. 2017a, March 14. Final Proposed Short-Lived Climate Pollutant Reduction Strategy. https://ww2.arb.ca.gov/sites/default/files/2018-12/final_slcp_report%20Final%202017.pdf.

———. 2017b, November. California's 2017 Climate Change Scoping Plan: The Strategy for Achieving California's 2030 Greenhouse Gas Target. https://www.arb.ca.gov/cc/scopingplan/scoping_plan_2017.pdf.

———. 2018, February. Proposed Update to the SB 375 Greenhouse Gas Emission Reduction Targets. https://www.arb.ca.gov/cc/sb375/sb375_target_update_final_staff_report_feb2018.pdf.

———. 2019a, February 21. Final Statement of Reasons for Rulemaking, Including Summary of Comments and Agency Response. Public Hearing to Consider the Proposed 2018 Amendment to Area Designations for State Ambient Air Quality Standards. https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2019/statereadesignations/fsor.pdf?_ga=2.56310120.293950539.1643666080-480168846.1633624542.

———. 2019b, July 25. California and major automakers reach groundbreaking framework agreement on clean emission standards. https://ww2.arb.ca.gov/news/california-and-major-automakers-reach-groundbreaking-framework-agreement-clean-emission.

———. 2020. 2020 California Greenhouse Gas 2000-2018 Emissions Trends and Indicators Report. https://ww3.arb.ca.gov/cc/inventory/pubs/reports/2000_2018/ghg_inventory_trends_00-18.pdf.

———. 2021a, September 10 (accessed). Air Pollution Data Monitoring Cards (2016, 2017, 2018, 2019, and 2020). http://www.arb.ca.gov/adam/topfour/topfour1.php.

———. 2021b, December 9. Staff Report, CARB Review of the South Coast 2021 Redesignation Request and Maintenance Plan. https://ww2.arb.ca.gov/sites/default/files/2021-10/Staff_Report_for_the_South_Coast_PM2.5_Redesignation_Request_and_Maintenance_Plan.pdf.

_____. 2022. 2022 Scoping Plan for Achieving Carbon Neutrality, https://ww2.arb.ca.gov/sites/default/files/2022-12/2022-sp.pdf, accessed December 7, 2022.

———. 2023a, January (accessed). Maps of State and Federal Area Designations. https://ww2.arb.ca.gov/resources/documents/maps-state-and-federal-area-designations.

———. 2023b, January 12 (accessed). February 24-2, 2022, Board Meeting Agenda. https://ww2.arb.ca.gov/ma022422.

California Energy Commission (CEC). 2018a. News Release: Energy Commission Adopts Standards Requiring Solar Systems for New Homes, First in Nation. https://www.energy.ca.gov/news/2018-05/energy-commission-adopts-standards-requiring-solar-systems-new-homes-first.

———.2018b. 2019 Building Energy and Efficiency Standards Frequently Asked Questions. https://www.energy.ca.gov/sites/default/files/2020-03/Title_24_2019_Building_Standards_FAQ_ada.pdf.

Intergovernmental Panel on Climate Change (IPCC). 1995. Second Assessment Report: Climate Change 1995. https://www.ipcc.ch/site/assets/uploads/2018/02/ipcc_sar_wg_I_full_report.pdf.

———. 2001. Third Assessment Report: Climate Change 2001. New York: Cambridge University Press. https://www.ipcc.ch/site/assets/uploads/2018/03/WGI_TAR_full_report.pdf.

———. 2007. Fourth Assessment Report: Climate Change 2007. New York: Cambridge University Press. https://www.ipcc.ch/site/assets/uploads/2018/02/ar4_syr_full_report.pdf.

———. 2013. Fifth Assessment Report: Climate Change 2013. New York: Cambridge University Press. https://www.ipcc.ch/site/assets/uploads/2018/02/WG1AR5_all_final.pdf.

Pasadena, City of. 2018, March 5. Pasadena Climate Action Plan. https://www.cityofpasadena.net/planning/wp-content/uploads/sites/30/Final-Pasadena-Climate-Action-Plan_3.5.2018.pdf?v=1632935580716.

South Coast Air Quality Management District (South Coast AQMD). 1992. Federal Attainment Plan for Carbon Monoxide.

———. 1993. California Environmental Quality Act Air Quality Handbook. http://www.aqmd.gov/home/rules-compliance/ceqa/air-quality-analysis-handbook/ceqa-air-quality-handbook-(1993).

———. 2003. 2003 Air Quality Management Plan. Appendix V. https://www.aqmd.gov/home/air-quality/clean-air-plans/air-quality-mgt-plan/2003-aqmp

———. 2005, May. Guidance Document for Addressing Air Quality Issues in General Plans and Local Planning. http://www.aqmd.gov/docs/default-source/planning/air-quality-guidance/complete-guidance-document.pdf.

———. 2008a, July. Final Localized Significance Threshold Methodology. http://www.aqmd.gov/docs/default-source/ceqa/handbook/localized-significance-thresholds/final-lst-methodology-document.pdf?sfvrsn=2.

———. 2008b, September. Multiple Air Toxics Exposure Study in the South Coast Air Basin (MATES III). https://www.aqmd.gov/home/air-quality/air-quality-studies/health-studies/mates-iii.

———.2011. Fact Sheet for Applying CalEEMod to Localized Significance Thresholds. http://www.aqmd.gov/docs/default-source/ceqa/handbook/localized-significance-thresholds/caleemod-guidance.pdf?sfvrsn=2.

———. 2010, September 28. Greenhouse Gases (GHG) CEQA Significance Thresholds Working Group Meeting 15. http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/year-2008-2009/ghg-meeting-15/ghg-meeting-15-main-presentation.pdf.

———. 2012, May 4. Final 2012 Lead State Implementation Plan: Los Angeles County. http://www3.aqmd.gov/hb/attachments/2011-2015/2012May/2012-May4-030.pdf.

———. 2013, February. 2012 Final Air Quality Management Plan. https://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2012-air-quality-management-plan/final-2012-aqmp-(february-2013)/main-document-final-2012.pdf.

———. 2015a, October 3. Final Report Multiple Air Toxics Exposure Study in the South Coast Air Basin (MATES IV). https://www.aqmd.gov/docs/default-source/air-quality/air-toxic-studies/mates-iv/mates-iv-final-draft-report-4-1-15.pdf?sfvrsn=7.

———. 2015b. Health Effects of Air Pollution. http://www.aqmd.gov/docs/default-source/publications/brochures/the-health-effects-of-air-pollution-brochure.pdf.

———. 2015c, October. "Blueprint for Clean Air: 2016 AQMP White Paper." 2016 AQMP White Papers Web Page. https://www.aqmd.gov/docs/default-source/Agendas/aqmp/white-paper-working-groups/wp-blueprint-final.pdf?sfvrsn=2.

———. 2017, March 4. Final 2016 Air Quality Management Plan. https://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2016-air-quality-management-plan/final-2016-aqmp/final2016aqmp.pdf?sfvrsn=15.

———. 2019, April (revised). South Coast AQMD Air Quality Significance Thresholds. http://www.aqmd.gov/docs/default-source/ceqa/handbook/scaqmd-air-quality-significance-thresholds.pdf.

———. 2022, December. South Coast AQMD 2022 Air Quality Management Plan (AQMP). https://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2022-air-quality-management-plan/final-2022-aqmp/final-2022-aqmp.pdf?sfvrsn=10.

Southern California Association of Governments (SCAG). 2020, September 3. Connect SoCal Plan: The 2020-2045 Regional Transportation Plan / Sustainable Communities Strategy of The Southern California Association of Governments. https://www.connectsocal.org/Pages/Connect-SoCal-Final-Plan.aspx.

US Environmental Protection Agency (USEPA). 2009, December. EPA: Greenhouse Gases Threaten Public Health and the Environment. Science overwhelmingly shows greenhouse gas concentrations at unprecedented levels due to human activity. https://archive.epa.gov/epapages/newsroom_archive/newsreleases/08d11a451131bca585257685005bf252.html.

———. 2020, September 10 (accessed). Overview of Greenhouse Gases. http://www3.epa.gov/climatechange/ghgemissions/gases.html.

———. US Environmental Protection Agency (USEPA). 2021, February 18 (updated). Criteria Air Pollutants. https://www.epa.gov/criteria-air-pollutants

Western Regional Climate Center (WRCC). 2021, September 23 (accessed). Period of Record Monthly Climate Summary, 01/01/1893 to 06/10/2016. Pasadena, California, Station (ID # 046719). Western US Climate Summaries. https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca6719.

Emissions Worksheet

Regional Construction Emissions Worksheet (Driving Range):

Demolition							
		ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite	**2022 Winter**						
	Off-Road	2.64	25.72	20.59	0.04	1.24	1.16
	Total	**2.64**	**25.72**	**20.59**	**0.04**	**1.24**	**1.16**
Offsite							
	Hauling	0.00	0.00	0.00	0.00	0.00	0.00
	Vendor	0.01	0.20	0.07	0.00	0.03	0.01
	Worker	0.06	0.04	0.54	0.00	0.16	0.04
	Total	**0.06**	**0.25**	**0.61**	**0.00**	**0.18**	**0.05**
TOTAL		***2.70***	***25.97***	***21.21***	***0.04***	***1.42***	***1.21***
Onsite	**2022**						
	Off-Road	2.64	25.72	20.59	0.04	1.24	1.16
	Total	**2.64**	**25.72**	**20.59**	**0.04**	**1.24**	**1.16**
Offsite							
	Hauling	0.00	0.00	0.00	0.00	0.00	0.00
	Vendor	0.01	0.20	0.07	0.00	0.03	0.01
	Worker	0.06	0.04	0.54	0.00	0.16	0.04
	Total	**0.06**	**0.25**	**0.61**	**0.00**	**0.18**	**0.05**
TOTAL		***2.70***	***25.97***	***21.21***	***0.04***	***1.42***	***1.21***

Site Preparation							
		ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite	**2022** Winter						
	Fugitive Dust					8.40	4.32
	Off-Road	3.17	33.08	19.70	0.04	1.61	1.48
	Total	**3.17**	**33.08**	**19.70**	**0.04**	**10.02**	**5.80**
Offsite							
	Hauling	0.00	0.00	0.00	0.00	0.00	0.00
	Vendor	0.01	0.20	0.07	0.00	0.03	0.01
	Worker	0.07	0.05	0.65	0.00	0.19	0.05
	Total	**0.07**	**0.25**	**0.72**	**0.00**	**0.21**	**0.06**
TOTAL		***3.24***	***33.34***	***20.42***	***0.04***	***10.23***	***5.86***
Onsite	**2022**						
	Fugitive Dust	0.00	0.00	0.00	0.00	8.40	4.32
	Off-Road	3.17	33.08	19.70	0.04	1.61	1.48
	Total	**3.17**	**33.08**	**19.70**	**0.04**	**10.02**	**5.80**
Offsite							
	Hauling	0.00	0.00	0.00	0.00	0.00	0.00
	Vendor	0.01	0.20	0.07	0.00	0.03	0.01
	Worker	0.07	0.05	0.65	0.00	0.19	0.05
	Total	**0.07**	**0.25**	**0.72**	**0.00**	**0.21**	**0.06**
TOTAL		***3.24***	***33.34***	***20.42***	***0.04***	***10.23***	***5.86***

Grading

			ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite		**2022** Winter						
	Fugitive Dust						3.93	1.56
	Off-Road		3.62	38.84	29.04	0.06	1.63	1.50
	Total		**3.62**	**38.84**	**29.04**	**0.06**	**5.57**	**3.07**
Offsite								
	Hauling		0.00	0.00	0.00	0.00	0.00	0.00
	Vendor		0.01	0.20	0.07	0.00	0.03	0.01
	Worker		0.07	0.06	0.72	0.00	0.21	0.06
	Total		**0.08**	**0.26**	**0.79**	**0.00**	**0.23**	**0.07**
TOTAL			***3.71***	***39.10***	***29.83***	***0.06***	***5.80***	***3.13***
Onsite		**2022**						
	Fugitive Dust		0.00	0.00	0.00	0.00	3.93	1.56
	Off-Road		3.62	38.84	29.04	0.06	1.63	1.50
	Total		**3.62**	**38.84**	**29.04**	**0.06**	**5.57**	**3.07**
Offsite								
	Hauling		0.00	0.00	0.00	0.00	0.00	0.00
	Vendor		0.01	0.20	0.07	0.00	0.03	0.01
	Worker		0.07	0.06	0.72	0.00	0.21	0.06
	Total		**0.08**	**0.26**	**0.79**	**0.00**	**0.23**	**0.07**
TOTAL			***3.71***	***39.10***	***29.83***	***0.06***	***5.80***	***3.13***

Trenching

			ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite		**2022 Winter**						
	Off-Road		0.73	6.76	5.20	0.01	0.48	0.44
	Total		**0.73**	**6.76**	**5.20**	**0.01**	**0.48**	**0.44**
Offsite								
	Hauling		0.00	0.00	0.00	0.00	0.00	0.00
	Vendor		0.00	0.00	0.00	0.00	0.00	0.00
	Worker		0.02	0.01	0.18	0.00	0.05	0.01
	Total		**0.02**	**0.01**	**0.18**	**0.00**	**0.05**	**0.01**
TOTAL			***0.75***	***6.77***	***5.38***	***0.01***	***0.53***	***0.45***
Onsite		**2022**						
	Off-Road		0.73	6.76	5.20	0.01	0.48	0.44
	Total		**0.73**	**6.76**	**5.20**	**0.01**	**0.48**	**0.44**
Offsite								
	Hauling		0.00	0.00	0.00	0.00	0.00	0.00
	Vendor		0.00	0.00	0.00	0.00	0.00	0.00
	Worker		0.02	0.01	0.18	0.00	0.05	0.01
	Total		**0.02**	**0.01**	**0.18**	**0.00**	**0.05**	**0.01**
TOTAL			***0.75***	***6.77***	***5.38***	***0.01***	***0.53***	***0.45***

Fencing

			ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite		**2022 Winter**						
	Off-Road		0.75	6.59	5.31	0.01	0.29	0.28
	Total		**0.75**	**6.59**	**5.31**	**0.01**	**0.29**	**0.28**
Offsite								
	Hauling		0.00	0.00	0.00	0.00	0.00	0.00
	Vendor		0.01	0.15	0.05	0.00	0.02	0.01
	Worker		0.03	0.02	0.29	0.00	0.08	0.02
	Total		**0.04**	**0.18**	**0.34**	**0.00**	**0.10**	**0.03**
TOTAL			***0.78***	***6.77***	***5.65***	***0.01***	***0.40***	***0.31***
Onsite		**2022**						
	Off-Road		0.75	6.59	5.31	0.01	0.29	0.28
	Total		**0.75**	**6.59**	**5.31**	**0.01**	**0.29**	**0.28**
Offsite								
	Hauling		0.00	0.00	0.00	0.00	0.00	0.00
	Vendor		0.01	0.15	0.05	0.00	0.02	0.01
	Worker		0.03	0.02	0.29	0.00	0.08	0.02
	Total		**0.04**	**0.18**	**0.34**	**0.00**	**0.10**	**0.03**
TOTAL			***0.78***	***6.77***	***5.65***	***0.01***	***0.40***	***0.31***

Paving

			ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite		**2022** Winter						
	Off-Road		1.19	11.68	15.04	0.02	0.59	0.54
	Paving		0.00				0.00	0.00
	Total		**1.19**	**11.68**	**15.04**	**0.02**	**0.59**	**0.54**
Offsite								
	Hauling		0.00	0.00	0.00	0.00	0.00	0.00
	Vendor		0.00	0.00	0.00	0.00	0.00	0.00
	Worker		0.07	0.06	0.72	0.00	0.21	0.06
	Total		**0.07**	**0.06**	**0.72**	**0.00**	**0.21**	**0.06**
TOTAL			***1.27***	***11.73***	***15.77***	***0.03***	***0.80***	***0.60***

Onsite		**2022**					
	Off-Road	1.19	11.68	15.04	0.02	0.59	0.54
	Paving	0.00	0.00	0.00	0.00	0.00	0.00
	Total	**1.19**	**11.68**	**15.04**	**0.02**	**0.59**	**0.54**
Offsite							
	Hauling	0.00	0.00	0.00	0.00	0.00	0.00
	Vendor	0.00	0.00	0.00	0.00	0.00	0.00
	Worker	0.07	0.06	0.72	0.00	0.21	0.06
	Total	**0.07**	**0.06**	**0.72**	**0.00**	**0.21**	**0.06**
TOTAL		***1.27***	***11.73***	***15.77***	***0.03***	***0.80***	***0.60***

	ROG	**NOx**	**CO**	**SO2**	**PM10 Total**	**PM2.5 Total**
Demolition	***3***	***26***	***21***	***0***	***1***	***1***
Site Preparation	***3***	***33***	***20***	***0***	***10***	***6***
Grading	***4***	***39***	***30***	***0***	***6***	***3***
Trenching and Fencing	***2***	***14***	***11***	***0***	***1***	***1***
Paving	***1***	***12***	***16***	***0***	***1***	***1***
MAX DAILY	**4**	**39**	**30**	**0**	**10**	**6**
Regional Thresholds	**75**	**100**	**550**	**150**	**150**	**55**
Exceeds Thresholds?	**No**	No	No	No	No	No

Construction LST Worksheet (Driving Range):

**NOx and CO LSTs based on 82 ft receptor (employees), PM10 and PM2.5 LSTs based on 250 ft receptor (residences) as employees would not be onsite 24hrs/day

Demolition

		NOx	CO	PM10 Total	PM2.5 Total
Onsite					
	Off-Road	25.72	20.59	1.24	1.16
	Total	**25.72**	**20.59**	**1.24**	**1.16**
TOTAL		***25.72***	***20.59***	***1.24***	***1.16***
Onsite					
	Off-Road	25.72	20.59	1.24	1.16
	Total	**25.72**	**20.59**	**1.24**	**1.16**
TOTAL		***25.72***	***20.59***	***1.24***	***1.16***

Site Preparation

		NOx	CO	PM10 Total	PM2.5 Total
Onsite					
	Fugitive Dust			8.40	4.32
	Off-Road	33.08	19.70	1.61	1.48
	Total	**33.08**	**19.70**	**10.02**	**5.80**
TOTAL		***33.08***	***19.70***	***10.02***	***5.80***
Onsite					
	Fugitive Dust	0.00	0.00	8.40	4.32
	Off-Road	33.08	19.70	1.61	1.48
	Total	**33.08**	**19.70**	**10.02**	**5.80**
TOTAL		***33.08***	***19.70***	***10.02***	***5.80***

Grading

		NOx	CO	PM10 Total	PM2.5 Total
Onsite					
	Fugitive Dust			3.93	1.56
	Off-Road	38.84	29.04	1.63	1.50
	Total	**38.84**	**29.04**	**5.57**	**3.07**
TOTAL		***38.84***	***29.04***	***5.57***	***3.07***
Onsite					
	Fugitive Dust	0.00	0.00	3.93	1.56
	Off-Road	38.84	29.04	1.63	1.50
	Total	**38.84**	**29.04**	**5.57**	**3.07**
TOTAL		***38.84***	***29.04***	***5.57***	***3.07***

Trenching					
		NOx	CO	PM10 Total	PM2.5 Total
Onsite					
	Off-Road	6.76	5.20	0.48	0.44
	Total	**6.76**	**5.20**	**0.48**	**0.44**
TOTAL		***6.76***	***5.20***	***0.48***	***0.44***
Onsite					
	Off-Road	6.76	5.20	0.48	0.44
	Total	**6.76**	**5.20**	**0.48**	**0.44**
TOTAL		***6.76***	***5.20***	***0.48***	***0.44***

Fencing					
		NOx	CO	PM10 Total	PM2.5 Total
Onsite					
	Off-Road	6.59	5.31	0.29	0.28
	Total	**6.59**	**5.31**	**0.29**	**0.28**
TOTAL		***6.59***	***5.31***	***0.29***	***0.28***
Onsite					
	Off-Road	6.59	5.31	0.29	0.28
	Total	**6.59**	**5.31**	**0.29**	**0.28**
TOTAL		***6.59***	***5.31***	***0.29***	***0.28***

Paving					
		NOx	CO	PM10 Total	PM2.5 Total
Onsite					
	Off-Road	11.68	15.04	0.59	0.54
	Paving			0.00	0.00
	Total	**11.68**	**15.04**	**0.59**	**0.54**
TOTAL		***11.68***	***15.04***	***0.59***	***0.54***
Onsite					
	Off-Road	11.68	15.04	0.59	0.54
	Paving	0.00	0.00	0.00	0.00
	Total	**11.68**	**15.04**	**0.59**	**0.54**
TOTAL		***11.68***	***15.04***	***0.59***	***0.54***

		NOx	CO	PM10 Total	PM2.5 Total
Demolition		***26***	***21***	***1.24***	***1.16***
	≤1.00 Acre LST	***69***	***535***	***19.38***	***5.57***
	Exceeds LST?	***no***	***no***	***no***	***no***
Site Preparation		***33***	***20***	***10.02***	***5.80***
	3.50 Acre LST	***123***	***1,176***	***36.12***	***9.36***
	Exceeds LST?	***no***	***no***	***no***	***no***
Grading		***39***	***29***	***5.57***	***3.07***
	4.00 Acre LST	***131***	***1,297***	***39.21***	***10.11***
	Exceeds LST?	***no***	***no***	***no***	***no***

Trenching and Fencing		***13***	***11***	***0.77***	***0.72***
	≤1.00 Acre LST	***69***	***535***	***19.38***	***5.57***
	Exceeds LST?	***no***	***no***	***no***	***no***
Paving		***12***	***15***	***0.59***	***0.54***
	≤1.00 Acre LST	***69***	***535***	***19.38***	***5.57***
	Exceeds LST?	***no***	***no***	***no***	***no***

Regional Construction Emissions Worksheet (Mini Golf Course):

Demolition							
		ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite	**Winter**						
	Off-Road	0.96	9.08	7.66	0.02	0.43	0.40
	Total	**0.96**	**9.08**	**7.66**	**0.02**	**0.43**	**0.40**
Offsite							
	Hauling	0.00	0.00	0.00	0.00	0.00	0.00
	Vendor	0.00	0.08	0.03	0.00	0.01	0.00
	Worker	0.03	0.02	0.27	0.00	0.08	0.02
	Total	**0.03**	**0.10**	**0.30**	**0.00**	**0.10**	**0.03**
TOTAL		***0.99***	***9.18***	***7.96***	***0.02***	***0.52***	***0.43***
Onsite							
	Off-Road	0.96	9.08	7.66	0.02	0.43	0.40
	Total	**0.96**	**9.08**	**7.66**	**0.02**	**0.43**	**0.40**
Offsite							
	Hauling	0.00	0.00	0.00	0.00	0.00	0.00
	Vendor	0.00	0.08	0.03	0.00	0.01	0.00
	Worker	0.03	0.02	0.27	0.00	0.08	0.02
	Total	**0.03**	**0.10**	**0.30**	**0.00**	**0.10**	**0.03**
TOTAL		***0.99***	***9.18***	***7.96***	***0.02***	***0.52***	***0.43***

Site Preparation							
		ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite	Winter						
	Fugitive Dust					2.80	1.44
	Off-Road	0.83	8.58	5.30	0.01	0.39	0.36
	Total	**0.83**	**8.58**	**5.30**	**0.01**	**3.19**	**1.80**
Offsite							
	Hauling	0.00	0.00	0.00	0.00	0.00	0.00
	Vendor	0.00	0.08	0.03	0.00	0.01	0.00
	Worker	0.02	0.01	0.17	0.00	0.05	0.01
	Total	**0.02**	**0.09**	**0.20**	**0.00**	**0.06**	**0.02**
TOTAL		***0.85***	***8.67***	***5.50***	***0.01***	***3.26***	***1.82***
Onsite							
	Fugitive Dust	0.00	0.00	0.00	0.00	2.80	1.44
	Off-Road	0.83	8.58	5.30	0.01	0.39	0.36
	Total	**0.83**	**8.58**	**5.30**	**0.01**	**3.19**	**1.80**
Offsite							
	Hauling	0.00	0.00	0.00	0.00	0.00	0.00
	Vendor	0.00	0.08	0.03	0.00	0.01	0.00
	Worker	0.02	0.01	0.17	0.00	0.05	0.01
	Total	**0.02**	**0.09**	**0.20**	**0.00**	**0.06**	**0.02**
TOTAL		***0.85***	***8.67***	***5.50***	***0.01***	***3.26***	***1.82***

Grading

		ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite	Winter						
	Fugitive Dust					2.10	1.08
	Off-Road	0.85	8.69	5.42	0.01	0.37	0.34
	Total	**0.85**	**8.69**	**5.42**	**0.01**	**2.47**	**1.42**
Offsite							
	Hauling	0.00	0.00	0.00	0.00	0.00	0.00
	Vendor	0.00	0.08	0.03	0.00	0.01	0.00
	Worker	0.03	0.02	0.27	0.00	0.08	0.02
	Total	**0.03**	**0.10**	**0.30**	**0.00**	**0.10**	**0.03**
TOTAL		***0.88***	***8.79***	***5.72***	***0.01***	***2.57***	***1.45***
Onsite							
	Fugitive Dust	0.00	0.00	0.00	0.00	2.10	1.08
	Off-Road	0.85	8.69	5.42	0.01	0.37	0.34
	Total	**0.85**	**8.69**	**5.42**	**0.01**	**2.47**	**1.42**
Offsite							
	Hauling	0.00	0.00	0.00	0.00	0.00	0.00
	Vendor	0.00	0.08	0.03	0.00	0.01	0.00
	Worker	0.03	0.02	0.27	0.00	0.08	0.02
	Total	**0.03**	**0.10**	**0.30**	**0.00**	**0.10**	**0.03**
TOTAL		***0.88***	***8.79***	***5.72***	***0.01***	***2.57***	***1.45***

Trenching

		ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite	**Winter**						
	Off-Road	0.35	3.23	2.59	0.00	0.22	0.21
	Total	**0.35**	**3.23**	**2.59**	**0.00**	**0.22**	**0.21**
Offsite							
	Hauling	0.00	0.00	0.00	0.00	0.00	0.00
	Vendor	0.00	0.00	0.00	0.00	0.00	0.00
	Worker	0.01	0.01	0.10	0.00	0.03	0.01
	Total	**0.01**	**0.01**	**0.10**	**0.00**	**0.03**	**0.01**
TOTAL		***0.36***	***3.24***	***2.69***	***0.00***	***0.26***	***0.21***
Onsite							
	Off-Road	0.35	3.23	2.59	0.00	0.22	0.21
	Total	**0.35**	**3.23**	**2.59**	**0.00**	**0.22**	**0.21**
Offsite							
	Hauling	0.00	0.00	0.00	0.00	0.00	0.00
	Vendor	0.00	0.00	0.00	0.00	0.00	0.00
	Worker	0.01	0.01	0.10	0.00	0.03	0.01
	Total	**0.01**	**0.01**	**0.10**	**0.00**	**0.03**	**0.01**
TOTAL		***0.36***	***3.24***	***2.69***	***0.00***	***0.26***	***0.21***

Paving

		ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite	Winter						
	Off-Road	0.49	4.72	6.58	0.01	0.23	0.22
	Paving	0.00				0.00	0.00
	Total	**0.49**	**4.72**	**6.58**	**0.01**	**0.23**	**0.22**
Offsite							
	Hauling	0.00	0.00	0.00	0.00	0.00	0.00
	Vendor	0.00	0.00	0.00	0.00	0.00	0.00
	Worker	0.03	0.02	0.33	0.00	0.10	0.03
	Total	**0.03**	**0.02**	**0.33**	**0.00**	**0.10**	**0.03**
TOTAL		***0.53***	***4.74***	***6.91***	***0.01***	***0.34***	***0.24***
Onsite							
	Off-Road	0.49	4.72	6.58	0.01	0.23	0.22
	Paving	0.00	0.00	0.00	0.00	0.00	0.00
	Total	**0.49**	**4.72**	**6.58**	**0.01**	**0.23**	**0.22**
Offsite							
	Hauling	0.00	0.00	0.00	0.00	0.00	0.00
	Vendor	0.00	0.00	0.00	0.00	0.00	0.00
	Worker	0.03	0.02	0.33	0.00	0.10	0.03
	Total	**0.03**	**0.02**	**0.33**	**0.00**	**0.10**	**0.03**
TOTAL		***0.53***	***4.74***	***6.91***	***0.01***	***0.34***	***0.24***

	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Demolition	***1***	***9***	***8***	***0***	***1***	***0***
Site Preparation	***1***	***9***	***5***	***0***	***3***	***2***
Grading	***1***	***9***	***6***	***0***	***3***	***1***
Trenching and Paving	***1***	***8***	***10***	***0***	***1***	***0***
Paving	***1***	***5***	***7***	***0***	***0***	***0***
MAX DAILY	**1**	**9**	**10**	**0**	**3**	**2**
Regional Thresholds	**75**	**100**	**550**	**150**	**150**	**55**
Exceeds Thresholds?	**No**	No	No	No	No	No

Construction LST Worksheet (Mini Golf Course):

**NOx and CO LSTs based on 82 ft receptor (employees), PM10 and PM2.5 LSTs based on 250 ft receptor (residences) as employees would not be onsite 24hrs/day

Demolition

			NOx	CO	PM10 Total	PM2.5 Total
Onsite		**2023**				
	Off-Road		9.08	7.66	0.43	0.40
	Total		**9.08**	**7.66**	**0.43**	**0.40**
TOTAL			***9.08***	***7.66***	***0.43***	***0.40***
Onsite		**2023**				
	Off-Road		9.08	7.66	0.43	0.40
	Total		**9.08**	**7.66**	**0.43**	**0.40**
TOTAL			***9.08***	***7.66***	***0.43***	***0.40***

Site Preparation

			NOx	CO	PM10 Total	PM2.5 Total
Onsite		**2023**				
	Fugitive Dust				2.80	1.44
	Off-Road		8.58	5.30	0.39	0.36
	Total		**8.58**	**5.30**	**3.19**	**1.80**
TOTAL			***8.58***	***5.30***	***3.19***	***1.80***
Onsite		**2023**				
	Fugitive Dust		0.00	0.00	2.80	1.44
	Off-Road		8.58	5.30	0.39	0.36
	Total		**8.58**	**5.30**	**3.19**	**1.80**
TOTAL			***8.58***	***5.30***	***3.19***	***1.80***

Grading

			NOx	CO	PM10 Total	PM2.5 Total
Onsite		**2023**				
	Fugitive Dust				2.10	1.08
	Off-Road		8.69	5.42	0.37	0.34
	Total		**8.69**	**5.42**	**2.47**	**1.42**
TOTAL			***8.69***	***5.42***	***2.47***	***1.42***
Onsite		**2023**				
	Fugitive Dust		0.00	0.00	2.10	1.08
	Off-Road		8.69	5.42	0.37	0.34
	Total		**8.69**	**5.42**	**2.47**	**1.42**
TOTAL			***8.69***	***5.42***	***2.47***	***1.42***

Trenching

			NOx	CO	PM10 Total	PM2.5 Total
Onsite		**2023**				
	Off-Road		3.23	2.59	0.22	0.21
	Total		**3.23**	**2.59**	**0.22**	**0.21**
TOTAL			***3.23***	***2.59***	***0.22***	***0.21***
Onsite		**2023**				
	Off-Road		3.23	2.59	0.22	0.21
	Total		**3.23**	**2.59**	**0.22**	**0.21**
TOTAL			***3.23***	***2.59***	***0.22***	***0.21***

Paving					
		NOx	CO	PM10 Total	PM2.5 Total
Onsite	**2023**				
	Off-Road	4.72	6.58	0.23	0.22
	Paving			0.00	0.00
	Total	**4.72**	**6.58**	**0.23**	**0.22**
TOTAL		***4.72***	***6.58***	***0.23***	***0.22***
Onsite	**2023**				
	Off-Road	4.72	6.58	0.23	0.22
	Paving	0.00	0.00	0.00	0.00
	Total	**4.72**	**6.58**	**0.23**	**0.22**
TOTAL		***4.72***	***6.58***	***0.23***	***0.22***
		NOx	**CO**	**PM10 Total**	**PM2.5 Total**
Demolition		***9***	***8***	***0.43***	***0.40***
	≤1.00 Acre LST	***69***	***535***	***19.38***	***5.57***
	Exceeds LST?	***no***	***no***	***no***	***no***
Site Preparation		***9***	***5***	***3.19***	***1.80***
	≤1.00 Acre LST	***69***	***535***	***19.38***	***5.57***
	Exceeds LST?	***no***	***no***	***no***	***no***
Grading		***9***	***5***	***2.47***	***1.42***
	≤1.00 Acre LST	***69***	***535***	***19.38***	***5.57***
	Exceeds LST?	***no***	***no***	***no***	***no***
Trenching and Paving		***8***	***9***	***0.46***	***0.42***
	≤1.00 Acre LST	***69***	***535***	***19.38***	***5.57***
	Exceeds LST?	***no***	***no***	***no***	***no***
Paving		***5***	***7***	***0.23***	***0.22***
	≤1.00 Acre LST	***69***	***535***	***19.38***	***5.57***
	Exceeds LST?	***no***	***no***	***no***	***no***

Regional Operation Emissions Worksheet: Buildout Year 2023[1]

[1] CalEEMod, Version 2020.4

Project

Summer

	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Area	0.06	0.00	0.01	0.00	0.00	0.00
Energy	0.00	0.00	0.00	0.00	0.00	0.00
Mobile	1.35	1.46	14.73	0.03	3.37	0.91
Total	**1.41**	**1.46**	**14.74**	**0.03**	**3.37**	**0.91**

Winter

	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Area	0.06	0.00	0.01	0.00	0.00	0.00
Energy	0.00	0.00	0.00	0.00	0.00	0.00
Mobile	1.33	1.58	14.30	0.03	3.37	0.91
Total	**1.39**	**1.58**	**14.31**	**0.03**	**3.37**	**0.91**

Max Daily

	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Area	0	0	0	0	0	0
Energy	0	0	0	0	0	0
Mobile	1	2	15	0	3	1
Total	**1**	**2**	**15**	**0**	**3**	**1**

Regional Thresholds (lb/day)	**55**	**55**	**550**	**150**	**150**	**55**
Exceeds Thresholds?	No	No	No	No	No	No

GHG Emissions Inventory

Source: CalEEMod, Version 2020.4

$MTCO_2e$=metric tons of carbon dioxide equivalent.

Construction

	$MTCO_2e$
2022 (Driving Range)	315
2023 (Mini Golf)	50
Total Construction	**365**
30-Year Amortization[1]	**12**

Operation	$MTCO_2e$	Percent of Emissions
Area	0	0%
Energy (Lighting)[2]	12	2%
Mobile	547	95%
Solid Waste	0	0%
Water	4	1%
30-Yr Amortized Construction Emissions[1]	12	2%
Total	**575**	**100%**
South Coast AQMD Working Group Threshold	3,000	
Exceed Threshold?	**No**	

Notes

1 Total construction emissions are amortized over 30 years per South Coast AQMD Working Group methodology; SCAQMD. 2009, November 19. Greenhouse Gases (GHG) CEQA Significance Thresholds Working Group Meeting 14. http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/year-2008-2009/ghg-meeting-14/ghg-meeting-14-main-presentation.pdf?sfvrsn=2.

2 See assumptions file for lighting calculations.

Assumptions Worksheet

CalEEMod Inputs - Brookside Golf Course Improvements Project (Driving Range), Construction

Name:	Brookside Golf Course Improvements Project (Driving Range)
Project Number:	RBOC-01
Project Location:	1133 Rosemont Ave, Pasadena, CA
County/Air Basin:	Los Angeles
Climate Zone:	12
Land Use Setting:	Urban
Operational Year:	2023
Utility Company:	Pasadena Water and Power
Air Basin:	South Coast Air Basin
Air District:	SCAQMD
SRA:	8- West San Gabriel Valley

Proiect Site Acreage	12
Disturbed Acreage (Driving Range)	9.00

Project Components	SQFT	Tons
New Construction	***SQFT***	***ACRES***
Golf Course	301,000	6.91
Hardscape	16,000	0.37
Additional Area	75,040	1.72

CalEEMod Land Use Inputs

Land Use Type	Land Use Subtype	Unit Amount	Size Metric	Lot Acreage*	Land Use Square Feet
Recreational	Golf Course	6.910	acre	6.91	301,000
Parking	Other Non-asphalt Surfaces	91.040	1000 sqft	2.09	91,040
				9.00	

Architectural Coating

Construction Mitigation

SCAQMD Rule 403

Replace Ground Cover	PM10:	5	% Reduction
Replace Ground Cover	PM2.5:	5	% Reduction
Water Exposed Area	Frequency:	2	per day
	PM10:	55	% Reduction
	PM25:	55	% Reduction
Unpaved Roads	Vehicle Speed:	15	mph
SCAQMD Rule 1186	Clean Paved Road	9	% PM Reduction

Pasadena Water and Power Carbon Intensity Factors

CO2:[1,2]	872.98	pounds per megawatt hour
CH4:[3]	0.029	pound per megawatt hour
N2O:[3]	0.00617	pound per megawatt hour

CalEEMod Inputs - Brookside Golf Course Improvements Project (Mini Golf), Construction

Name:	Brookside Golf Course Improvements Project (Mini Golf)
Project Number:	RBOC-01
Project Location:	1133 Rosemont Ave, Pasadena, CA
County/Air Basin:	Los Angeles
Climate Zone:	12
Land Use Setting:	Urban
Operational Year:	2023
Utility Company:	Pasadena Water and Power
Air Basin:	South Coast Air Basin
Air District:	SCAQMD
SRA:	8- West San Gabriel Valley

Proiect Site Acreage	12
Disturbed Site Acreage	1.00

Project Components	SQFT	Tons
New Construction	***SQFT***	***ACRES***
Landscape (Mini Golf Course)	21,500	0.49
Hardscape	21,500	0.49

CalEEMod Land Use Inputs

Land Use Type	Land Use Subtype	Unit Amount	Size Metric	Lot Acreage*	Land Use Square Feet
Recreational	Golf Course	0.494	acres	0.49	21,500
Parking	Other Non-asphalt Surfaces	21.500	1000 sqft	0.49	21,500
				0.99	

Architectural Coating

Construction Mitigation

SCAQMD Rule 403

Replace Ground Cover	PM10:	5	% Reduction
Replace Ground Cover	PM2.5:	5	% Reduction
Water Exposed Area	Frequency:	2	per day
	PM10:	55	% Reduction
	PM25:	55	% Reduction
Unpaved Roads	Vehicle Speed:	15	mph
SCAQMD Rule 1186	Clean Paved Road	9	% PM Reduction

Pasadena Water and Power Carbon Intensity Factors

CO2:	872.98	pounds per megawatt hour
CH4:	0.029	pound per megawatt hour
N2O:	0.00617	pound per megawatt hour

Construction Activities and Schedule Assumptions: Brookside Golf Course Improvement Project

based on durations provided by Applicant

model assumes construction begins year 2022 for the most conservative emissions outputs

Construction Schedule (Driving Range)

Construction Activities	Phase Type	Start Date	End Date	CalEEMod Duration (Workday)
Demolition	Demolition	5/1/2022	6/10/2022	30
Site Preparation	Site Preparation	6/11/2022	7/11/2022	21
Grading (Rough Grading + Fine Grading)	Grading	7/12/2022	9/30/2022	59
Trenching	Trenching	10/1/2022	11/15/2022	32
Fencing	Building Construction	10/1/2022	11/15/2022	32
Paving	Paving	11/16/2022	12/16/2022	23

Construction Schedule (Mini Golf)

Construction Activities	Phase Type	Start Date	End Date	CalEEMod Duration (Workday)
Demolition	Demolition	1/1/2023	1/13/2023	10
Site Preparation	Site Preparation	1/14/2023	2/3/2023	15
Grading (Rough Grading + Fine Grading)	Grading	2/4/2023	3/28/2023	37
Trenching	Trenching	3/29/2023	4/11/2023	10
Paving	Paving	3/29/2023	4/20/2023	17

CalEEMod Construction Off-Road Equipment Inputs

**Based on equipment mix provided by the Applicant.*

General Construction Hours: 8 hours btwn 7:00 AM to 4:00 PM (with 1 hr break), Mon-Fri

Construction Equipment Details						
Equipment	**model**	**# of Equipment**	**hr/day**	**hp**	**load factor**	**total trips/Day**
Driving Range Development						
Demolition						
Concrete/Industrial Saws		1	8	81		
Excavators		3	8	158		
Rubber Tired Dozers		2	8	247		
Worker Trips						15
Vendor Trips						0
Hauling Trips (TOTAL TRIPS)						0
Water Trucks						4
Site Preparation						
Rubber Tired Dozers		3	8	247		
Tractors/Loaders/Backhoes		4	8	97		
Worker Trips						18
Vendor Trips						0
Hauling Trips (TOTAL TRIPS)						0
Water Trucks						4
Grading						
Excavators		2	8	158		
Graders		1	8	187		
Rubber Tired Dozers		1	8	247		
Scrapers		2	8	367		
Tractors/Loaders/Backhoes		2	8	97		
Worker Trips						20
Vendor Trips						0
Hauling Trips (TOTAL TRIPS)						0
Water Trucks						4
Utility Trenching						
Trenchers		2	8	78		
Worker Trips						5
Vendor Trips						0
Hauling Trips (TOTAL TRIPS)						0
Fencing						
Cranes		1	7	231		
Tractors/Loaders/Backhoes		1	7	97		
Welders		1	8	46		
Worker Trips						8
Vendor Trips						3
Hauling Trips (TOTAL TRIPS)						0

** for the most conservative estimates, fencing construction activity uses vendor trip rates for building construction activities and the hardscape area*

	Unit
16.00	1000sqft

	Vendor Trip Rate	**Trips**
Building Construction Trips	0.1639	3

Paving*						
Pavers		2	8	130		
Rollers		2	8	80		
Paving Equipment		2	8	132		
Cement and Mortar Mixers		2	6	9		
Worker Trips						20
Vendor Trips						0
Hauling Trips (TOTAL TRIPS)						0

Mini Golf Course Development

Demolition						
Concrete/Industrial Saws		1	8	81		
Rubber Tired Dozers		1	6	247		
Tractors/Loaders/Backhoes		1	6	97		
Worker Trips						8
Vendor Trips						0
Hauling Trips (TOTAL TRIPS)						0
Water Trucks						2
Site Preparation						
Rubber Tired Dozers		1	8	247		
Tractors/Loaders/Backhoes		1	8	97		
Worker Trips						5
Vendor Trips						0
Hauling Trips (TOTAL TRIPS)						0
Water Trucks						2
Grading						
Rubber Tired Loader		1	6	203		
Rubber Tired Dozers		1	6	247		
Tractors/Loaders/Backhoes		1	7	97		
Worker Trips						8
Vendor Trips						0
Hauling Trips (TOTAL TRIPS)						0
Water Trucks						2
Utility Trenching						
Trenchers		1	8	78		
Worker Trips						3
Vendor Trips						0
Hauling Trips (TOTAL TRIPS)						0
Paving*						
Pavers		1	7	130		
Cement and Mortar Mixers		1	6	9		
Rollers		1	7	80		
Paving Equipment		1	7	132		
Worker Trips						10
Vendor Trips						0
Hauling Trips (TOTAL TRIPS)						0

CalEEMod Inputs - Brookside Golf Course Imrpovements Project, Operations

Name:	Brookside Golf Course Improvements Project
Project Number:	RBOC-01
Project Location:	1133 Rosemont Ave, Pasadena, CA
County/Air Basin:	Los Angeles
Climate Zone:	12
Land Use Setting:	Urban
Operational Year:	2023
Utility Company:	Pasadena Water and Power
Air Basin:	South Coast Air Basin
Air District:	SCAQMD
SRA:	8- West San Gabriel Valley

Proiect Site Acreage	12
Disturbed Site Acreage	10.00

Project Components	SQFT	Tons
New Construction	***SQFT***	***ACRES***
Driving Range	301,000	6.91
Hardscape	16,000	0.37
Additional Area	75,040	1.72
New Construction	***SQFT***	***ACRES***
Mini Golf Course	21,500	0.49
Hardscape	21,500	0.49

CalEEMod Land Use Inputs

Land Use Type	Land Use Subtype	Unit Amount	Size Metric	Lot Acreage	Land Use Square Feet
Recreational	Golf Course	7.404	acres	7.40	322,500
Parking	Other Non-asphalt Surfaces	112.540	1000 sqft	2.58	112,540
				9.99	

Trips

Land Use Type	Average Daily Trips	CalEEMod Trip Rate	Saturday Trips	CalEEMod Trip Rate	Sunday Trips	CalEEMod Trip
Driving Range	410	**55.31**	410	**55.31**	410	**55.31**
Mini Golf	130	**17.56**	130	**17.56**	130	**17.56**
Existing	136	**18.37**	136	**18.37**	136	**18.37**
Total	**404**	**54.50**	**404**	**54.50**	**404**	**54.50**

Source: Pasadena Department of Transportation. 2021, May. Transportation Impact Analysis for Expansion of the Existing Brookside GolfCourse

Daily Weekday VMT	4,364

Trips	Average Trip Rate (mi/trip)	Annual Vehicle Miles Traveled***
Total Trips	**10.82**	**1,588,536**

*** Annual VMT is calculated based on weekday VMT x 364 days per year.

	Trip Type Percentages		
	Primary	**Diverted**	**Passby**
Golf Course	52%	39%	9%
Adjusted Trip Type Percentages	**100%**	**0%**	**0%**

Water Use (CalEEMod Defaults)

Mini Golf Course Sewage Generation 80 gal/day/1000 sf

*Sewage generation rates based on a City of LA CEQA Thresholds for a golf course lobby

Land Use[1,2]	**Indoor**	**Outdoor[3]**	**Total**
Total Water Use (gal/day)	1,720	0	1,720
Total Water Use (gal/year)	627,800	0	627,800

[1] considers only new generation from Mini Golf Course operations. Assumes driving range operations is intended to meet demand currently at the golf course

[2] Assumes 100% aerobic treatment.

[3] Outdoor water use already occurs

Solid Waste

Land Use	**(tons/year)**
Golf Course	0.46

*Based on CalEEMod default rates for new generation from Mini Golf Course operations. Assumes driving range operations is intended to meet demand currently at the golf course.

Lighting (Electricity Use)

	Total Average kW/Day [1]	**Day/Year[2]**	**Hours[3]**	**Kwh (Annual)**
Light Pole Operations	21.30	365	4	31,098
			Total Annual kWh	31,098

Calculation of GHGs from Field Lighting

CO_2 [4]	**CH_4 [4]**	**N_2O [4]**	**CO_2e**	**CO_2e**
lbs/Mwh	lbs/Mwh	lbs/Mwh	lbs/Mwh	MT/Kwh
872.98300	0.02900	0.00617	873.02	0.000396
				MT/Year
			CO_2e from Lighting	**12.31**

[1] *Based on Lighting Plan for the proposed driving range as provided by the Applicant.*

[2] *Assumes light poles will be operational year round*

[3] *Based on worst case estimate*

[4] *CalEEMod default Carbon Intensity Factors*

Pasadena Water and Power Carbon Intensity Factors

CO2:	872.98	pounds per megawatt hour
CH4:	0.029	pound per megawatt hour
N2O:	0.00617	pound per megawatt hour

CalEEMod Construction Model

Brookside Golf Course Improvements (Driving Range) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Brookside Golf Course Improvements (Driving Range) Construction Run

Los Angeles-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	91.04	1000sqft	2.09	91,040.00	0
Golf Course	6.91	Acre	6.91	300,999.60	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	12			**Operational Year**	2022
Utility Company	Pasadena Water and Power				
CO2 Intensity (lb/MWhr)	872.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - based on information provided by applicant

Off-road Equipment - based on info from applicant

Off-road Equipment - based on information provided by applicant

Off-road Equipment - based on info from applicant

Off-road Equipment - based on info from applicant

Trips and VMT - assuming 4 vt/water truck/day. Fencing bendor trips based on vendor trip rate for building construction activities and hardscape area.

Grading -

Construction Off-road Equipment Mitigation - SCAQMD Rule 403 and Rule 1186

Brookside Golf Course Improvements (Driving Range) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Parking	5462	960
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	9
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	20.00	30.00
tblConstructionPhase	NumDays	10.00	21.00
tblConstructionPhase	NumDays	20.00	59.00
tblConstructionPhase	NumDays	20.00	23.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	3.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.2226	2.2448	1.7716	3.5500e-003	0.4954	0.1032	0.5986	0.2186	0.0952	0.3138	0.0000	312.3358	312.3358	0.0928	1.0900e-003	314.9803
Maximum	**0.2226**	**2.2448**	**1.7716**	**3.5500e-003**	**0.4954**	**0.1032**	**0.5986**	**0.2186**	**0.0952**	**0.3138**	**0.0000**	**312.3358**	**312.3358**	**0.0928**	**1.0900e-003**	**314.9803**

Brookside Golf Course Improvements (Driving Range) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.2226	2.2448	1.7716	3.5500e-003	0.2205	0.1032	0.3236	0.0958	0.0952	0.1910	0.0000	312.3354	312.3354	0.0928	1.0900e-003	314.9799
Maximum	**0.2226**	**2.2448**	**1.7716**	**3.5500e-003**	**0.2205**	**0.1032**	**0.3236**	**0.0958**	**0.0952**	**0.1910**	**0.0000**	**312.3354**	**312.3354**	**0.0928**	**1.0900e-003**	**314.9799**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**55.50**	**0.00**	**45.93**	**56.17**	**0.00**	**39.13**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**5-1-2022**	**7-31-2022**	1.1300	1.1300
2	**8-1-2022**	**9-30-2022**	0.9323	0.9323
		Highest	1.1300	1.1300

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	5/1/2022	6/10/2022	5	30	a
2	Site Preparation	Site Preparation	6/11/2022	7/11/2022	5	21	b
3	Grading	Grading	7/12/2022	9/30/2022	5	59	c
4	Trenching	Trenching	10/1/2022	11/15/2022	5	32	d
5	Fencing	Trenching	10/1/2022	11/15/2022	5	32	e
6	Paving	Paving	11/16/2022	12/16/2022	5	23	f

Brookside Golf Course Improvements (Driving Range) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Acres of Grading (Site Preparation Phase): 31.5

Acres of Grading (Grading Phase): 177

Acres of Paving: 2.09

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Trenching	Trenchers	2	8.00	78	0.50
Fencing	Cranes	1	7.00	231	0.29
Fencing	Forklifts	0	8.00	89	0.20
Fencing	Generator Sets	0	8.00	84	0.74
Fencing	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Fencing	Welders	1	8.00	46	0.45
Paving	Cement and Mortar Mixers	2	6.00	9	0.56
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38

Brookside Golf Course Improvements (Driving Range) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Trenching	2	5.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Fencing	3	8.00	3.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	8	20.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Replace Ground Cover

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

3.2 Demolition - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0396	0.3858	0.3089	5.8000e-004		0.0186	0.0186		0.0173	0.0173	0.0000	50.9853	50.9853	0.0143	0.0000	51.3434
Total	**0.0396**	**0.3858**	**0.3089**	**5.8000e-004**		**0.0186**	**0.0186**		**0.0173**	**0.0173**	**0.0000**	**50.9853**	**50.9853**	**0.0143**	**0.0000**	**51.3434**

Brookside Golf Course Improvements (Driving Range) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.2000e-004	3.0900e-003	1.0200e-003	1.0000e-005	3.8000e-004	3.0000e-005	4.1000e-004	1.1000e-004	3.0000e-005	1.4000e-004	0.0000	1.1458	1.1458	4.0000e-005	1.7000e-004	1.1960
Worker	7.7000e-004	6.4000e-004	8.3400e-003	2.0000e-005	2.4700e-003	2.0000e-005	2.4800e-003	6.5000e-004	1.0000e-005	6.7000e-004	0.0000	2.0278	2.0278	6.0000e-005	6.0000e-005	2.0458
Total	**8.9000e-004**	**3.7300e-003**	**9.3600e-003**	**3.0000e-005**	**2.8500e-003**	**5.0000e-005**	**2.8900e-003**	**7.6000e-004**	**4.0000e-005**	**8.1000e-004**	**0.0000**	**3.1735**	**3.1735**	**1.0000e-004**	**2.3000e-004**	**3.2417**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0396	0.3858	0.3089	5.8000e-004		0.0186	0.0186		0.0173	0.0173	0.0000	50.9853	50.9853	0.0143	0.0000	51.3433
Total	**0.0396**	**0.3858**	**0.3089**	**5.8000e-004**		**0.0186**	**0.0186**		**0.0173**	**0.0173**	**0.0000**	**50.9853**	**50.9853**	**0.0143**	**0.0000**	**51.3433**

Brookside Golf Course Improvements (Driving Range) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.2000e-004	3.0900e-003	1.0200e-003	1.0000e-005	3.5000e-004	3.0000e-005	3.8000e-004	1.0000e-004	3.0000e-005	1.3000e-004	0.0000	1.1458	1.1458	4.0000e-005	1.7000e-004	1.1960
Worker	7.7000e-004	6.4000e-004	8.3400e-003	2.0000e-005	2.2700e-003	2.0000e-005	2.2900e-003	6.1000e-004	1.0000e-005	6.2000e-004	0.0000	2.0278	2.0278	6.0000e-005	6.0000e-005	2.0458
Total	**8.9000e-004**	**3.7300e-003**	**9.3600e-003**	**3.0000e-005**	**2.6200e-003**	**5.0000e-005**	**2.6700e-003**	**7.1000e-004**	**4.0000e-005**	**7.5000e-004**	**0.0000**	**3.1735**	**3.1735**	**1.0000e-004**	**2.3000e-004**	**3.2417**

3.3 Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.2064	0.0000	0.2064	0.1061	0.0000	0.1061	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0333	0.3474	0.2068	4.0000e-004		0.0169	0.0169		0.0156	0.0156	0.0000	35.1114	35.1114	0.0114	0.0000	35.3953
Total	**0.0333**	**0.3474**	**0.2068**	**4.0000e-004**	**0.2064**	**0.0169**	**0.2233**	**0.1061**	**0.0156**	**0.1217**	**0.0000**	**35.1114**	**35.1114**	**0.0114**	**0.0000**	**35.3953**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	8.0000e-005	2.1600e-003	7.2000e-004	1.0000e-005	2.6000e-004	2.0000e-005	2.8000e-004	8.0000e-005	2.0000e-005	1.0000e-004	0.0000	0.8020	0.8020	3.0000e-005	1.2000e-004	0.8372
Worker	6.5000e-004	5.4000e-004	7.0100e-003	2.0000e-005	2.0700e-003	1.0000e-005	2.0800e-003	5.5000e-004	1.0000e-005	5.6000e-004	0.0000	1.7034	1.7034	5.0000e-005	5.0000e-005	1.7184
Total	**7.3000e-004**	**2.7000e-003**	**7.7300e-003**	**3.0000e-005**	**2.3300e-003**	**3.0000e-005**	**2.3600e-003**	**6.3000e-004**	**3.0000e-005**	**6.6000e-004**	**0.0000**	**2.5054**	**2.5054**	**8.0000e-005**	**1.7000e-004**	**2.5556**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0882	0.0000	0.0882	0.0454	0.0000	0.0454	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0333	0.3474	0.2068	4.0000e-004		0.0169	0.0169		0.0156	0.0156	0.0000	35.1113	35.1113	0.0114	0.0000	35.3952
Total	**0.0333**	**0.3474**	**0.2068**	**4.0000e-004**	**0.0882**	**0.0169**	**0.1052**	**0.0454**	**0.0156**	**0.0609**	**0.0000**	**35.1113**	**35.1113**	**0.0114**	**0.0000**	**35.3952**

Brookside Golf Course Improvements (Driving Range) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	8.0000e-005	2.1600e-003	7.2000e-004	1.0000e-005	2.5000e-004	2.0000e-005	2.7000e-004	7.0000e-005	2.0000e-005	9.0000e-005	0.0000	0.8020	0.8020	3.0000e-005	1.2000e-004	0.8372
Worker	6.5000e-004	5.4000e-004	7.0100e-003	2.0000e-005	1.9100e-003	1.0000e-005	1.9200e-003	5.1000e-004	1.0000e-005	5.2000e-004	0.0000	1.7034	1.7034	5.0000e-005	5.0000e-005	1.7184
Total	**7.3000e-004**	**2.7000e-003**	**7.7300e-003**	**3.0000e-005**	**2.1600e-003**	**3.0000e-005**	**2.1900e-003**	**5.8000e-004**	**3.0000e-005**	**6.1000e-004**	**0.0000**	**2.5054**	**2.5054**	**8.0000e-005**	**1.7000e-004**	**2.5556**

3.4 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.2715	0.0000	0.2715	0.1078	0.0000	0.1078	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1069	1.1459	0.8567	1.8300e-003		0.0482	0.0482		0.0444	0.0444	0.0000	160.8771	160.8771	0.0520	0.0000	162.1778
Total	**0.1069**	**1.1459**	**0.8567**	**1.8300e-003**	**0.2715**	**0.0482**	**0.3197**	**0.1078**	**0.0444**	**0.1522**	**0.0000**	**160.8771**	**160.8771**	**0.0520**	**0.0000**	**162.1778**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.3000e-004	6.0700e-003	2.0100e-003	2.0000e-005	7.4000e-004	6.0000e-005	8.0000e-004	2.1000e-004	5.0000e-005	2.7000e-004	0.0000	2.2533	2.2533	8.0000e-005	3.3000e-004	2.3520
Worker	2.0200e-003	1.6800e-003	0.0219	6.0000e-005	6.4700e-003	4.0000e-005	6.5100e-003	1.7200e-003	4.0000e-005	1.7600e-003	0.0000	5.3173	5.3173	1.5000e-004	1.5000e-004	5.3644
Total	**2.2500e-003**	**7.7500e-003**	**0.0239**	**8.0000e-005**	**7.2100e-003**	**1.0000e-004**	**7.3100e-003**	**1.9300e-003**	**9.0000e-005**	**2.0300e-003**	**0.0000**	**7.5706**	**7.5706**	**2.3000e-004**	**4.8000e-004**	**7.7165**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1161	0.0000	0.1161	0.0461	0.0000	0.0461	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1069	1.1459	0.8567	1.8300e-003		0.0482	0.0482		0.0444	0.0444	0.0000	160.8769	160.8769	0.0520	0.0000	162.1777
Total	**0.1069**	**1.1459**	**0.8567**	**1.8300e-003**	**0.1161**	**0.0482**	**0.1643**	**0.0461**	**0.0444**	**0.0905**	**0.0000**	**160.8769**	**160.8769**	**0.0520**	**0.0000**	**162.1777**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.3000e-004	6.0700e-003	2.0100e-003	2.0000e-005	7.0000e-004	6.0000e-005	7.5000e-004	2.0000e-004	5.0000e-005	2.6000e-004	0.0000	2.2533	2.2533	8.0000e-005	3.3000e-004	2.3520
Worker	2.0200e-003	1.6800e-003	0.0219	6.0000e-005	5.9600e-003	4.0000e-005	6.0000e-003	1.5900e-003	4.0000e-005	1.6300e-003	0.0000	5.3173	5.3173	1.5000e-004	1.5000e-004	5.3644
Total	**2.2500e-003**	**7.7500e-003**	**0.0239**	**8.0000e-005**	**6.6600e-003**	**1.0000e-004**	**6.7500e-003**	**1.7900e-003**	**9.0000e-005**	**1.8900e-003**	**0.0000**	**7.5706**	**7.5706**	**2.3000e-004**	**4.8000e-004**	**7.7165**

3.5 Trenching - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0116	0.1082	0.0832	1.1000e-004		7.6600e-003	7.6600e-003		7.0500e-003	7.0500e-003	0.0000	9.4913	9.4913	3.0700e-003	0.0000	9.5681
Total	**0.0116**	**0.1082**	**0.0832**	**1.1000e-004**		**7.6600e-003**	**7.6600e-003**		**7.0500e-003**	**7.0500e-003**	**0.0000**	**9.4913**	**9.4913**	**3.0700e-003**	**0.0000**	**9.5681**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.7000e-004	2.3000e-004	2.9700e-003	1.0000e-005	8.8000e-004	1.0000e-005	8.8000e-004	2.3000e-004	1.0000e-005	2.4000e-004	0.0000	0.7210	0.7210	2.0000e-005	2.0000e-005	0.7274
Total	**2.7000e-004**	**2.3000e-004**	**2.9700e-003**	**1.0000e-005**	**8.8000e-004**	**1.0000e-005**	**8.8000e-004**	**2.3000e-004**	**1.0000e-005**	**2.4000e-004**	**0.0000**	**0.7210**	**0.7210**	**2.0000e-005**	**2.0000e-005**	**0.7274**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0116	0.1082	0.0832	1.1000e-004		7.6600e-003	7.6600e-003		7.0500e-003	7.0500e-003	0.0000	9.4913	9.4913	3.0700e-003	0.0000	9.5680
Total	**0.0116**	**0.1082**	**0.0832**	**1.1000e-004**		**7.6600e-003**	**7.6600e-003**		**7.0500e-003**	**7.0500e-003**	**0.0000**	**9.4913**	**9.4913**	**3.0700e-003**	**0.0000**	**9.5680**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.7000e-004	2.3000e-004	2.9700e-003	1.0000e-005	8.1000e-004	1.0000e-005	8.1000e-004	2.2000e-004	1.0000e-005	2.2000e-004	0.0000	0.7210	0.7210	2.0000e-005	2.0000e-005	0.7274
Total	**2.7000e-004**	**2.3000e-004**	**2.9700e-003**	**1.0000e-005**	**8.1000e-004**	**1.0000e-005**	**8.1000e-004**	**2.2000e-004**	**1.0000e-005**	**2.2000e-004**	**0.0000**	**0.7210**	**0.7210**	**2.0000e-005**	**2.0000e-005**	**0.7274**

3.6 Fencing - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0120	0.1055	0.0850	1.7000e-004		4.7200e-003	4.7200e-003		4.4200e-003	4.4200e-003	0.0000	13.9349	13.9349	3.8900e-003	0.0000	14.0322
Total	**0.0120**	**0.1055**	**0.0850**	**1.7000e-004**		**4.7200e-003**	**4.7200e-003**		**4.4200e-003**	**4.4200e-003**	**0.0000**	**13.9349**	**13.9349**	**3.8900e-003**	**0.0000**	**14.0322**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	9.0000e-005	2.4700e-003	8.2000e-004	1.0000e-005	3.0000e-004	2.0000e-005	3.2000e-004	9.0000e-005	2.0000e-005	1.1000e-004	0.0000	0.9166	0.9166	3.0000e-005	1.3000e-004	0.9568
Worker	4.4000e-004	3.7000e-004	4.7500e-003	1.0000e-005	1.4000e-003	1.0000e-005	1.4100e-003	3.7000e-004	1.0000e-005	3.8000e-004	0.0000	1.1536	1.1536	3.0000e-005	3.0000e-005	1.1638
Total	**5.3000e-004**	**2.8400e-003**	**5.5700e-003**	**2.0000e-005**	**1.7000e-003**	**3.0000e-005**	**1.7300e-003**	**4.6000e-004**	**3.0000e-005**	**4.9000e-004**	**0.0000**	**2.0702**	**2.0702**	**6.0000e-005**	**1.6000e-004**	**2.1206**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0120	0.1055	0.0850	1.7000e-004		4.7200e-003	4.7200e-003		4.4200e-003	4.4200e-003	0.0000	13.9349	13.9349	3.8900e-003	0.0000	14.0322
Total	**0.0120**	**0.1055**	**0.0850**	**1.7000e-004**		**4.7200e-003**	**4.7200e-003**		**4.4200e-003**	**4.4200e-003**	**0.0000**	**13.9349**	**13.9349**	**3.8900e-003**	**0.0000**	**14.0322**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	9.0000e-005	2.4700e-003	8.2000e-004	1.0000e-005	2.8000e-004	2.0000e-005	3.1000e-004	8.0000e-005	2.0000e-005	1.0000e-004	0.0000	0.9166	0.9166	3.0000e-005	1.3000e-004	0.9568
Worker	4.4000e-004	3.7000e-004	4.7500e-003	1.0000e-005	1.2900e-003	1.0000e-005	1.3000e-003	3.5000e-004	1.0000e-005	3.5000e-004	0.0000	1.1536	1.1536	3.0000e-005	3.0000e-005	1.1638
Total	**5.3000e-004**	**2.8400e-003**	**5.5700e-003**	**2.0000e-005**	**1.5700e-003**	**3.0000e-005**	**1.6100e-003**	**4.3000e-004**	**3.0000e-005**	**4.5000e-004**	**0.0000**	**2.0702**	**2.0702**	**6.0000e-005**	**1.6000e-004**	**2.1206**

3.7 Paving - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0137	0.1343	0.1730	2.7000e-004		6.7800e-003	6.7800e-003		6.2600e-003	6.2600e-003	0.0000	23.8222	23.8222	7.5300e-003	0.0000	24.0105
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0137**	**0.1343**	**0.1730**	**2.7000e-004**		**6.7800e-003**	**6.7800e-003**		**6.2600e-003**	**6.2600e-003**	**0.0000**	**23.8222**	**23.8222**	**7.5300e-003**	**0.0000**	**24.0105**

Brookside Golf Course Improvements (Driving Range) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.9000e-004	6.6000e-004	8.5300e-003	2.0000e-005	2.5200e-003	2.0000e-005	2.5400e-003	6.7000e-004	2.0000e-005	6.8000e-004	0.0000	2.0729	2.0729	6.0000e-005	6.0000e-005	2.0912
Total	**7.9000e-004**	**6.6000e-004**	**8.5300e-003**	**2.0000e-005**	**2.5200e-003**	**2.0000e-005**	**2.5400e-003**	**6.7000e-004**	**2.0000e-005**	**6.8000e-004**	**0.0000**	**2.0729**	**2.0729**	**6.0000e-005**	**6.0000e-005**	**2.0912**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0137	0.1343	0.1730	2.7000e-004		6.7800e-003	6.7800e-003		6.2600e-003	6.2600e-003	0.0000	23.8222	23.8222	7.5300e-003	0.0000	24.0105
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0137**	**0.1343**	**0.1730**	**2.7000e-004**		**6.7800e-003**	**6.7800e-003**		**6.2600e-003**	**6.2600e-003**	**0.0000**	**23.8222**	**23.8222**	**7.5300e-003**	**0.0000**	**24.0105**

Brookside Golf Course Improvements (Driving Range) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.9000e-004	6.6000e-004	8.5300e-003	2.0000e-005	2.3200e-003	2.0000e-005	2.3400e-003	6.2000e-004	2.0000e-005	6.4000e-004	0.0000	2.0729	2.0729	6.0000e-005	6.0000e-005	2.0912
Total	**7.9000e-004**	**6.6000e-004**	**8.5300e-003**	**2.0000e-005**	**2.3200e-003**	**2.0000e-005**	**2.3400e-003**	**6.2000e-004**	**2.0000e-005**	**6.4000e-004**	**0.0000**	**2.0729**	**2.0729**	**6.0000e-005**	**6.0000e-005**	**2.0912**

Brookside Golf Course Improvements (Driving Range) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Brookside Golf Course Improvements (Driving Range) Construction Run

Los Angeles-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	91.04	1000sqft	2.09	91,040.00	0
Golf Course	6.91	Acre	6.91	300,999.60	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	12			**Operational Year**	2022
Utility Company	Pasadena Water and Power				
CO2 Intensity (lb/MWhr)	872.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - based on information provided by applicant

Off-road Equipment - based on info from applicant

Off-road Equipment - based on information provided by applicant

Off-road Equipment - based on info from applicant

Off-road Equipment - based on info from applicant

Trips and VMT - assuming 4 vt/water truck/day. Fencing bendor trips based on vendor trip rate for building construction activities and hardscape area.

Grading -

Construction Off-road Equipment Mitigation - SCAQMD Rule 403 and Rule 1186

Brookside Golf Course Improvements (Driving Range) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Parking	5462	960
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	9
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	20.00	30.00
tblConstructionPhase	NumDays	10.00	21.00
tblConstructionPhase	NumDays	20.00	59.00
tblConstructionPhase	NumDays	20.00	23.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	3.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	3.7019	39.0899	29.8959	0.0649	19.8838	1.6382	21.4996	10.1632	1.5072	11.6497	0.0000	6,302.2836	6,302.2836	1.9527	0.0171	6,356.2064
Maximum	**3.7019**	**39.0899**	**29.8959**	**0.0649**	**19.8838**	**1.6382**	**21.4996**	**10.1632**	**1.5072**	**11.6497**	**0.0000**	**6,302.2836**	**6,302.2836**	**1.9527**	**0.0171**	**6,356.2064**

Brookside Golf Course Improvements (Driving Range) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	3.7019	39.0899	29.8959	0.0649	8.6128	1.6382	10.2285	4.3753	1.5072	5.8618	0.0000	6,302.2836	6,302.2836	1.9527	0.0171	6,356.2064
Maximum	**3.7019**	**39.0899**	**29.8959**	**0.0649**	**8.6128**	**1.6382**	**10.2285**	**4.3753**	**1.5072**	**5.8618**	**0.0000**	**6,302.2836**	**6,302.2836**	**1.9527**	**0.0171**	**6,356.2064**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**56.68**	**0.00**	**52.42**	**56.95**	**0.00**	**49.68**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	5/1/2022	6/10/2022	5	30	a
2	Site Preparation	Site Preparation	6/11/2022	7/11/2022	5	21	b
3	Grading	Grading	7/12/2022	9/30/2022	5	59	c
4	Trenching	Trenching	10/1/2022	11/15/2022	5	32	d
5	Fencing	Trenching	10/1/2022	11/15/2022	5	32	e
6	Paving	Paving	11/16/2022	12/16/2022	5	23	f

Brookside Golf Course Improvements (Driving Range) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Acres of Grading (Site Preparation Phase): 31.5

Acres of Grading (Grading Phase): 177

Acres of Paving: 2.09

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Trenching	Trenchers	2	8.00	78	0.50
Fencing	Cranes	1	7.00	231	0.29
Fencing	Forklifts	0	8.00	89	0.20
Fencing	Generator Sets	0	8.00	84	0.74
Fencing	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Fencing	Welders	1	8.00	46	0.45
Paving	Cement and Mortar Mixers	2	6.00	9	0.56
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38

Brookside Golf Course Improvements (Driving Range) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Trenching	2	5.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Fencing	3	8.00	3.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	8	20.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Replace Ground Cover

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

3.2 Demolition - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.6392	25.7194	20.5941	0.0388		1.2427	1.2427		1.1553	1.1553		3,746.7812	3,746.7812	1.0524		3,773.0920
Total	**2.6392**	**25.7194**	**20.5941**	**0.0388**		**1.2427**	**1.2427**		**1.1553**	**1.1553**		**3,746.7812**	**3,746.7812**	**1.0524**		**3,773.0920**

Brookside Golf Course Improvements (Driving Range) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	7.8700e-003	0.1959	0.0672	7.8000e-004	0.0256	1.8700e-003	0.0275	7.3800e-003	1.7900e-003	9.1600e-003		84.1846	84.1846	2.8100e-003	0.0121	87.8701
Worker	0.0519	0.0379	0.5904	1.5300e-003	0.1677	1.0700e-003	0.1687	0.0445	9.9000e-004	0.0455		155.0163	155.0163	4.2200e-003	3.7500e-003	156.2404
Total	**0.0598**	**0.2338**	**0.6576**	**2.3100e-003**	**0.1933**	**2.9400e-003**	**0.1962**	**0.0519**	**2.7800e-003**	**0.0546**		**239.2009**	**239.2009**	**7.0300e-003**	**0.0159**	**244.1105**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.6392	25.7194	20.5941	0.0388		1.2427	1.2427		1.1553	1.1553	0.0000	3,746.7812	3,746.7812	1.0524		3,773.0920
Total	**2.6392**	**25.7194**	**20.5941**	**0.0388**		**1.2427**	**1.2427**		**1.1553**	**1.1553**	**0.0000**	**3,746.7812**	**3,746.7812**	**1.0524**		**3,773.0920**

Brookside Golf Course Improvements (Driving Range) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	7.8700e-003	0.1959	0.0672	7.8000e-004	0.0240	1.8700e-003	0.0259	6.9700e-003	1.7900e-003	8.7600e-003		84.1846	84.1846	2.8100e-003	0.0121	87.8701
Worker	0.0519	0.0379	0.5904	1.5300e-003	0.1546	1.0700e-003	0.1556	0.0413	9.9000e-004	0.0422		155.0163	155.0163	4.2200e-003	3.7500e-003	156.2404
Total	**0.0598**	**0.2338**	**0.6576**	**2.3100e-003**	**0.1785**	**2.9400e-003**	**0.1815**	**0.0482**	**2.7800e-003**	**0.0510**		**239.2009**	**239.2009**	**7.0300e-003**	**0.0159**	**244.1105**

3.3 Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					19.6570	0.0000	19.6570	10.1025	0.0000	10.1025			0.0000			0.0000
Off-Road	3.1701	33.0835	19.6978	0.0380		1.6126	1.6126		1.4836	1.4836		3,686.0619	3,686.0619	1.1922		3,715.8655
Total	**3.1701**	**33.0835**	**19.6978**	**0.0380**	**19.6570**	**1.6126**	**21.2696**	**10.1025**	**1.4836**	**11.5860**		**3,686.0619**	**3,686.0619**	**1.1922**		**3,715.8655**

Brookside Golf Course Improvements (Driving Range) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	7.8700e-003	0.1959	0.0672	7.8000e-004	0.0256	1.8700e-003	0.0275	7.3800e-003	1.7900e-003	9.1600e-003		84.1846	84.1846	2.8100e-003	0.0121	87.8701
Worker	0.0623	0.0455	0.7085	1.8400e-003	0.2012	1.2900e-003	0.2025	0.0534	1.1900e-003	0.0545		186.0196	186.0196	5.0700e-003	4.5000e-003	187.4885
Total	**0.0702**	**0.2414**	**0.7756**	**2.6200e-003**	**0.2268**	**3.1600e-003**	**0.2300**	**0.0607**	**2.9800e-003**	**0.0637**		**270.2042**	**270.2042**	**7.8800e-003**	**0.0166**	**275.3585**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.4034	0.0000	8.4034	4.3188	0.0000	4.3188			0.0000			0.0000
Off-Road	3.1701	33.0835	19.6978	0.0380		1.6126	1.6126		1.4836	1.4836	0.0000	3,686.0619	3,686.0619	1.1922		3,715.8655
Total	**3.1701**	**33.0835**	**19.6978**	**0.0380**	**8.4034**	**1.6126**	**10.0159**	**4.3188**	**1.4836**	**5.8024**	**0.0000**	**3,686.0619**	**3,686.0619**	**1.1922**		**3,715.8655**

Brookside Golf Course Improvements (Driving Range) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	7.8700e-003	0.1959	0.0672	7.8000e-004	0.0240	1.8700e-003	0.0259	6.9700e-003	1.7900e-003	8.7600e-003		84.1846	84.1846	2.8100e-003	0.0121	87.8701
Worker	0.0623	0.0455	0.7085	1.8400e-003	0.1855	1.2900e-003	0.1867	0.0495	1.1900e-003	0.0507		186.0196	186.0196	5.0700e-003	4.5000e-003	187.4885
Total	**0.0702**	**0.2414**	**0.7756**	**2.6200e-003**	**0.2094**	**3.1600e-003**	**0.2126**	**0.0565**	**2.9800e-003**	**0.0594**		**270.2042**	**270.2042**	**7.8800e-003**	**0.0166**	**275.3585**

3.4 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					9.2036	0.0000	9.2036	3.6538	0.0000	3.6538			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041		6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**9.2036**	**1.6349**	**10.8385**	**3.6538**	**1.5041**	**5.1579**		**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

Brookside Golf Course Improvements (Driving Range) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	7.8700e-003	0.1959	0.0672	7.8000e-004	0.0256	1.8700e-003	0.0275	7.3800e-003	1.7900e-003	9.1600e-003		84.1846	84.1846	2.8100e-003	0.0121	87.8701
Worker	0.0692	0.0505	0.7872	2.0400e-003	0.2236	1.4300e-003	0.2250	0.0593	1.3200e-003	0.0606		206.6884	206.6884	5.6300e-003	5.0000e-003	208.3205
Total	**0.0771**	**0.2465**	**0.8543**	**2.8200e-003**	**0.2492**	**3.3000e-003**	**0.2525**	**0.0667**	**3.1100e-003**	**0.0698**		**290.8730**	**290.8730**	**8.4400e-003**	**0.0171**	**296.1906**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.9345	0.0000	3.9345	1.5620	0.0000	1.5620			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041	0.0000	6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**3.9345**	**1.6349**	**5.5694**	**1.5620**	**1.5041**	**3.0661**	**0.0000**	**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

Brookside Golf Course Improvements (Driving Range) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	7.8700e-003	0.1959	0.0672	7.8000e-004	0.0240	1.8700e-003	0.0259	6.9700e-003	1.7900e-003	8.7600e-003		84.1846	84.1846	2.8100e-003	0.0121	87.8701
Worker	0.0692	0.0505	0.7872	2.0400e-003	0.2061	1.4300e-003	0.2075	0.0550	1.3200e-003	0.0563		206.6884	206.6884	5.6300e-003	5.0000e-003	208.3205
Total	**0.0771**	**0.2465**	**0.8543**	**2.8200e-003**	**0.2300**	**3.3000e-003**	**0.2333**	**0.0620**	**3.1100e-003**	**0.0651**		**290.8730**	**290.8730**	**8.4400e-003**	**0.0171**	**296.1906**

3.5 Trenching - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.7277	6.7594	5.1979	6.7400e-003		0.4789	0.4789		0.4406	0.4406		653.8989	653.8989	0.2115		659.1860
Total	**0.7277**	**6.7594**	**5.1979**	**6.7400e-003**		**0.4789**	**0.4789**		**0.4406**	**0.4406**		**653.8989**	**653.8989**	**0.2115**		**659.1860**

Brookside Golf Course Improvements (Driving Range) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0173	0.0126	0.1968	5.1000e-004	0.0559	3.6000e-004	0.0563	0.0148	3.3000e-004	0.0152		51.6721	51.6721	1.4100e-003	1.2500e-003	52.0801
Total	**0.0173**	**0.0126**	**0.1968**	**5.1000e-004**	**0.0559**	**3.6000e-004**	**0.0563**	**0.0148**	**3.3000e-004**	**0.0152**		**51.6721**	**51.6721**	**1.4100e-003**	**1.2500e-003**	**52.0801**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.7277	6.7594	5.1979	6.7400e-003		0.4789	0.4789		0.4406	0.4406	0.0000	653.8989	653.8989	0.2115		659.1860
Total	**0.7277**	**6.7594**	**5.1979**	**6.7400e-003**		**0.4789**	**0.4789**		**0.4406**	**0.4406**	**0.0000**	**653.8989**	**653.8989**	**0.2115**		**659.1860**

Brookside Golf Course Improvements (Driving Range) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0173	0.0126	0.1968	5.1000e-004	0.0515	3.6000e-004	0.0519	0.0138	3.3000e-004	0.0141		51.6721	51.6721	1.4100e-003	1.2500e-003	52.0801
Total	**0.0173**	**0.0126**	**0.1968**	**5.1000e-004**	**0.0515**	**3.6000e-004**	**0.0519**	**0.0138**	**3.3000e-004**	**0.0141**		**51.6721**	**51.6721**	**1.4100e-003**	**1.2500e-003**	**52.0801**

3.6 Fencing - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.7472	6.5903	5.3098	0.0103		0.2948	0.2948		0.2763	0.2763		960.0384	960.0384	0.2682		966.7438
Total	**0.7472**	**6.5903**	**5.3098**	**0.0103**		**0.2948**	**0.2948**		**0.2763**	**0.2763**		**960.0384**	**960.0384**	**0.2682**		**966.7438**

Brookside Golf Course Improvements (Driving Range) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.9000e-003	0.1470	0.0504	5.9000e-004	0.0192	1.4000e-003	0.0206	5.5300e-003	1.3400e-003	6.8700e-003		63.1385	63.1385	2.1100e-003	9.1000e-003	65.9025
Worker	0.0277	0.0202	0.3149	8.2000e-004	0.0894	5.7000e-004	0.0900	0.0237	5.3000e-004	0.0242		82.6754	82.6754	2.2500e-003	2.0000e-003	83.3282
Total	**0.0336**	**0.1672**	**0.3653**	**1.4100e-003**	**0.1086**	**1.9700e-003**	**0.1106**	**0.0292**	**1.8700e-003**	**0.0311**		**145.8138**	**145.8138**	**4.3600e-003**	**0.0111**	**149.2308**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.7472	6.5903	5.3098	0.0103		0.2948	0.2948		0.2763	0.2763	0.0000	960.0384	960.0384	0.2682		966.7438
Total	**0.7472**	**6.5903**	**5.3098**	**0.0103**		**0.2948**	**0.2948**		**0.2763**	**0.2763**	**0.0000**	**960.0384**	**960.0384**	**0.2682**		**966.7438**

Brookside Golf Course Improvements (Driving Range) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.9000e-003	0.1470	0.0504	5.9000e-004	0.0180	1.4000e-003	0.0194	5.2300e-003	1.3400e-003	6.5700e-003		63.1385	63.1385	2.1100e-003	9.1000e-003	65.9025
Worker	0.0277	0.0202	0.3149	8.2000e-004	0.0824	5.7000e-004	0.0830	0.0220	5.3000e-004	0.0225		82.6754	82.6754	2.2500e-003	2.0000e-003	83.3282
Total	**0.0336**	**0.1672**	**0.3653**	**1.4100e-003**	**0.1004**	**1.9700e-003**	**0.1024**	**0.0272**	**1.8700e-003**	**0.0291**		**145.8138**	**145.8138**	**4.3600e-003**	**0.0111**	**149.2308**

3.7 Paving - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1910	11.6772	15.0432	0.0239		0.5894	0.5894		0.5439	0.5439		2,283.4348	2,283.4348	0.7219		2,301.4815
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.1910**	**11.6772**	**15.0432**	**0.0239**		**0.5894**	**0.5894**		**0.5439**	**0.5439**		**2,283.4348**	**2,283.4348**	**0.7219**		**2,301.4815**

Brookside Golf Course Improvements (Driving Range) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0692	0.0505	0.7872	2.0400e-003	0.2236	1.4300e-003	0.2250	0.0593	1.3200e-003	0.0606		206.6884	206.6884	5.6300e-003	5.0000e-003	208.3205
Total	**0.0692**	**0.0505**	**0.7872**	**2.0400e-003**	**0.2236**	**1.4300e-003**	**0.2250**	**0.0593**	**1.3200e-003**	**0.0606**		**206.6884**	**206.6884**	**5.6300e-003**	**5.0000e-003**	**208.3205**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1910	11.6772	15.0432	0.0239		0.5894	0.5894		0.5439	0.5439	0.0000	2,283.4348	2,283.4348	0.7219		2,301.4815
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.1910**	**11.6772**	**15.0432**	**0.0239**		**0.5894**	**0.5894**		**0.5439**	**0.5439**	**0.0000**	**2,283.4348**	**2,283.4348**	**0.7219**		**2,301.4815**

Date: 9/23/2021 5:00 PM

Brookside Golf Course Improvements (Driving Range) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0692	0.0505	0.7872	2.0400e-003	0.2061	1.4300e-003	0.2075	0.0550	1.3200e-003	0.0563		206.6884	206.6884	5.6300e-003	5.0000e-003	208.3205
Total	**0.0692**	**0.0505**	**0.7872**	**2.0400e-003**	**0.2061**	**1.4300e-003**	**0.2075**	**0.0550**	**1.3200e-003**	**0.0563**		**206.6884**	**206.6884**	**5.6300e-003**	**5.0000e-003**	**208.3205**

Brookside Golf Course Improvements (Driving Range) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Brookside Golf Course Improvements (Driving Range) Construction Run

Los Angeles-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	91.04	1000sqft	2.09	91,040.00	0
Golf Course	6.91	Acre	6.91	300,999.60	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	12			**Operational Year**	2022
Utility Company	Pasadena Water and Power				
CO2 Intensity (lb/MWhr)	872.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - based on information provided by applicant

Off-road Equipment - based on info from applicant

Off-road Equipment - based on information provided by applicant

Off-road Equipment - based on info from applicant

Off-road Equipment - based on info from applicant

Trips and VMT - assuming 4 vt/water truck/day. Fencing bendor trips based on vendor trip rate for building construction activities and hardscape area.

Grading -

Construction Off-road Equipment Mitigation - SCAQMD Rule 403 and Rule 1186

Brookside Golf Course Improvements (Driving Range) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Parking	5462	960
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	9
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	20.00	30.00
tblConstructionPhase	NumDays	10.00	21.00
tblConstructionPhase	NumDays	20.00	59.00
tblConstructionPhase	NumDays	20.00	23.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	3.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	3.7067	39.1033	29.8337	0.0648	19.8838	1.6382	21.4996	10.1632	1.5072	11.6497	0.0000	6,291.3874	6,291.3874	1.9527	0.0175	6,345.4187
Maximum	**3.7067**	**39.1033**	**29.8337**	**0.0648**	**19.8838**	**1.6382**	**21.4996**	**10.1632**	**1.5072**	**11.6497**	**0.0000**	**6,291.3874**	**6,291.3874**	**1.9527**	**0.0175**	**6,345.4187**

Brookside Golf Course Improvements (Driving Range) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	3.7067	39.1033	29.8337	0.0648	8.6128	1.6382	10.2285	4.3753	1.5072	5.8618	0.0000	6,291.3874	6,291.3874	1.9527	0.0175	6,345.4187
Maximum	**3.7067**	**39.1033**	**29.8337**	**0.0648**	**8.6128**	**1.6382**	**10.2285**	**4.3753**	**1.5072**	**5.8618**	**0.0000**	**6,291.3874**	**6,291.3874**	**1.9527**	**0.0175**	**6,345.4187**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**56.68**	**0.00**	**52.42**	**56.95**	**0.00**	**49.68**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	5/1/2022	6/10/2022	5	30	a
2	Site Preparation	Site Preparation	6/11/2022	7/11/2022	5	21	b
3	Grading	Grading	7/12/2022	9/30/2022	5	59	c
4	Trenching	Trenching	10/1/2022	11/15/2022	5	32	d
5	Fencing	Trenching	10/1/2022	11/15/2022	5	32	e
6	Paving	Paving	11/16/2022	12/16/2022	5	23	f

Brookside Golf Course Improvements (Driving Range) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Acres of Grading (Site Preparation Phase): 31.5

Acres of Grading (Grading Phase): 177

Acres of Paving: 2.09

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Trenching	Trenchers	2	8.00	78	0.50
Fencing	Cranes	1	7.00	231	0.29
Fencing	Forklifts	0	8.00	89	0.20
Fencing	Generator Sets	0	8.00	84	0.74
Fencing	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Fencing	Welders	1	8.00	46	0.45
Paving	Cement and Mortar Mixers	2	6.00	9	0.56
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38

Brookside Golf Course Improvements (Driving Range) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Trenching	2	5.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Fencing	3	8.00	3.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	8	20.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Replace Ground Cover

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

3.2 Demolition - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.6392	25.7194	20.5941	0.0388		1.2427	1.2427		1.1553	1.1553		3,746.7812	3,746.7812	1.0524		3,773.0920
Total	**2.6392**	**25.7194**	**20.5941**	**0.0388**		**1.2427**	**1.2427**		**1.1553**	**1.1553**		**3,746.7812**	**3,746.7812**	**1.0524**		**3,773.0920**

Brookside Golf Course Improvements (Driving Range) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	7.7800e-003	0.2040	0.0695	7.8000e-004	0.0256	1.8700e-003	0.0275	7.3800e-003	1.7900e-003	9.1700e-003		84.2163	84.2163	2.8000e-003	0.0122	87.9061
Worker	0.0556	0.0419	0.5421	1.4500e-003	0.1677	1.0700e-003	0.1687	0.0445	9.9000e-004	0.0455		146.8205	146.8205	4.2700e-003	4.0100e-003	148.1225
Total	**0.0633**	**0.2459**	**0.6116**	**2.2300e-003**	**0.1933**	**2.9400e-003**	**0.1962**	**0.0519**	**2.7800e-003**	**0.0546**		**231.0367**	**231.0367**	**7.0700e-003**	**0.0162**	**236.0286**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.6392	25.7194	20.5941	0.0388		1.2427	1.2427		1.1553	1.1553	0.0000	3,746.7812	3,746.7812	1.0524		3,773.0920
Total	**2.6392**	**25.7194**	**20.5941**	**0.0388**		**1.2427**	**1.2427**		**1.1553**	**1.1553**	**0.0000**	**3,746.7812**	**3,746.7812**	**1.0524**		**3,773.0920**

Mitigated Construction Off-Site

Brookside Golf Course Improvements (Driving Range) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	7.7800e-003	0.2040	0.0695	7.8000e-004	0.0240	1.8700e-003	0.0259	6.9700e-003	1.7900e-003	8.7700e-003		84.2163	84.2163	2.8000e-003	0.0122	87.9061
Worker	0.0556	0.0419	0.5421	1.4500e-003	0.1546	1.0700e-003	0.1556	0.0413	9.9000e-004	0.0422		146.8205	146.8205	4.2700e-003	4.0100e-003	148.1225
Total	**0.0633**	**0.2459**	**0.6116**	**2.2300e-003**	**0.1785**	**2.9400e-003**	**0.1815**	**0.0482**	**2.7800e-003**	**0.0510**		**231.0367**	**231.0367**	**7.0700e-003**	**0.0162**	**236.0286**

3.3 Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					19.6570	0.0000	19.6570	10.1025	0.0000	10.1025			0.0000			0.0000
Off-Road	3.1701	33.0835	19.6978	0.0380		1.6126	1.6126		1.4836	1.4836		3,686.0619	3,686.0619	1.1922		3,715.8655
Total	**3.1701**	**33.0835**	**19.6978**	**0.0380**	**19.6570**	**1.6126**	**21.2696**	**10.1025**	**1.4836**	**11.5860**		**3,686.0619**	**3,686.0619**	**1.1922**		**3,715.8655**

Brookside Golf Course Improvements (Driving Range) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	7.7800e-003	0.2040	0.0695	7.8000e-004	0.0256	1.8700e-003	0.0275	7.3800e-003	1.7900e-003	9.1700e-003		84.2163	84.2163	2.8000e-003	0.0122	87.9061
Worker	0.0667	0.0502	0.6505	1.7400e-003	0.2012	1.2900e-003	0.2025	0.0534	1.1900e-003	0.0545		176.1846	176.1846	5.1300e-003	4.8100e-003	177.7470
Total	**0.0745**	**0.2543**	**0.7200**	**2.5200e-003**	**0.2268**	**3.1600e-003**	**0.2300**	**0.0607**	**2.9800e-003**	**0.0637**		**260.4008**	**260.4008**	**7.9300e-003**	**0.0170**	**265.6531**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.4034	0.0000	8.4034	4.3188	0.0000	4.3188			0.0000			0.0000
Off-Road	3.1701	33.0835	19.6978	0.0380		1.6126	1.6126		1.4836	1.4836	0.0000	3,686.0619	3,686.0619	1.1922		3,715.8655
Total	**3.1701**	**33.0835**	**19.6978**	**0.0380**	**8.4034**	**1.6126**	**10.0159**	**4.3188**	**1.4836**	**5.8024**	**0.0000**	**3,686.0619**	**3,686.0619**	**1.1922**		**3,715.8655**

Brookside Golf Course Improvements (Driving Range) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	7.7800e-003	0.2040	0.0695	7.8000e-004	0.0240	1.8700e-003	0.0259	6.9700e-003	1.7900e-003	8.7700e-003		84.2163	84.2163	2.8000e-003	0.0122	87.9061
Worker	0.0667	0.0502	0.6505	1.7400e-003	0.1855	1.2900e-003	0.1867	0.0495	1.1900e-003	0.0507		176.1846	176.1846	5.1300e-003	4.8100e-003	177.7470
Total	**0.0745**	**0.2543**	**0.7200**	**2.5200e-003**	**0.2094**	**3.1600e-003**	**0.2126**	**0.0565**	**2.9800e-003**	**0.0595**		**260.4008**	**260.4008**	**7.9300e-003**	**0.0170**	**265.6531**

3.4 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					9.2036	0.0000	9.2036	3.6538	0.0000	3.6538			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041		6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**9.2036**	**1.6349**	**10.8385**	**3.6538**	**1.5041**	**5.1579**		**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

Brookside Golf Course Improvements (Driving Range) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	7.7800e-003	0.2040	0.0695	7.8000e-004	0.0256	1.8700e-003	0.0275	7.3800e-003	1.7900e-003	9.1700e-003		84.2163	84.2163	2.8000e-003	0.0122	87.9061
Worker	0.0741	0.0558	0.7227	1.9400e-003	0.2236	1.4300e-003	0.2250	0.0593	1.3200e-003	0.0606		195.7606	195.7606	5.7000e-003	5.3500e-003	197.4967
Total	**0.0819**	**0.2598**	**0.7922**	**2.7200e-003**	**0.2492**	**3.3000e-003**	**0.2525**	**0.0667**	**3.1100e-003**	**0.0698**		**279.9769**	**279.9769**	**8.5000e-003**	**0.0175**	**285.4028**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.9345	0.0000	3.9345	1.5620	0.0000	1.5620			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041	0.0000	6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**3.9345**	**1.6349**	**5.5694**	**1.5620**	**1.5041**	**3.0661**	**0.0000**	**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

Brookside Golf Course Improvements (Driving Range) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	7.7800e-003	0.2040	0.0695	7.8000e-004	0.0240	1.8700e-003	0.0259	6.9700e-003	1.7900e-003	8.7700e-003		84.2163	84.2163	2.8000e-003	0.0122	87.9061
Worker	0.0741	0.0558	0.7227	1.9400e-003	0.2061	1.4300e-003	0.2075	0.0550	1.3200e-003	0.0563		195.7606	195.7606	5.7000e-003	5.3500e-003	197.4967
Total	**0.0819**	**0.2598**	**0.7922**	**2.7200e-003**	**0.2300**	**3.3000e-003**	**0.2333**	**0.0620**	**3.1100e-003**	**0.0651**		**279.9769**	**279.9769**	**8.5000e-003**	**0.0175**	**285.4028**

3.5 Trenching - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.7277	6.7594	5.1979	6.7400e-003		0.4789	0.4789		0.4406	0.4406		653.8989	653.8989	0.2115		659.1860
Total	**0.7277**	**6.7594**	**5.1979**	**6.7400e-003**		**0.4789**	**0.4789**		**0.4406**	**0.4406**		**653.8989**	**653.8989**	**0.2115**		**659.1860**

Brookside Golf Course Improvements (Driving Range) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0185	0.0140	0.1807	4.8000e-004	0.0559	3.6000e-004	0.0563	0.0148	3.3000e-004	0.0152		48.9402	48.9402	1.4200e-003	1.3400e-003	49.3742
Total	**0.0185**	**0.0140**	**0.1807**	**4.8000e-004**	**0.0559**	**3.6000e-004**	**0.0563**	**0.0148**	**3.3000e-004**	**0.0152**		**48.9402**	**48.9402**	**1.4200e-003**	**1.3400e-003**	**49.3742**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.7277	6.7594	5.1979	6.7400e-003		0.4789	0.4789		0.4406	0.4406	0.0000	653.8989	653.8989	0.2115		659.1860
Total	**0.7277**	**6.7594**	**5.1979**	**6.7400e-003**		**0.4789**	**0.4789**		**0.4406**	**0.4406**	**0.0000**	**653.8989**	**653.8989**	**0.2115**		**659.1860**

Brookside Golf Course Improvements (Driving Range) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0185	0.0140	0.1807	4.8000e-004	0.0515	3.6000e-004	0.0519	0.0138	3.3000e-004	0.0141		48.9402	48.9402	1.4200e-003	1.3400e-003	49.3742
Total	**0.0185**	**0.0140**	**0.1807**	**4.8000e-004**	**0.0515**	**3.6000e-004**	**0.0519**	**0.0138**	**3.3000e-004**	**0.0141**		**48.9402**	**48.9402**	**1.4200e-003**	**1.3400e-003**	**49.3742**

3.6 Fencing - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.7472	6.5903	5.3098	0.0103		0.2948	0.2948		0.2763	0.2763		960.0384	960.0384	0.2682		966.7438
Total	**0.7472**	**6.5903**	**5.3098**	**0.0103**		**0.2948**	**0.2948**		**0.2763**	**0.2763**		**960.0384**	**960.0384**	**0.2682**		**966.7438**

Brookside Golf Course Improvements (Driving Range) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.8300e-003	0.1530	0.0521	5.9000e-004	0.0192	1.4000e-003	0.0206	5.5300e-003	1.3400e-003	6.8800e-003		63.1622	63.1622	2.1000e-003	9.1100e-003	65.9296
Worker	0.0296	0.0223	0.2891	7.7000e-004	0.0894	5.7000e-004	0.0900	0.0237	5.3000e-004	0.0242		78.3043	78.3043	2.2800e-003	2.1400e-003	78.9987
Total	**0.0355**	**0.1753**	**0.3412**	**1.3600e-003**	**0.1086**	**1.9700e-003**	**0.1106**	**0.0292**	**1.8700e-003**	**0.0311**		**141.4665**	**141.4665**	**4.3800e-003**	**0.0113**	**144.9283**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.7472	6.5903	5.3098	0.0103		0.2948	0.2948		0.2763	0.2763	0.0000	960.0384	960.0384	0.2682		966.7438
Total	**0.7472**	**6.5903**	**5.3098**	**0.0103**		**0.2948**	**0.2948**		**0.2763**	**0.2763**	**0.0000**	**960.0384**	**960.0384**	**0.2682**		**966.7438**

Brookside Golf Course Improvements (Driving Range) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.8300e-003	0.1530	0.0521	5.9000e-004	0.0180	1.4000e-003	0.0194	5.2300e-003	1.3400e-003	6.5700e-003		63.1622	63.1622	2.1000e-003	9.1100e-003	65.9296
Worker	0.0296	0.0223	0.2891	7.7000e-004	0.0824	5.7000e-004	0.0830	0.0220	5.3000e-004	0.0225		78.3043	78.3043	2.2800e-003	2.1400e-003	78.9987
Total	**0.0355**	**0.1753**	**0.3412**	**1.3600e-003**	**0.1004**	**1.9700e-003**	**0.1024**	**0.0272**	**1.8700e-003**	**0.0291**		**141.4665**	**141.4665**	**4.3800e-003**	**0.0113**	**144.9283**

3.7 Paving - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1910	11.6772	15.0432	0.0239		0.5894	0.5894		0.5439	0.5439		2,283.4348	2,283.4348	0.7219		2,301.4815
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.1910**	**11.6772**	**15.0432**	**0.0239**		**0.5894**	**0.5894**		**0.5439**	**0.5439**		**2,283.4348**	**2,283.4348**	**0.7219**		**2,301.4815**

Brookside Golf Course Improvements (Driving Range) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0741	0.0558	0.7227	1.9400e-003	0.2236	1.4300e-003	0.2250	0.0593	1.3200e-003	0.0606		195.7606	195.7606	5.7000e-003	5.3500e-003	197.4967
Total	**0.0741**	**0.0558**	**0.7227**	**1.9400e-003**	**0.2236**	**1.4300e-003**	**0.2250**	**0.0593**	**1.3200e-003**	**0.0606**		**195.7606**	**195.7606**	**5.7000e-003**	**5.3500e-003**	**197.4967**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1910	11.6772	15.0432	0.0239		0.5894	0.5894		0.5439	0.5439	0.0000	2,283.4348	2,283.4348	0.7219		2,301.4815
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.1910**	**11.6772**	**15.0432**	**0.0239**		**0.5894**	**0.5894**		**0.5439**	**0.5439**	**0.0000**	**2,283.4348**	**2,283.4348**	**0.7219**		**2,301.4815**

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Brookside Golf Course Improvements (Driving Range) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0741	0.0558	0.7227	1.9400e-003	0.2061	1.4300e-003	0.2075	0.0550	1.3200e-003	0.0563		195.7606	195.7606	5.7000e-003	5.3500e-003	197.4967
Total	**0.0741**	**0.0558**	**0.7227**	**1.9400e-003**	**0.2061**	**1.4300e-003**	**0.2075**	**0.0550**	**1.3200e-003**	**0.0563**		**195.7606**	**195.7606**	**5.7000e-003**	**5.3500e-003**	**197.4967**

Brookside Golf Course Improvements (Mini Golf) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Brookside Golf Course Improvements (Mini Golf) Construction Run

Los Angeles-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Golf Course	0.49	Acre	0.49	21,518.64	0
Other Non-Asphalt Surfaces	21.50	1000sqft	0.49	21,500.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	12			**Operational Year**	2023
Utility Company	Pasadena Water and Power				
CO2 Intensity (lb/MWhr)	872.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - based on info from applicant

Off-road Equipment - based on info from applicant

Off-road Equipment - based on info from applicant

Off-road Equipment - based on info from applicant

Off-road Equipment - based on info from applicant

Off-road Equipment - based on info from applicant

Grading -

Trips and VMT - assumes 2vt/water truck/day

Construction Off-road Equipment Mitigation - SCAQMD Rule 403 and Rule 1186

Brookside Golf Course Improvements (Mini Golf) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	9
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	2.00	37.00
tblConstructionPhase	NumDays	5.00	17.00
tblConstructionPhase	NumDays	1.00	15.00
tblConstructionPhase	PhaseEndDate	1/18/2023	3/28/2023
tblConstructionPhase	PhaseEndDate	6/14/2023	4/20/2023
tblConstructionPhase	PhaseEndDate	1/16/2023	2/3/2023
tblConstructionPhase	PhaseStartDate	1/17/2023	2/4/2023
tblConstructionPhase	PhaseStartDate	6/8/2023	3/29/2023
tblOffRoadEquipment	LoadFactor	0.40	0.40
tblOffRoadEquipment	LoadFactor	0.36	0.36
tblOffRoadEquipment	LoadFactor	0.36	0.36
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Dozers
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Trenchers
tblOffRoadEquipment	OffRoadEquipmentType		Paving Equipment
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	1.00	6.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00

Brookside Golf Course Improvements (Mini Golf) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2023	0.0338	0.3301	0.2593	5.7000e-004	0.1440	0.0151	0.1592	0.0730	0.0140	0.0870	0.0000	49.7930	49.7930	0.0141	2.4000e-004	50.2167
Maximum	**0.0338**	**0.3301**	**0.2593**	**5.7000e-004**	**0.1440**	**0.0151**	**0.1592**	**0.0730**	**0.0140**	**0.0870**	**0.0000**	**49.7930**	**49.7930**	**0.0141**	**2.4000e-004**	**50.2167**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2023	0.0338	0.3301	0.2593	5.7000e-004	0.0635	0.0151	0.0787	0.0318	0.0140	0.0457	0.0000	49.7929	49.7929	0.0141	2.4000e-004	50.2166
Maximum	**0.0338**	**0.3301**	**0.2593**	**5.7000e-004**	**0.0635**	**0.0151**	**0.0787**	**0.0318**	**0.0140**	**0.0457**	**0.0000**	**49.7929**	**49.7929**	**0.0141**	**2.4000e-004**	**50.2166**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**55.89**	**0.00**	**50.57**	**56.52**	**0.00**	**47.44**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**1-1-2023**	**3-31-2023**	0.3112	0.3112
2	**4-1-2023**	**6-30-2023**	0.0517	0.0517
		Highest	0.3112	0.3112

Brookside Golf Course Improvements (Mini Golf) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2023	1/13/2023	5	10	a
2	Site Preparation	Site Preparation	1/14/2023	2/3/2023	5	15	b
3	Grading	Grading	2/4/2023	3/28/2023	5	37	c
4	Trenching	Trenching	3/29/2023	4/11/2023	5	10	d
5	Paving	Paving	3/29/2023	4/20/2023	5	17	e

Acres of Grading (Site Preparation Phase): 7.5

Acres of Grading (Grading Phase): 13.88

Acres of Paving: 0.49

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	1	8.00	247	0.40
Paving	Cement and Mortar Mixers	1	6.00	9	0.56
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Grading	Rubber Tired Loaders	1	6.00	203	0.36
Trenching	Trenchers	1	8.00	78	0.50
Grading	Graders	0	6.00	187	0.41
Site Preparation	Graders	0	8.00	187	0.41
Paving	Pavers	1	7.00	130	0.42
Paving	Rollers	1	7.00	80	0.38
Demolition	Rubber Tired Dozers	1	6.00	247	0.40
Grading	Rubber Tired Dozers	1	6.00	247	0.40
Paving	Paving Equipment	1	7.00	132	0.36

Brookside Golf Course Improvements (Mini Golf) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Demolition	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Grading	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Paving	Tractors/Loaders/Backhoes	0	7.00	97	0.37
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	3	8.00	2.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	2	5.00	2.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	3	8.00	2.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Trenching	1	3.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	4	10.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Replace Ground Cover

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

3.2 Demolition - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	4.8000e-003	0.0454	0.0383	7.0000e-005		2.1300e-003	2.1300e-003		2.0100e-003	2.0100e-003	0.0000	6.5276	6.5276	1.3700e-003	0.0000	6.5620
Total	**4.8000e-003**	**0.0454**	**0.0383**	**7.0000e-005**		**2.1300e-003**	**2.1300e-003**		**2.0100e-003**	**2.0100e-003**	**0.0000**	**6.5276**	**6.5276**	**1.3700e-003**	**0.0000**	**6.5620**

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Brookside Golf Course Improvements (Mini Golf) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.0000e-005	4.0000e-004	1.5000e-004	0.0000	6.0000e-005	0.0000	6.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.1818	0.1818	1.0000e-005	3.0000e-005	0.1898
Worker	1.3000e-004	1.0000e-004	1.3600e-003	0.0000	4.4000e-004	0.0000	4.4000e-004	1.2000e-004	0.0000	1.2000e-004	0.0000	0.3489	0.3489	1.0000e-005	1.0000e-005	0.3518
Total	**1.4000e-004**	**5.0000e-004**	**1.5100e-003**	**0.0000**	**5.0000e-004**	**0.0000**	**5.0000e-004**	**1.4000e-004**	**0.0000**	**1.4000e-004**	**0.0000**	**0.5307**	**0.5307**	**2.0000e-005**	**4.0000e-005**	**0.5416**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	4.8000e-003	0.0454	0.0383	7.0000e-005		2.1300e-003	2.1300e-003		2.0100e-003	2.0100e-003	0.0000	6.5276	6.5276	1.3700e-003	0.0000	6.5620
Total	**4.8000e-003**	**0.0454**	**0.0383**	**7.0000e-005**		**2.1300e-003**	**2.1300e-003**		**2.0100e-003**	**2.0100e-003**	**0.0000**	**6.5276**	**6.5276**	**1.3700e-003**	**0.0000**	**6.5620**

Brookside Golf Course Improvements (Mini Golf) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.0000e-005	4.0000e-004	1.5000e-004	0.0000	6.0000e-005	0.0000	6.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.1818	0.1818	1.0000e-005	3.0000e-005	0.1898
Worker	1.3000e-004	1.0000e-004	1.3600e-003	0.0000	4.0000e-004	0.0000	4.1000e-004	1.1000e-004	0.0000	1.1000e-004	0.0000	0.3489	0.3489	1.0000e-005	1.0000e-005	0.3518
Total	**1.4000e-004**	**5.0000e-004**	**1.5100e-003**	**0.0000**	**4.6000e-004**	**0.0000**	**4.7000e-004**	**1.3000e-004**	**0.0000**	**1.3000e-004**	**0.0000**	**0.5307**	**0.5307**	**2.0000e-005**	**4.0000e-005**	**0.5416**

3.3 Site Preparation - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0491	0.0000	0.0491	0.0253	0.0000	0.0253	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.2100e-003	0.0643	0.0398	9.0000e-005		2.9500e-003	2.9500e-003		2.7100e-003	2.7100e-003	0.0000	7.6126	7.6126	2.4600e-003	0.0000	7.6742
Total	**6.2100e-003**	**0.0643**	**0.0398**	**9.0000e-005**	**0.0491**	**2.9500e-003**	**0.0521**	**0.0253**	**2.7100e-003**	**0.0280**	**0.0000**	**7.6126**	**7.6126**	**2.4600e-003**	**0.0000**	**7.6742**

Brookside Golf Course Improvements (Mini Golf) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.0000e-005	6.0000e-004	2.3000e-004	0.0000	9.0000e-005	0.0000	1.0000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.2727	0.2727	1.0000e-005	4.0000e-005	0.2847
Worker	1.2000e-004	9.0000e-005	1.2800e-003	0.0000	4.1000e-004	0.0000	4.1000e-004	1.1000e-004	0.0000	1.1000e-004	0.0000	0.3271	0.3271	1.0000e-005	1.0000e-005	0.3299
Total	**1.4000e-004**	**6.9000e-004**	**1.5100e-003**	**0.0000**	**5.0000e-004**	**0.0000**	**5.1000e-004**	**1.4000e-004**	**0.0000**	**1.4000e-004**	**0.0000**	**0.5998**	**0.5998**	**2.0000e-005**	**5.0000e-005**	**0.6145**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0210	0.0000	0.0210	0.0108	0.0000	0.0108	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.2100e-003	0.0643	0.0398	9.0000e-005		2.9500e-003	2.9500e-003		2.7100e-003	2.7100e-003	0.0000	7.6126	7.6126	2.4600e-003	0.0000	7.6741
Total	**6.2100e-003**	**0.0643**	**0.0398**	**9.0000e-005**	**0.0210**	**2.9500e-003**	**0.0240**	**0.0108**	**2.7100e-003**	**0.0135**	**0.0000**	**7.6126**	**7.6126**	**2.4600e-003**	**0.0000**	**7.6741**

Brookside Golf Course Improvements (Mini Golf) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.0000e-005	6.0000e-004	2.3000e-004	0.0000	9.0000e-005	0.0000	9.0000e-005	3.0000e-005	0.0000	3.0000e-005	0.0000	0.2727	0.2727	1.0000e-005	4.0000e-005	0.2847
Worker	1.2000e-004	9.0000e-005	1.2800e-003	0.0000	3.8000e-004	0.0000	3.8000e-004	1.0000e-004	0.0000	1.0000e-004	0.0000	0.3271	0.3271	1.0000e-005	1.0000e-005	0.3299
Total	**1.4000e-004**	**6.9000e-004**	**1.5100e-003**	**0.0000**	**4.7000e-004**	**0.0000**	**4.7000e-004**	**1.3000e-004**	**0.0000**	**1.3000e-004**	**0.0000**	**0.5998**	**0.5998**	**2.0000e-005**	**5.0000e-005**	**0.6145**

3.4 Grading - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0909	0.0000	0.0909	0.0467	0.0000	0.0467	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0157	0.1608	0.1003	2.6000e-004		6.9200e-003	6.9200e-003		6.3700e-003	6.3700e-003	0.0000	22.4987	22.4987	7.2800e-003	0.0000	22.6806
Total	**0.0157**	**0.1608**	**0.1003**	**2.6000e-004**	**0.0909**	**6.9200e-003**	**0.0978**	**0.0467**	**6.3700e-003**	**0.0531**	**0.0000**	**22.4987**	**22.4987**	**7.2800e-003**	**0.0000**	**22.6806**

Brookside Golf Course Improvements (Mini Golf) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.0000e-005	1.4900e-003	5.6000e-004	1.0000e-005	2.3000e-004	1.0000e-005	2.4000e-004	7.0000e-005	1.0000e-005	7.0000e-005	0.0000	0.6727	0.6727	2.0000e-005	1.0000e-004	0.7022
Worker	4.7000e-004	3.7000e-004	5.0400e-003	1.0000e-005	1.6200e-003	1.0000e-005	1.6300e-003	4.3000e-004	1.0000e-005	4.4000e-004	0.0000	1.2909	1.2909	3.0000e-005	3.0000e-005	1.3018
Total	**5.1000e-004**	**1.8600e-003**	**5.6000e-003**	**2.0000e-005**	**1.8500e-003**	**2.0000e-005**	**1.8700e-003**	**5.0000e-004**	**2.0000e-005**	**5.1000e-004**	**0.0000**	**1.9637**	**1.9637**	**5.0000e-005**	**1.3000e-004**	**2.0040**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0389	0.0000	0.0389	0.0200	0.0000	0.0200	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0157	0.1608	0.1003	2.6000e-004		6.9200e-003	6.9200e-003		6.3700e-003	6.3700e-003	0.0000	22.4987	22.4987	7.2800e-003	0.0000	22.6806
Total	**0.0157**	**0.1608**	**0.1003**	**2.6000e-004**	**0.0389**	**6.9200e-003**	**0.0458**	**0.0200**	**6.3700e-003**	**0.0263**	**0.0000**	**22.4987**	**22.4987**	**7.2800e-003**	**0.0000**	**22.6806**

Brookside Golf Course Improvements (Mini Golf) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.0000e-005	1.4900e-003	5.6000e-004	1.0000e-005	2.2000e-004	1.0000e-005	2.3000e-004	6.0000e-005	1.0000e-005	7.0000e-005	0.0000	0.6727	0.6727	2.0000e-005	1.0000e-004	0.7022
Worker	4.7000e-004	3.7000e-004	5.0400e-003	1.0000e-005	1.5000e-003	1.0000e-005	1.5100e-003	4.0000e-004	1.0000e-005	4.1000e-004	0.0000	1.2909	1.2909	3.0000e-005	3.0000e-005	1.3018
Total	**5.1000e-004**	**1.8600e-003**	**5.6000e-003**	**2.0000e-005**	**1.7200e-003**	**2.0000e-005**	**1.7400e-003**	**4.6000e-004**	**2.0000e-005**	**4.8000e-004**	**0.0000**	**1.9637**	**1.9637**	**5.0000e-005**	**1.3000e-004**	**2.0040**

3.5 Trenching - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.7300e-003	0.0162	0.0130	2.0000e-005		1.1200e-003	1.1200e-003		1.0300e-003	1.0300e-003	0.0000	1.4842	1.4842	4.8000e-004	0.0000	1.4962
Total	**1.7300e-003**	**0.0162**	**0.0130**	**2.0000e-005**		**1.1200e-003**	**1.1200e-003**		**1.0300e-003**	**1.0300e-003**	**0.0000**	**1.4842**	**1.4842**	**4.8000e-004**	**0.0000**	**1.4962**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.0000e-005	4.0000e-005	5.1000e-004	0.0000	1.6000e-004	0.0000	1.7000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.1308	0.1308	0.0000	0.0000	0.1319
Total	**5.0000e-005**	**4.0000e-005**	**5.1000e-004**	**0.0000**	**1.6000e-004**	**0.0000**	**1.7000e-004**	**4.0000e-005**	**0.0000**	**4.0000e-005**	**0.0000**	**0.1308**	**0.1308**	**0.0000**	**0.0000**	**0.1319**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.7300e-003	0.0162	0.0130	2.0000e-005		1.1200e-003	1.1200e-003		1.0300e-003	1.0300e-003	0.0000	1.4842	1.4842	4.8000e-004	0.0000	1.4962
Total	**1.7300e-003**	**0.0162**	**0.0130**	**2.0000e-005**		**1.1200e-003**	**1.1200e-003**		**1.0300e-003**	**1.0300e-003**	**0.0000**	**1.4842**	**1.4842**	**4.8000e-004**	**0.0000**	**1.4962**

Brookside Golf Course Improvements (Mini Golf) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.0000e-005	4.0000e-005	5.1000e-004	0.0000	1.5000e-004	0.0000	1.5000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.1308	0.1308	0.0000	0.0000	0.1319
Total	**5.0000e-005**	**4.0000e-005**	**5.1000e-004**	**0.0000**	**1.5000e-004**	**0.0000**	**1.5000e-004**	**4.0000e-005**	**0.0000**	**4.0000e-005**	**0.0000**	**0.1308**	**0.1308**	**0.0000**	**0.0000**	**0.1319**

3.6 Paving - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	4.2000e-003	0.0401	0.0559	9.0000e-005		1.9800e-003	1.9800e-003		1.8300e-003	1.8300e-003	0.0000	7.7034	7.7034	2.4300e-003	0.0000	7.7641
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**4.2000e-003**	**0.0401**	**0.0559**	**9.0000e-005**		**1.9800e-003**	**1.9800e-003**		**1.8300e-003**	**1.8300e-003**	**0.0000**	**7.7034**	**7.7034**	**2.4300e-003**	**0.0000**	**7.7641**

Brookside Golf Course Improvements (Mini Golf) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.7000e-004	2.1000e-004	2.9000e-003	1.0000e-005	9.3000e-004	1.0000e-005	9.4000e-004	2.5000e-004	1.0000e-005	2.5000e-004	0.0000	0.7414	0.7414	2.0000e-005	2.0000e-005	0.7477
Total	**2.7000e-004**	**2.1000e-004**	**2.9000e-003**	**1.0000e-005**	**9.3000e-004**	**1.0000e-005**	**9.4000e-004**	**2.5000e-004**	**1.0000e-005**	**2.5000e-004**	**0.0000**	**0.7414**	**0.7414**	**2.0000e-005**	**2.0000e-005**	**0.7477**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	4.2000e-003	0.0401	0.0559	9.0000e-005		1.9800e-003	1.9800e-003		1.8300e-003	1.8300e-003	0.0000	7.7034	7.7034	2.4300e-003	0.0000	7.7641
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**4.2000e-003**	**0.0401**	**0.0559**	**9.0000e-005**		**1.9800e-003**	**1.9800e-003**		**1.8300e-003**	**1.8300e-003**	**0.0000**	**7.7034**	**7.7034**	**2.4300e-003**	**0.0000**	**7.7641**

Brookside Golf Course Improvements (Mini Golf) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.7000e-004	2.1000e-004	2.9000e-003	1.0000e-005	8.6000e-004	1.0000e-005	8.6000e-004	2.3000e-004	1.0000e-005	2.3000e-004	0.0000	0.7414	0.7414	2.0000e-005	2.0000e-005	0.7477
Total	**2.7000e-004**	**2.1000e-004**	**2.9000e-003**	**1.0000e-005**	**8.6000e-004**	**1.0000e-005**	**8.6000e-004**	**2.3000e-004**	**1.0000e-005**	**2.3000e-004**	**0.0000**	**0.7414**	**0.7414**	**2.0000e-005**	**2.0000e-005**	**0.7477**

Brookside Golf Course Improvements (Mini Golf) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Brookside Golf Course Improvements (Mini Golf) Construction Run

Los Angeles-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Golf Course	0.49	Acre	0.49	21,518.64	0
Other Non-Asphalt Surfaces	21.50	1000sqft	0.49	21,500.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	12			**Operational Year**	2023
Utility Company	Pasadena Water and Power				
CO2 Intensity (lb/MWhr)	872.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - based on info from applicant

Off-road Equipment - based on info from applicant

Off-road Equipment - based on info from applicant

Off-road Equipment - based on info from applicant

Off-road Equipment - based on info from applicant

Off-road Equipment - based on info from applicant

Grading -

Trips and VMT - assumes 2vt/water truck/day

Brookside Golf Course Improvements (Mini Golf) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Construction Off-road Equipment Mitigation - SCAQMD Rule 403 and Rule 1186

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	9
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	2.00	37.00
tblConstructionPhase	NumDays	5.00	17.00
tblConstructionPhase	NumDays	1.00	15.00
tblConstructionPhase	PhaseEndDate	1/18/2023	3/28/2023
tblConstructionPhase	PhaseEndDate	6/14/2023	4/20/2023
tblConstructionPhase	PhaseEndDate	1/16/2023	2/3/2023
tblConstructionPhase	PhaseStartDate	1/17/2023	2/4/2023
tblConstructionPhase	PhaseStartDate	6/8/2023	3/29/2023
tblOffRoadEquipment	LoadFactor	0.40	0.40
tblOffRoadEquipment	LoadFactor	0.36	0.36
tblOffRoadEquipment	LoadFactor	0.36	0.36
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Dozers
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Trenchers
tblOffRoadEquipment	OffRoadEquipmentType		Paving Equipment
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	1.00	6.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00

Brookside Golf Course Improvements (Mini Golf) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2023	0.9886	9.1760	9.6433	0.0162	6.6210	0.4582	7.0147	3.3860	0.4224	3.7482	0.0000	1,559.1611	1,559.1611	0.4369	7.6100e-003	1,569.0853
Maximum	**0.9886**	**9.1760**	**9.6433**	**0.0162**	**6.6210**	**0.4582**	**7.0147**	**3.3860**	**0.4224**	**3.7482**	**0.0000**	**1,559.1611**	**1,559.1611**	**0.4369**	**7.6100e-003**	**1,569.0853**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2023	0.9886	9.1760	9.6433	0.0162	2.8646	0.4582	3.2583	1.4568	0.4224	1.8191	0.0000	1,559.1611	1,559.1611	0.4369	7.6100e-003	1,569.0853
Maximum	**0.9886**	**9.1760**	**9.6433**	**0.0162**	**2.8646**	**0.4582**	**3.2583**	**1.4568**	**0.4224**	**1.8191**	**0.0000**	**1,559.1611**	**1,559.1611**	**0.4369**	**7.6100e-003**	**1,569.0853**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**56.73**	**0.00**	**53.55**	**56.97**	**0.00**	**51.47**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Brookside Golf Course Improvements (Mini Golf) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2023	1/13/2023	5	10	a
2	Site Preparation	Site Preparation	1/14/2023	2/3/2023	5	15	b
3	Grading	Grading	2/4/2023	3/28/2023	5	37	c
4	Trenching	Trenching	3/29/2023	4/11/2023	5	10	d
5	Paving	Paving	3/29/2023	4/20/2023	5	17	e

Acres of Grading (Site Preparation Phase): 7.5

Acres of Grading (Grading Phase): 13.88

Acres of Paving: 0.49

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	1	8.00	247	0.40
Paving	Cement and Mortar Mixers	1	6.00	9	0.56
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Grading	Rubber Tired Loaders	1	6.00	203	0.36
Trenching	Trenchers	1	8.00	78	0.50
Grading	Graders	0	6.00	187	0.41
Site Preparation	Graders	0	8.00	187	0.41
Paving	Pavers	1	7.00	130	0.42
Paving	Rollers	1	7.00	80	0.38
Demolition	Rubber Tired Dozers	1	6.00	247	0.40
Grading	Rubber Tired Dozers	1	6.00	247	0.40

Brookside Golf Course Improvements (Mini Golf) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Paving	Paving Equipment	1	7.00	132	0.36
Demolition	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Grading	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Paving	Tractors/Loaders/Backhoes	0	7.00	97	0.37
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	3	8.00	2.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	2	5.00	2.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	3	8.00	2.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Trenching	1	3.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	4	10.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Replace Ground Cover

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

Brookside Golf Course Improvements (Mini Golf) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Demolition - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9607	9.0814	7.6606	0.0150		0.4258	0.4258		0.4020	0.4020		1,439.0986	1,439.0986	0.3030		1,446.6724
Total	**0.9607**	**9.0814**	**7.6606**	**0.0150**		**0.4258**	**0.4258**		**0.4020**	**0.4020**		**1,439.0986**	**1,439.0986**	**0.3030**		**1,446.6724**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.3000e-003	0.0768	0.0297	3.7000e-004	0.0128	3.9000e-004	0.0132	3.6900e-003	3.7000e-004	4.0600e-003		40.0565	40.0565	1.3400e-003	5.7600e-003	41.8062
Worker	0.0256	0.0179	0.2891	7.9000e-004	0.0894	5.4000e-004	0.0900	0.0237	5.0000e-004	0.0242		80.0060	80.0060	2.0200e-003	1.8500e-003	80.6067
Total	**0.0279**	**0.0946**	**0.3189**	**1.1600e-003**	**0.1022**	**9.3000e-004**	**0.1032**	**0.0274**	**8.7000e-004**	**0.0283**		**120.0625**	**120.0625**	**3.3600e-003**	**7.6100e-003**	**122.4129**

Brookside Golf Course Improvements (Mini Golf) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9607	9.0814	7.6606	0.0150		0.4258	0.4258		0.4020	0.4020	0.0000	1,439.0986	1,439.0986	0.3030		1,446.6724
Total	**0.9607**	**9.0814**	**7.6606**	**0.0150**		**0.4258**	**0.4258**		**0.4020**	**0.4020**	**0.0000**	**1,439.0986**	**1,439.0986**	**0.3030**		**1,446.6724**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.3000e-003	0.0768	0.0297	3.7000e-004	0.0120	3.9000e-004	0.0124	3.4900e-003	3.7000e-004	3.8600e-003		40.0565	40.0565	1.3400e-003	5.7600e-003	41.8062
Worker	0.0256	0.0179	0.2891	7.9000e-004	0.0824	5.4000e-004	0.0830	0.0220	5.0000e-004	0.0225		80.0060	80.0060	2.0200e-003	1.8500e-003	80.6067
Total	**0.0279**	**0.0946**	**0.3189**	**1.1600e-003**	**0.0944**	**9.3000e-004**	**0.0953**	**0.0255**	**8.7000e-004**	**0.0264**		**120.0625**	**120.0625**	**3.3600e-003**	**7.6100e-003**	**122.4129**

Brookside Golf Course Improvements (Mini Golf) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Site Preparation - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.5523	0.0000	6.5523	3.3675	0.0000	3.3675			0.0000			0.0000
Off-Road	0.8280	8.5791	5.3012	0.0116		0.3930	0.3930		0.3615	0.3615		1,118.8599	1,118.8599	0.3619		1,127.9065
Total	**0.8280**	**8.5791**	**5.3012**	**0.0116**	**6.5523**	**0.3930**	**6.9453**	**3.3675**	**0.3615**	**3.7290**		**1,118.8599**	**1,118.8599**	**0.3619**		**1,127.9065**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.3000e-003	0.0768	0.0297	3.7000e-004	0.0128	3.9000e-004	0.0132	3.6900e-003	3.7000e-004	4.0600e-003		40.0565	40.0565	1.3400e-003	5.7600e-003	41.8062
Worker	0.0160	0.0112	0.1807	4.9000e-004	0.0559	3.4000e-004	0.0562	0.0148	3.1000e-004	0.0151		50.0038	50.0038	1.2600e-003	1.1500e-003	50.3792
Total	**0.0183**	**0.0879**	**0.2104**	**8.6000e-004**	**0.0687**	**7.3000e-004**	**0.0694**	**0.0185**	**6.8000e-004**	**0.0192**		**90.0603**	**90.0603**	**2.6000e-003**	**6.9100e-003**	**92.1854**

Brookside Golf Course Improvements (Mini Golf) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.8011	0.0000	2.8011	1.4396	0.0000	1.4396			0.0000			0.0000
Off-Road	0.8280	8.5791	5.3012	0.0116		0.3930	0.3930		0.3615	0.3615	0.0000	1,118.8599	1,118.8599	0.3619		1,127.9065
Total	**0.8280**	**8.5791**	**5.3012**	**0.0116**	**2.8011**	**0.3930**	**3.1941**	**1.4396**	**0.3615**	**1.8011**	**0.0000**	**1,118.8599**	**1,118.8599**	**0.3619**		**1,127.9065**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.3000e-003	0.0768	0.0297	3.7000e-004	0.0120	3.9000e-004	0.0124	3.4900e-003	3.7000e-004	3.8600e-003		40.0565	40.0565	1.3400e-003	5.7600e-003	41.8062
Worker	0.0160	0.0112	0.1807	4.9000e-004	0.0515	3.4000e-004	0.0519	0.0138	3.1000e-004	0.0141		50.0038	50.0038	1.2600e-003	1.1500e-003	50.3792
Total	**0.0183**	**0.0879**	**0.2104**	**8.6000e-004**	**0.0635**	**7.3000e-004**	**0.0642**	**0.0172**	**6.8000e-004**	**0.0179**		**90.0603**	**90.0603**	**2.6000e-003**	**6.9100e-003**	**92.1854**

Brookside Golf Course Improvements (Mini Golf) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Grading - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					4.9144	0.0000	4.9144	2.5256	0.0000	2.5256			0.0000			0.0000
Off-Road	0.8498	8.6900	5.4202	0.0138		0.3740	0.3740		0.3441	0.3441		1,340.5717	1,340.5717	0.4336		1,351.4109
Total	**0.8498**	**8.6900**	**5.4202**	**0.0138**	**4.9144**	**0.3740**	**5.2884**	**2.5256**	**0.3441**	**2.8697**		**1,340.5717**	**1,340.5717**	**0.4336**		**1,351.4109**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.3000e-003	0.0768	0.0297	3.7000e-004	0.0128	3.9000e-004	0.0132	3.6900e-003	3.7000e-004	4.0600e-003		40.0565	40.0565	1.3400e-003	5.7600e-003	41.8062
Worker	0.0256	0.0179	0.2891	7.9000e-004	0.0894	5.4000e-004	0.0900	0.0237	5.0000e-004	0.0242		80.0060	80.0060	2.0200e-003	1.8500e-003	80.6067
Total	**0.0279**	**0.0946**	**0.3189**	**1.1600e-003**	**0.1022**	**9.3000e-004**	**0.1032**	**0.0274**	**8.7000e-004**	**0.0283**		**120.0625**	**120.0625**	**3.3600e-003**	**7.6100e-003**	**122.4129**

Brookside Golf Course Improvements (Mini Golf) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.1009	0.0000	2.1009	1.0797	0.0000	1.0797			0.0000			0.0000
Off-Road	0.8498	8.6900	5.4202	0.0138		0.3740	0.3740		0.3441	0.3441	0.0000	1,340.5717	1,340.5717	0.4336		1,351.4109
Total	**0.8498**	**8.6900**	**5.4202**	**0.0138**	**2.1009**	**0.3740**	**2.4749**	**1.0797**	**0.3441**	**1.4238**	**0.0000**	**1,340.5717**	**1,340.5717**	**0.4336**		**1,351.4109**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.3000e-003	0.0768	0.0297	3.7000e-004	0.0120	3.9000e-004	0.0124	3.4900e-003	3.7000e-004	3.8600e-003		40.0565	40.0565	1.3400e-003	5.7600e-003	41.8062
Worker	0.0256	0.0179	0.2891	7.9000e-004	0.0824	5.4000e-004	0.0830	0.0220	5.0000e-004	0.0225		80.0060	80.0060	2.0200e-003	1.8500e-003	80.6067
Total	**0.0279**	**0.0946**	**0.3189**	**1.1600e-003**	**0.0944**	**9.3000e-004**	**0.0953**	**0.0255**	**8.7000e-004**	**0.0264**		**120.0625**	**120.0625**	**3.3600e-003**	**7.6100e-003**	**122.4129**

Brookside Golf Course Improvements (Mini Golf) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Trenching - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.3467	3.2332	2.5921	3.3800e-003		0.2243	0.2243		0.2064	0.2064		327.1999	327.1999	0.1058		329.8454
Total	**0.3467**	**3.2332**	**2.5921**	**3.3800e-003**		**0.2243**	**0.2243**		**0.2064**	**0.2064**		**327.1999**	**327.1999**	**0.1058**		**329.8454**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.6000e-003	6.6900e-003	0.1084	3.0000e-004	0.0335	2.0000e-004	0.0337	8.8900e-003	1.9000e-004	9.0800e-003		30.0023	30.0023	7.6000e-004	6.9000e-004	30.2275
Total	**9.6000e-003**	**6.6900e-003**	**0.1084**	**3.0000e-004**	**0.0335**	**2.0000e-004**	**0.0337**	**8.8900e-003**	**1.9000e-004**	**9.0800e-003**		**30.0023**	**30.0023**	**7.6000e-004**	**6.9000e-004**	**30.2275**

Brookside Golf Course Improvements (Mini Golf) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.3467	3.2332	2.5921	3.3800e-003		0.2243	0.2243		0.2064	0.2064	0.0000	327.1999	327.1999	0.1058		329.8454
Total	**0.3467**	**3.2332**	**2.5921**	**3.3800e-003**		**0.2243**	**0.2243**		**0.2064**	**0.2064**	**0.0000**	**327.1999**	**327.1999**	**0.1058**		**329.8454**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.6000e-003	6.6900e-003	0.1084	3.0000e-004	0.0309	2.0000e-004	0.0311	8.2500e-003	1.9000e-004	8.4300e-003		30.0023	30.0023	7.6000e-004	6.9000e-004	30.2275
Total	**9.6000e-003**	**6.6900e-003**	**0.1084**	**3.0000e-004**	**0.0309**	**2.0000e-004**	**0.0311**	**8.2500e-003**	**1.9000e-004**	**8.4300e-003**		**30.0023**	**30.0023**	**7.6000e-004**	**6.9000e-004**	**30.2275**

Brookside Golf Course Improvements (Mini Golf) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.6 Paving - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4939	4.7159	6.5814	0.0105		0.2330	0.2330		0.2152	0.2152		999.0073	999.0073	0.3148		1,006.8768
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.4939**	**4.7159**	**6.5814**	**0.0105**		**0.2330**	**0.2330**		**0.2152**	**0.2152**		**999.0073**	**999.0073**	**0.3148**		**1,006.8768**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0320	0.0223	0.3614	9.9000e-004	0.1118	6.7000e-004	0.1125	0.0296	6.2000e-004	0.0303		100.0075	100.0075	2.5200e-003	2.3100e-003	100.7583
Total	**0.0320**	**0.0223**	**0.3614**	**9.9000e-004**	**0.1118**	**6.7000e-004**	**0.1125**	**0.0296**	**6.2000e-004**	**0.0303**		**100.0075**	**100.0075**	**2.5200e-003**	**2.3100e-003**	**100.7583**

Brookside Golf Course Improvements (Mini Golf) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4939	4.7159	6.5814	0.0105		0.2330	0.2330		0.2152	0.2152	0.0000	999.0073	999.0073	0.3148		1,006.8768
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.4939**	**4.7159**	**6.5814**	**0.0105**		**0.2330**	**0.2330**		**0.2152**	**0.2152**	**0.0000**	**999.0073**	**999.0073**	**0.3148**		**1,006.8768**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0320	0.0223	0.3614	9.9000e-004	0.1030	6.7000e-004	0.1037	0.0275	6.2000e-004	0.0281		100.0075	100.0075	2.5200e-003	2.3100e-003	100.7583
Total	**0.0320**	**0.0223**	**0.3614**	**9.9000e-004**	**0.1030**	**6.7000e-004**	**0.1037**	**0.0275**	**6.2000e-004**	**0.0281**		**100.0075**	**100.0075**	**2.5200e-003**	**2.3100e-003**	**100.7583**

Brookside Golf Course Improvements (Mini Golf) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Brookside Golf Course Improvements (Mini Golf) Construction Run

Los Angeles-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Golf Course	0.49	Acre	0.49	21,518.64	0
Other Non-Asphalt Surfaces	21.50	1000sqft	0.49	21,500.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	12			**Operational Year**	2023
Utility Company	Pasadena Water and Power				
CO2 Intensity (lb/MWhr)	872.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - based on info from applicant

Off-road Equipment - based on info from applicant

Off-road Equipment - based on info from applicant

Off-road Equipment - based on info from applicant

Off-road Equipment - based on info from applicant

Off-road Equipment - based on info from applicant

Grading -

Trips and VMT - assumes 2vt/water truck/day

Construction Off-road Equipment Mitigation - SCAQMD Rule 403 and Rule 1186

Brookside Golf Course Improvements (Mini Golf) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	9
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	2.00	37.00
tblConstructionPhase	NumDays	5.00	17.00
tblConstructionPhase	NumDays	1.00	15.00
tblConstructionPhase	PhaseEndDate	1/18/2023	3/28/2023
tblConstructionPhase	PhaseEndDate	6/14/2023	4/20/2023
tblConstructionPhase	PhaseEndDate	1/16/2023	2/3/2023
tblConstructionPhase	PhaseStartDate	1/17/2023	2/4/2023
tblConstructionPhase	PhaseStartDate	6/8/2023	3/29/2023
tblOffRoadEquipment	LoadFactor	0.40	0.40
tblOffRoadEquipment	LoadFactor	0.36	0.36
tblOffRoadEquipment	LoadFactor	0.36	0.36
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Dozers
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Trenchers
tblOffRoadEquipment	OffRoadEquipmentType		Paving Equipment
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	1.00	6.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00

Brookside Golf Course Improvements (Mini Golf) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2023	0.9905	9.1815	9.6053	0.0161	6.6210	0.4582	7.0147	3.3860	0.4224	3.7482	0.0000	1,555.0109	1,555.0109	0.4370	7.7400e-003	1,564.9778
Maximum	**0.9905**	**9.1815**	**9.6053**	**0.0161**	**6.6210**	**0.4582**	**7.0147**	**3.3860**	**0.4224**	**3.7482**	**0.0000**	**1,555.0109**	**1,555.0109**	**0.4370**	**7.7400e-003**	**1,564.9778**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2023	0.9905	9.1815	9.6053	0.0161	2.8646	0.4582	3.2583	1.4568	0.4224	1.8191	0.0000	1,555.0109	1,555.0109	0.4370	7.7400e-003	1,564.9778
Maximum	**0.9905**	**9.1815**	**9.6053**	**0.0161**	**2.8646**	**0.4582**	**3.2583**	**1.4568**	**0.4224**	**1.8191**	**0.0000**	**1,555.0109**	**1,555.0109**	**0.4370**	**7.7400e-003**	**1,564.9778**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**56.73**	**0.00**	**53.55**	**56.97**	**0.00**	**51.47**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Brookside Golf Course Improvements (Mini Golf) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2023	1/13/2023	5	10	a
2	Site Preparation	Site Preparation	1/14/2023	2/3/2023	5	15	b
3	Grading	Grading	2/4/2023	3/28/2023	5	37	c
4	Trenching	Trenching	3/29/2023	4/11/2023	5	10	d
5	Paving	Paving	3/29/2023	4/20/2023	5	17	e

Acres of Grading (Site Preparation Phase): 7.5

Acres of Grading (Grading Phase): 13.88

Acres of Paving: 0.49

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	1	8.00	247	0.40
Paving	Cement and Mortar Mixers	1	6.00	9	0.56
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Grading	Rubber Tired Loaders	1	6.00	203	0.36
Trenching	Trenchers	1	8.00	78	0.50
Grading	Graders	0	6.00	187	0.41
Site Preparation	Graders	0	8.00	187	0.41
Paving	Pavers	1	7.00	130	0.42
Paving	Rollers	1	7.00	80	0.38
Demolition	Rubber Tired Dozers	1	6.00	247	0.40
Grading	Rubber Tired Dozers	1	6.00	247	0.40

Brookside Golf Course Improvements (Mini Golf) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Paving	Paving Equipment	1	7.00	132	0.36
Demolition	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Grading	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Paving	Tractors/Loaders/Backhoes	0	7.00	97	0.37
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	3	8.00	2.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	2	5.00	2.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	3	8.00	2.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Trenching	1	3.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	4	10.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Replace Ground Cover

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

Brookside Golf Course Improvements (Mini Golf) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Demolition - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9607	9.0814	7.6606	0.0150		0.4258	0.4258		0.4020	0.4020		1,439.0986	1,439.0986	0.3030		1,446.6724
Total	**0.9607**	**9.0814**	**7.6606**	**0.0150**		**0.4258**	**0.4258**		**0.4020**	**0.4020**		**1,439.0986**	**1,439.0986**	**0.3030**		**1,446.6724**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.2200e-003	0.0804	0.0307	3.7000e-004	0.0128	3.9000e-004	0.0132	3.6900e-003	3.7000e-004	4.0600e-003		40.1241	40.1241	1.3400e-003	5.7700e-003	41.8782
Worker	0.0275	0.0197	0.2658	7.5000e-004	0.0894	5.4000e-004	0.0900	0.0237	5.0000e-004	0.0242		75.7883	75.7883	2.0500e-003	1.9700e-003	76.4271
Total	**0.0297**	**0.1001**	**0.2964**	**1.1200e-003**	**0.1022**	**9.3000e-004**	**0.1032**	**0.0274**	**8.7000e-004**	**0.0283**		**115.9124**	**115.9124**	**3.3900e-003**	**7.7400e-003**	**118.3053**

Brookside Golf Course Improvements (Mini Golf) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9607	9.0814	7.6606	0.0150		0.4258	0.4258		0.4020	0.4020	0.0000	1,439.0986	1,439.0986	0.3030		1,446.6724
Total	**0.9607**	**9.0814**	**7.6606**	**0.0150**		**0.4258**	**0.4258**		**0.4020**	**0.4020**	**0.0000**	**1,439.0986**	**1,439.0986**	**0.3030**		**1,446.6724**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.2200e-003	0.0804	0.0307	3.7000e-004	0.0120	3.9000e-004	0.0124	3.4900e-003	3.7000e-004	3.8600e-003		40.1241	40.1241	1.3400e-003	5.7700e-003	41.8782
Worker	0.0275	0.0197	0.2658	7.5000e-004	0.0824	5.4000e-004	0.0830	0.0220	5.0000e-004	0.0225		75.7883	75.7883	2.0500e-003	1.9700e-003	76.4271
Total	**0.0297**	**0.1001**	**0.2964**	**1.1200e-003**	**0.0944**	**9.3000e-004**	**0.0953**	**0.0255**	**8.7000e-004**	**0.0264**		**115.9124**	**115.9124**	**3.3900e-003**	**7.7400e-003**	**118.3053**

Brookside Golf Course Improvements (Mini Golf) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Site Preparation - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.5523	0.0000	6.5523	3.3675	0.0000	3.3675			0.0000			0.0000
Off-Road	0.8280	8.5791	5.3012	0.0116		0.3930	0.3930		0.3615	0.3615		1,118.8599	1,118.8599	0.3619		1,127.9065
Total	**0.8280**	**8.5791**	**5.3012**	**0.0116**	**6.5523**	**0.3930**	**6.9453**	**3.3675**	**0.3615**	**3.7290**		**1,118.8599**	**1,118.8599**	**0.3619**		**1,127.9065**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.2200e-003	0.0804	0.0307	3.7000e-004	0.0128	3.9000e-004	0.0132	3.6900e-003	3.7000e-004	4.0600e-003		40.1241	40.1241	1.3400e-003	5.7700e-003	41.8782
Worker	0.0172	0.0123	0.1661	4.7000e-004	0.0559	3.4000e-004	0.0562	0.0148	3.1000e-004	0.0151		47.3677	47.3677	1.2800e-003	1.2300e-003	47.7670
Total	**0.0194**	**0.0927**	**0.1968**	**8.4000e-004**	**0.0687**	**7.3000e-004**	**0.0694**	**0.0185**	**6.8000e-004**	**0.0192**		**87.4917**	**87.4917**	**2.6200e-003**	**7.0000e-003**	**89.6452**

Brookside Golf Course Improvements (Mini Golf) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.8011	0.0000	2.8011	1.4396	0.0000	1.4396			0.0000			0.0000
Off-Road	0.8280	8.5791	5.3012	0.0116		0.3930	0.3930		0.3615	0.3615	0.0000	1,118.8599	1,118.8599	0.3619		1,127.9065
Total	**0.8280**	**8.5791**	**5.3012**	**0.0116**	**2.8011**	**0.3930**	**3.1941**	**1.4396**	**0.3615**	**1.8011**	**0.0000**	**1,118.8599**	**1,118.8599**	**0.3619**		**1,127.9065**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.2200e-003	0.0804	0.0307	3.7000e-004	0.0120	3.9000e-004	0.0124	3.4900e-003	3.7000e-004	3.8600e-003		40.1241	40.1241	1.3400e-003	5.7700e-003	41.8782
Worker	0.0172	0.0123	0.1661	4.7000e-004	0.0515	3.4000e-004	0.0519	0.0138	3.1000e-004	0.0141		47.3677	47.3677	1.2800e-003	1.2300e-003	47.7670
Total	**0.0194**	**0.0927**	**0.1968**	**8.4000e-004**	**0.0635**	**7.3000e-004**	**0.0642**	**0.0172**	**6.8000e-004**	**0.0179**		**87.4917**	**87.4917**	**2.6200e-003**	**7.0000e-003**	**89.6452**

Brookside Golf Course Improvements (Mini Golf) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Grading - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					4.9144	0.0000	4.9144	2.5256	0.0000	2.5256			0.0000			0.0000
Off-Road	0.8498	8.6900	5.4202	0.0138		0.3740	0.3740		0.3441	0.3441		1,340.5717	1,340.5717	0.4336		1,351.4109
Total	**0.8498**	**8.6900**	**5.4202**	**0.0138**	**4.9144**	**0.3740**	**5.2884**	**2.5256**	**0.3441**	**2.8697**		**1,340.5717**	**1,340.5717**	**0.4336**		**1,351.4109**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.2200e-003	0.0804	0.0307	3.7000e-004	0.0128	3.9000e-004	0.0132	3.6900e-003	3.7000e-004	4.0600e-003		40.1241	40.1241	1.3400e-003	5.7700e-003	41.8782
Worker	0.0275	0.0197	0.2658	7.5000e-004	0.0894	5.4000e-004	0.0900	0.0237	5.0000e-004	0.0242		75.7883	75.7883	2.0500e-003	1.9700e-003	76.4271
Total	**0.0297**	**0.1001**	**0.2964**	**1.1200e-003**	**0.1022**	**9.3000e-004**	**0.1032**	**0.0274**	**8.7000e-004**	**0.0283**		**115.9124**	**115.9124**	**3.3900e-003**	**7.7400e-003**	**118.3053**

Brookside Golf Course Improvements (Mini Golf) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.1009	0.0000	2.1009	1.0797	0.0000	1.0797			0.0000			0.0000
Off-Road	0.8498	8.6900	5.4202	0.0138		0.3740	0.3740		0.3441	0.3441	0.0000	1,340.5717	1,340.5717	0.4336		1,351.4109
Total	**0.8498**	**8.6900**	**5.4202**	**0.0138**	**2.1009**	**0.3740**	**2.4749**	**1.0797**	**0.3441**	**1.4238**	**0.0000**	**1,340.5717**	**1,340.5717**	**0.4336**		**1,351.4109**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.2200e-003	0.0804	0.0307	3.7000e-004	0.0120	3.9000e-004	0.0124	3.4900e-003	3.7000e-004	3.8600e-003		40.1241	40.1241	1.3400e-003	5.7700e-003	41.8782
Worker	0.0275	0.0197	0.2658	7.5000e-004	0.0824	5.4000e-004	0.0830	0.0220	5.0000e-004	0.0225		75.7883	75.7883	2.0500e-003	1.9700e-003	76.4271
Total	**0.0297**	**0.1001**	**0.2964**	**1.1200e-003**	**0.0944**	**9.3000e-004**	**0.0953**	**0.0255**	**8.7000e-004**	**0.0264**		**115.9124**	**115.9124**	**3.3900e-003**	**7.7400e-003**	**118.3053**

Brookside Golf Course Improvements (Mini Golf) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Trenching - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.3467	3.2332	2.5921	3.3800e-003		0.2243	0.2243		0.2064	0.2064		327.1999	327.1999	0.1058		329.8454
Total	**0.3467**	**3.2332**	**2.5921**	**3.3800e-003**		**0.2243**	**0.2243**		**0.2064**	**0.2064**		**327.1999**	**327.1999**	**0.1058**		**329.8454**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0103	7.3900e-003	0.0997	2.8000e-004	0.0335	2.0000e-004	0.0337	8.8900e-003	1.9000e-004	9.0800e-003		28.4206	28.4206	7.7000e-004	7.4000e-004	28.6602
Total	**0.0103**	**7.3900e-003**	**0.0997**	**2.8000e-004**	**0.0335**	**2.0000e-004**	**0.0337**	**8.8900e-003**	**1.9000e-004**	**9.0800e-003**		**28.4206**	**28.4206**	**7.7000e-004**	**7.4000e-004**	**28.6602**

Brookside Golf Course Improvements (Mini Golf) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.3467	3.2332	2.5921	3.3800e-003		0.2243	0.2243		0.2064	0.2064	0.0000	327.1999	327.1999	0.1058		329.8454
Total	**0.3467**	**3.2332**	**2.5921**	**3.3800e-003**		**0.2243**	**0.2243**		**0.2064**	**0.2064**	**0.0000**	**327.1999**	**327.1999**	**0.1058**		**329.8454**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0103	7.3900e-003	0.0997	2.8000e-004	0.0309	2.0000e-004	0.0311	8.2500e-003	1.9000e-004	8.4300e-003		28.4206	28.4206	7.7000e-004	7.4000e-004	28.6602
Total	**0.0103**	**7.3900e-003**	**0.0997**	**2.8000e-004**	**0.0309**	**2.0000e-004**	**0.0311**	**8.2500e-003**	**1.9000e-004**	**8.4300e-003**		**28.4206**	**28.4206**	**7.7000e-004**	**7.4000e-004**	**28.6602**

Brookside Golf Course Improvements (Mini Golf) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.6 Paving - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4939	4.7159	6.5814	0.0105		0.2330	0.2330		0.2152	0.2152		999.0073	999.0073	0.3148		1,006.8768
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.4939**	**4.7159**	**6.5814**	**0.0105**		**0.2330**	**0.2330**		**0.2152**	**0.2152**		**999.0073**	**999.0073**	**0.3148**		**1,006.8768**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0344	0.0246	0.3322	9.4000e-004	0.1118	6.7000e-004	0.1125	0.0296	6.2000e-004	0.0303		94.7354	94.7354	2.5600e-003	2.4700e-003	95.5339
Total	**0.0344**	**0.0246**	**0.3322**	**9.4000e-004**	**0.1118**	**6.7000e-004**	**0.1125**	**0.0296**	**6.2000e-004**	**0.0303**		**94.7354**	**94.7354**	**2.5600e-003**	**2.4700e-003**	**95.5339**

Brookside Golf Course Improvements (Mini Golf) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4939	4.7159	6.5814	0.0105		0.2330	0.2330		0.2152	0.2152	0.0000	999.0073	999.0073	0.3148		1,006.8768
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.4939**	**4.7159**	**6.5814**	**0.0105**		**0.2330**	**0.2330**		**0.2152**	**0.2152**	**0.0000**	**999.0073**	**999.0073**	**0.3148**		**1,006.8768**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0344	0.0246	0.3322	9.4000e-004	0.1030	6.7000e-004	0.1037	0.0275	6.2000e-004	0.0281		94.7354	94.7354	2.5600e-003	2.4700e-003	95.5339
Total	**0.0344**	**0.0246**	**0.3322**	**9.4000e-004**	**0.1030**	**6.7000e-004**	**0.1037**	**0.0275**	**6.2000e-004**	**0.0281**		**94.7354**	**94.7354**	**2.5600e-003**	**2.4700e-003**	**95.5339**

CalEEMod Operations Model

Brookside Golf Course Improvements Operational Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Brookside Golf Course Improvements Operational Run

Los Angeles-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	112.54	1000sqft	2.58	112,540.00	0
Golf Course	7.40	Acre	7.40	322,518.24	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	12			**Operational Year**	2023
Utility Company	Pasadena Water and Power				
CO2 Intensity (lb/MWhr)	872.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase -

Vehicle Trips - based on net increase in trips from applicant

Area Coating - no parking area assumed for project

Water And Wastewater - Sewage generation rates based on a City of LA CEQA Thresholds for a golf course lobby. Considers only new generation from Mini Golf Course

Solid Waste - considers only new generation from Mini Golf Course operations. Assumes driving range operations is intended to meet demand currently at the golf course

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Parking	6752	0
tblLandUse	LandUseSquareFeet	322,344.00	322,518.24
tblSolidWaste	SolidWasteGenerationRate	6.88	0.46

Brookside Golf Course Improvements Operational Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

tblVehicleTrips	DV_TP	39.00	0.00
tblVehicleTrips	PB_TP	9.00	0.00
tblVehicleTrips	PR_TP	52.00	100.00
tblVehicleTrips	ST_TR	3.74	54.50
tblVehicleTrips	SU_TR	3.74	54.50
tblVehicleTrips	WD_TR	3.74	54.50
tblWater	AerobicPercent	87.46	100.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	IndoorWaterUseRate	0.00	627,800.00
tblWater	OutdoorWaterUseRate	8,816,961.99	0.00
tblWater	SepticTankPercent	10.33	0.00

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0105	1.0000e-005	1.5300e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	2.9800e-003	2.9800e-003	1.0000e-005	0.0000	3.1700e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.2388	0.2924	2.6302	5.7700e-003	0.5968	4.2200e-003	0.6010	0.1592	3.9200e-003	0.1631	0.0000	539.1676	539.1676	0.0354	0.0228	546.8472
Waste						0.0000	0.0000		0.0000	0.0000	0.0934	0.0000	0.0934	5.5200e-003	0.0000	0.2313
Water						0.0000	0.0000		0.0000	0.0000	0.2221	3.2370	3.4591	8.9000e-004	5.0000e-004	3.6296
Total	**0.2492**	**0.2924**	**2.6317**	**5.7700e-003**	**0.5968**	**4.2300e-003**	**0.6010**	**0.1592**	**3.9300e-003**	**0.1631**	**0.3155**	**542.4075**	**542.7230**	**0.0419**	**0.0233**	**550.7113**

Brookside Golf Course Improvements Operational Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0105	1.0000e-005	1.5300e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	2.9800e-003	2.9800e-003	1.0000e-005	0.0000	3.1700e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.2388	0.2924	2.6302	5.7700e-003	0.5968	4.2200e-003	0.6010	0.1592	3.9200e-003	0.1631	0.0000	539.1676	539.1676	0.0354	0.0228	546.8472
Waste						0.0000	0.0000		0.0000	0.0000	0.0934	0.0000	0.0934	5.5200e-003	0.0000	0.2313
Water						0.0000	0.0000		0.0000	0.0000	0.2221	3.2370	3.4591	8.9000e-004	5.0000e-004	3.6296
Total	**0.2492**	**0.2924**	**2.6317**	**5.7700e-003**	**0.5968**	**4.2300e-003**	**0.6010**	**0.1592**	**3.9300e-003**	**0.1631**	**0.3155**	**542.4075**	**542.7230**	**0.0419**	**0.0233**	**550.7113**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.2388	0.2924	2.6302	5.7700e-003	0.5968	4.2200e-003	0.6010	0.1592	3.9200e-003	0.1631	0.0000	539.1676	539.1676	0.0354	0.0228	546.8472
Unmitigated	0.2388	0.2924	2.6302	5.7700e-003	0.5968	4.2200e-003	0.6010	0.1592	3.9200e-003	0.1631	0.0000	539.1676	539.1676	0.0354	0.0228	546.8472

Brookside Golf Course Improvements Operational Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Golf Course	403.30	403.30	403.30	1,588,536	1,588,536
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Total	403.30	403.30	403.30	1,588,536	1,588,536

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Golf Course	16.60	8.40	6.90	33.00	48.00	19.00	100	0	0
Other Non-Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Golf Course	0.544785	0.062844	0.187478	0.127235	0.023089	0.006083	0.010475	0.008012	0.000925	0.000611	0.024394	0.000698	0.003374
Other Non-Asphalt Surfaces	0.544785	0.062844	0.187478	0.127235	0.023089	0.006083	0.010475	0.008012	0.000925	0.000611	0.024394	0.000698	0.003374

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Brookside Golf Course Improvements Operational Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Golf Course	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Golf Course	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Golf Course	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Brookside Golf Course Improvements Operational Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Golf Course	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0105	1.0000e-005	1.5300e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	2.9800e-003	2.9800e-003	1.0000e-005	0.0000	3.1700e-003
Unmitigated	0.0105	1.0000e-005	1.5300e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	2.9800e-003	2.9800e-003	1.0000e-005	0.0000	3.1700e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0103					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.4000e-004	1.0000e-005	1.5300e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	2.9800e-003	2.9800e-003	1.0000e-005	0.0000	3.1700e-003
Total	**0.0105**	**1.0000e-005**	**1.5300e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**2.9800e-003**	**2.9800e-003**	**1.0000e-005**	**0.0000**	**3.1700e-003**

Brookside Golf Course Improvements Operational Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0103					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.4000e-004	1.0000e-005	1.5300e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	2.9800e-003	2.9800e-003	1.0000e-005	0.0000	3.1700e-003
Total	**0.0105**	**1.0000e-005**	**1.5300e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**2.9800e-003**	**2.9800e-003**	**1.0000e-005**	**0.0000**	**3.1700e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	3.4591	8.9000e-004	5.0000e-004	3.6296
Unmitigated	3.4591	8.9000e-004	5.0000e-004	3.6296

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Golf Course	0.6278 / 0	3.4591	8.9000e-004	5.0000e-004	3.6296
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**3.4591**	**8.9000e-004**	**5.0000e-004**	**3.6296**

Brookside Golf Course Improvements Operational Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Golf Course	0.6278 / 0	3.4591	8.9000e-004	5.0000e-004	3.6296
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**3.4591**	**8.9000e-004**	**5.0000e-004**	**3.6296**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0934	5.5200e-003	0.0000	0.2313
Unmitigated	0.0934	5.5200e-003	0.0000	0.2313

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Golf Course	0.46	0.0934	5.5200e-003	0.0000	0.2313
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0934**	**5.5200e-003**	**0.0000**	**0.2313**

Brookside Golf Course Improvements Operational Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Golf Course	0.46	0.0934	5.5200e-003	0.0000	0.2313
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0934**	**5.5200e-003**	**0.0000**	**0.2313**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

Brookside Golf Course Improvements Operational Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Brookside Golf Course Improvements Operational Run

Los Angeles-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	112.54	1000sqft	2.58	112,540.00	0
Golf Course	7.40	Acre	7.40	322,518.24	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	12			**Operational Year**	2023
Utility Company	Pasadena Water and Power				
CO2 Intensity (lb/MWhr)	872.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase -

Vehicle Trips - based on net increase in trips from applicant

Area Coating - no parking area assumed for project

Water And Wastewater - Sewage generation rates based on a City of LA CEQA Thresholds for a golf course lobby. Considers only new generation from Mini Golf Course

Solid Waste - considers only new generation from Mini Golf Course operations. Assumes driving range operations is intended to meet demand currently at the golf course

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Parking	6752	0
tblLandUse	LandUseSquareFeet	322,344.00	322,518.24

Brookside Golf Course Improvements Operational Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

tblSolidWaste	SolidWasteGenerationRate	6.88	0.46
tblVehicleTrips	DV_TP	39.00	0.00
tblVehicleTrips	PB_TP	9.00	0.00
tblVehicleTrips	PR_TP	52.00	100.00
tblVehicleTrips	ST_TR	3.74	54.50
tblVehicleTrips	SU_TR	3.74	54.50
tblVehicleTrips	WD_TR	3.74	54.50
tblWater	AerobicPercent	87.46	100.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	IndoorWaterUseRate	0.00	627,800.00
tblWater	OutdoorWaterUseRate	8,816,961.99	0.00
tblWater	SepticTankPercent	10.33	0.00

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0576	1.1000e-004	0.0122	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0263	0.0263	7.0000e-005		0.0280
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	1.3534	1.4641	14.7258	0.0328	3.3441	0.0232	3.3673	0.8907	0.0215	0.9123		3,375.4728	3,375.4728	0.2104	0.1312	3,419.8433
Total	**1.4110**	**1.4642**	**14.7381**	**0.0328**	**3.3441**	**0.0232**	**3.3674**	**0.8907**	**0.0216**	**0.9123**		**3,375.4990**	**3,375.4990**	**0.2105**	**0.1312**	**3,419.8712**

Brookside Golf Course Improvements Operational Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0576	1.1000e-004	0.0122	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0263	0.0263	7.0000e-005		0.0280
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	1.3534	1.4641	14.7258	0.0328	3.3441	0.0232	3.3673	0.8907	0.0215	0.9123		3,375.4728	3,375.4728	0.2104	0.1312	3,419.8433
Total	**1.4110**	**1.4642**	**14.7381**	**0.0328**	**3.3441**	**0.0232**	**3.3674**	**0.8907**	**0.0216**	**0.9123**		**3,375.4990**	**3,375.4990**	**0.2105**	**0.1312**	**3,419.8712**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.3534	1.4641	14.7258	0.0328	3.3441	0.0232	3.3673	0.8907	0.0215	0.9123		3,375.4728	3,375.4728	0.2104	0.1312	3,419.8433
Unmitigated	1.3534	1.4641	14.7258	0.0328	3.3441	0.0232	3.3673	0.8907	0.0215	0.9123		3,375.4728	3,375.4728	0.2104	0.1312	3,419.8433

Brookside Golf Course Improvements Operational Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Golf Course	403.30	403.30	403.30	1,588,536	1,588,536
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Total	403.30	403.30	403.30	1,588,536	1,588,536

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Golf Course	16.60	8.40	6.90	33.00	48.00	19.00	100	0	0
Other Non-Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Golf Course	0.544785	0.062844	0.187478	0.127235	0.023089	0.006083	0.010475	0.008012	0.000925	0.000611	0.024394	0.000698	0.003374
Other Non-Asphalt Surfaces	0.544785	0.062844	0.187478	0.127235	0.023089	0.006083	0.010475	0.008012	0.000925	0.000611	0.024394	0.000698	0.003374

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

Brookside Golf Course Improvements Operational Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Golf Course	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Golf Course	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Brookside Golf Course Improvements Operational Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0576	1.1000e-004	0.0122	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0263	0.0263	7.0000e-005		0.0280
Unmitigated	0.0576	1.1000e-004	0.0122	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0263	0.0263	7.0000e-005		0.0280

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0565					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.1300e-003	1.1000e-004	0.0122	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0263	0.0263	7.0000e-005		0.0280
Total	**0.0576**	**1.1000e-004**	**0.0122**	**0.0000**		**4.0000e-005**	**4.0000e-005**		**4.0000e-005**	**4.0000e-005**		**0.0263**	**0.0263**	**7.0000e-005**		**0.0280**

Brookside Golf Course Improvements Operational Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0565					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.1300e-003	1.1000e-004	0.0122	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0263	0.0263	7.0000e-005		0.0280
Total	**0.0576**	**1.1000e-004**	**0.0122**	**0.0000**		**4.0000e-005**	**4.0000e-005**		**4.0000e-005**	**4.0000e-005**		**0.0263**	**0.0263**	**7.0000e-005**		**0.0280**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

Brookside Golf Course Improvements Operational Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Brookside Golf Course Improvements Operational Run

Los Angeles-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	112.54	1000sqft	2.58	112,540.00	0
Golf Course	7.40	Acre	7.40	322,518.24	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	12			**Operational Year**	2023
Utility Company	Pasadena Water and Power				
CO2 Intensity (lb/MWhr)	872.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase -

Vehicle Trips - based on net increase in trips from applicant

Area Coating - no parking area assumed for project

Water And Wastewater - Sewage generation rates based on a City of LA CEQA Thresholds for a golf course lobby. Considers only new generation from Mini Golf Course

Solid Waste - considers only new generation from Mini Golf Course operations. Assumes driving range operations is intended to meet demand currently at the golf course

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Parking	6752	0
tblLandUse	LandUseSquareFeet	322,344.00	322,518.24

Brookside Golf Course Improvements Operational Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

tblSolidWaste	SolidWasteGenerationRate	6.88	0.46
tblVehicleTrips	DV_TP	39.00	0.00
tblVehicleTrips	PB_TP	9.00	0.00
tblVehicleTrips	PR_TP	52.00	100.00
tblVehicleTrips	ST_TR	3.74	54.50
tblVehicleTrips	SU_TR	3.74	54.50
tblVehicleTrips	WD_TR	3.74	54.50
tblWater	AerobicPercent	87.46	100.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	IndoorWaterUseRate	0.00	627,800.00
tblWater	OutdoorWaterUseRate	8,816,961.99	0.00
tblWater	SepticTankPercent	10.33	0.00

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0576	1.1000e-004	0.0122	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0263	0.0263	7.0000e-005		0.0280
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	1.3323	1.5822	14.2983	0.0314	3.3441	0.0232	3.3673	0.8907	0.0216	0.9123		3,230.6324	3,230.6324	0.2155	0.1371	3,276.8754
Total	**1.3900**	**1.5823**	**14.3105**	**0.0314**	**3.3441**	**0.0233**	**3.3674**	**0.8907**	**0.0216**	**0.9123**		**3,230.6587**	**3,230.6587**	**0.2156**	**0.1371**	**3,276.9034**

Brookside Golf Course Improvements Operational Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0576	1.1000e-004	0.0122	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0263	0.0263	7.0000e-005		0.0280
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	1.3323	1.5822	14.2983	0.0314	3.3441	0.0232	3.3673	0.8907	0.0216	0.9123		3,230.6324	3,230.6324	0.2155	0.1371	3,276.8754
Total	**1.3900**	**1.5823**	**14.3105**	**0.0314**	**3.3441**	**0.0233**	**3.3674**	**0.8907**	**0.0216**	**0.9123**		**3,230.6587**	**3,230.6587**	**0.2156**	**0.1371**	**3,276.9034**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive	Exhaust	PM10 Total	Fugitive	Exhaust	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.3323	1.5822	14.2983	0.0314	3.3441	0.0232	3.3673	0.8907	0.0216	0.9123		3,230.6324	3,230.6324	0.2155	0.1371	3,276.8754
Unmitigated	1.3323	1.5822	14.2983	0.0314	3.3441	0.0232	3.3673	0.8907	0.0216	0.9123		3,230.6324	3,230.6324	0.2155	0.1371	3,276.8754

Brookside Golf Course Improvements Operational Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Golf Course	403.30	403.30	403.30	1,588,536	1,588,536
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Total	403.30	403.30	403.30	1,588,536	1,588,536

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Golf Course	16.60	8.40	6.90	33.00	48.00	19.00	100	0	0
Other Non-Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Golf Course	0.544785	0.062844	0.187478	0.127235	0.023089	0.006083	0.010475	0.008012	0.000925	0.000611	0.024394	0.000698	0.003374
Other Non-Asphalt Surfaces	0.544785	0.062844	0.187478	0.127235	0.023089	0.006083	0.010475	0.008012	0.000925	0.000611	0.024394	0.000698	0.003374

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

Brookside Golf Course Improvements Operational Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Golf Course	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Golf Course	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Brookside Golf Course Improvements Operational Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0576	1.1000e-004	0.0122	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0263	0.0263	7.0000e-005		0.0280
Unmitigated	0.0576	1.1000e-004	0.0122	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0263	0.0263	7.0000e-005		0.0280

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0565					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.1300e-003	1.1000e-004	0.0122	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0263	0.0263	7.0000e-005		0.0280
Total	**0.0576**	**1.1000e-004**	**0.0122**	**0.0000**		**4.0000e-005**	**4.0000e-005**		**4.0000e-005**	**4.0000e-005**		**0.0263**	**0.0263**	**7.0000e-005**		**0.0280**

Brookside Golf Course Improvements Operational Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0565					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.1300e-003	1.1000e-004	0.0122	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0263	0.0263	7.0000e-005		0.0280
Total	**0.0576**	**1.1000e-004**	**0.0122**	**0.0000**		**4.0000e-005**	**4.0000e-005**		**4.0000e-005**	**4.0000e-005**		**0.0263**	**0.0263**	**7.0000e-005**		**0.0280**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

LST Worksheets

Construction Localized Significance Thresholds: Demolition

		NOx & CO		*PM10 & PM2.5*		
SRA No.	Acres	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Construction / Project Site Size (Acres)
8	1.00	25	82	76	250	9.00

Source Receptor	**West San Gabriel Valley**	**Equipment**	**Acres/8-hr Day**		**Daily hours**	**Equipment Used**	**Acres**
Distance (meters)	25	Tractors	0.5	0.0625			0
NOx	**69**	Tractors	0.5	0.0625			0
CO	**535**	Graders	0.5	0.0625			0
PM10	**19.38**	Dozers	0.5	0.0625	8	2	1
PM2.5	**5.57**	Scrapers	1	0.125			0
						Acres	1.00

	Acres	**25**	**50**	**100**	**200**	**500**
NOx	1	69	69	81	104	164
	1	69	69	81	104	164
		69	69	81	104	164
CO	1	535	783	1158	2229	7270
	1	535	783	1158	2229	7270
		535	783	1158	2229	7270
PM10	1	4	11	27	58	152
	1	4	11	27	58	152
		4	11	27	58	152
PM2.5	1	3	4	7	18	77
	1	3	4	7	18	77
		3	4	7	18	77

West San Gabriel Valley

1.00 Acres

	25	**50**	**100**	**200**	**500**
NOx	69	69	81	104	164
CO	535	783	1158	2229	7270
PM10	4	11	27	58	152
PM2.5	3	4	7	18	77

Acre Below		**Acre Above**	
SRA No.	Acres	SRA No.	Acres
8	1	8	1
Distance Increment Below			
25			
Distance Increment Above			
25			

Updated: 10/21/2009 - Table C-1. 2006 – 2008

Construction Localized Significance Thresholds: Site Preparation

		NOx & CO		PM10 & PM2.5		
SRA No.	Acres	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Construction / Project Site Size (Acres)
8	3.50	25	82	76	250	9.00

Source Receptor	**West San Gabriel Valley**	**Equipment**	**Acres/8-hr Day**		**Daily hours**	**Equipment Used**	**Acres**
Distance (meters)	25	Tractors	0.5	0.0625			0
NOx	**123**	Tractors	0.5	0.0625	8	4	2
CO	**1,176**	Graders	0.5	0.0625			0
PM10	**36.12**	Dozers	0.5	0.0625	8	3	1.5
PM2.5	**9.36**	Scrapers	1	0.125			0
						Acres	3.50

	Acres	**25**	**50**	**100**	**200**	**500**
NOx	3	115	110	120	138	186
	4	131	126	135	152	197
		123	118	128	145	192
CO	3	1055	1390	1929	3230	8590
	4	1297	1656	2264	3674	9224
		1176	1523	2097	3452	8907
PM10	3	8	25	40	72	167
	4	10	31	47	79	173
		9	28	44	76	170
PM2.5	3	5	6	11	23	86
	4	6	8	12	25	89
		6	7	12	24	88

West San Gabriel Valley

3.50 Acres

	25	**50**	**100**	**200**	**500**
NOx	123	118	128	145	192
CO	1176	1523	2097	3452	8907
PM10	9	28	44	76	170
PM2.5	6	7	12	24	88

Acre Below		**Acre Above**	
SRA No.	Acres	SRA No.	Acres
8	3	8	4
Distance Increment Below			
25			
Distance Increment Above			
25			

Updated: 10/21/2009 - Table C-1. 2006 – 2008

Construction Localized Significance Thresholds: Grading

		NOx & CO		*PM10 & PM2.5*		
SRA No.	Acres	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Construction / Project Site Size (Acres)
8	4.00	25	82	76	250	9.00

Source Receptor	**West San Gabriel Valley**	**Equipment**	**Acres/8-hr Day**		**Daily hours**	**Equipment Used**	**Acres**
Distance (meters)	25	Tractors	0.5	0.0625			0
NOx	**131**	Tractors	0.5	0.0625	8	2	1
CO	**1,297**	Graders	0.5	0.0625	8	1	0.5
PM10	**39.21**	Dozers	0.5	0.0625	8	1	0.5
PM2.5	**10.11**	Scrapers	1	0.125	8	2	2
						Acres	4.00

	Acres	**25**	**50**	**100**	**200**	**500**
NOx	4	131	126	135	152	197
	4	131	126	135	152	197
		131	126	135	152	197
CO	4	1297	1656	2264	3674	9224
	4	1297	1656	2264	3674	9224
		1297	1656	2264	3674	9224
PM10	4	10	31	47	79	173
	4	10	31	47	79	173
		10	31	47	79	173
PM2.5	4	6	8	12	25	89
	4	6	8	12	25	89
		6	8	12	25	89

West San Gabriel Valley

4.00 Acres

	25	**50**	**100**	**200**	**500**
NOx	131	126	135	152	197
CO	1297	1656	2264	3674	9224
PM10	10	31	47	79	173
PM2.5	6	8	12	25	89

Acre Below		**Acre Above**	
SRA No.	Acres	SRA No.	Acres
8	4	8	4
Distance Increment Below			
25			
Distance Increment Above			
25			

Updated: 10/21/2009 - Table C-1. 2006 – 2008

Construction Localized Significance Thresholds: Trenching and Fencing

		NOx & CO		*PM10 & PM2.5*		
SRA No.	Acres	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Construction / Project Site Size (Acres)
8	0.44	25	82	76	250	9.00

Source Receptor	**West San Gabriel Valley**	**Equipment**	**Acres/8-hr Day**		**Daily hours**	**Equipment Used**	**Acres**
Distance (meters)	25	Tractors	0.5	0.0625	7	1	0.4375
NOx	**69**	Tractors	0.5	0.0625			0
CO	**535**	Graders	0.5	0.0625			0
PM10	**19.38**	Dozers	0.5	0.0625			0
PM2.5	**5.57**	Scrapers	1	0.125			0
						Acres	0.44

	Acres	**25**	**50**	**100**	**200**	**500**
NOx	1	69	69	81	104	164
	1	69	69	81	104	164
		69	69	81	104	164
CO	1	535	783	1158	2229	7270
	1	535	783	1158	2229	7270
		535	783	1158	2229	7270
PM10	1	4	11	27	58	152
	1	4	11	27	58	152
		4	11	27	58	152
PM2.5	1	3	4	7	18	77
	1	3	4	7	18	77
		3	4	7	18	77

West San Gabriel Valley

0.44 Acres

	25	**50**	**100**	**200**	**500**
NOx	69	69	81	104	164
CO	535	783	1158	2229	7270
PM10	4	11	27	58	152
PM2.5	3	4	7	18	77

Acre Below		**Acre Above**	
SRA No.	Acres	SRA No.	Acres
8	1	8	1
Distance Increment Below			
25			
Distance Increment Above			
25			

Updated: 10/21/2009 - Table C-1. 2006 – 2008

Construction Localized Significance Thresholds: Paving

		NOx & CO		*PM10 & PM2.5*		
SRA No.	Acres	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Construction / Project Site Size (Acres)
8	0.00	25	82	76	250	9.00

Source Receptor	**West San Gabriel Valley**	**Equipment**	**Acres/8-hr Day**		**Daily hours**	**Equipment Used**	**Acres**
Distance (meters)	25	Tractors	0.5	0.0625			0
NOx	**69**	Tractors	0.5	0.0625			0
CO	**535**	Graders	0.5	0.0625			0
PM10	**19.38**	Dozers	0.5	0.0625			0
PM2.5	**5.57**	Scrapers	1	0.125			0
						Acres	0.00

	Acres	**25**	**50**	**100**	**200**	**500**
NOx	1	69	69	81	104	164
	1	69	69	81	104	164
		69	69	81	104	164
CO	1	535	783	1158	2229	7270
	1	535	783	1158	2229	7270
		535	783	1158	2229	7270
PM10	1	4	11	27	58	152
	1	4	11	27	58	152
		4	11	27	58	152
PM2.5	1	3	4	7	18	77
	1	3	4	7	18	77
		3	4	7	18	77

West San Gabriel Valley

0.00 Acres

	25	**50**	**100**	**200**	**500**
NOx	69	69	81	104	164
CO	535	783	1158	2229	7270
PM10	4	11	27	58	152
PM2.5	3	4	7	18	77

Acre Below		**Acre Above**	
SRA No.	Acres	SRA No.	Acres
8	1	8	1
Distance Increment Below			
25			
Distance Increment Above			
25			

Updated: 10/21/2009 - Table C-1. 2006 – 2008

Construction Localized Significance Thresholds: ≤1.00 Acre LST

		NOx & CO		*PM10 & PM2.5*		
SRA No.	Acres	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Construction / Project Site Size (Acres)
8	1.00	25	82	76	250	1.00

Source Receptor	**West San Gabriel Valley**
Distance (meters)	25
NOx	**69**
CO	**535**
PM10	**19.38**
PM2.5	**5.57**

Equipment	**Acres/8-hr Day**		**Daily hours**	**Equipment Used**	**Acres**
Tractors	0.5	0.0625			0
Tractors	0.5	0.0625	8	1	0.5
Graders	0.5	0.0625			0
Dozers	0.5	0.0625	8	1	0.5
Scrapers	1	0.125			0
				Acres	1.00

	Acres	**25**	**50**	**100**	**200**	**500**
NOx	1	69	69	81	104	164
	1	69	69	81	104	164
		69	69	81	104	164
CO	1	535	783	1158	2229	7270
	1	535	783	1158	2229	7270
		535	783	1158	2229	7270
PM10	1	4	11	27	58	152
	1	4	11	27	58	152
		4	11	27	58	152
PM2.5	1	3	4	7	18	77
	1	3	4	7	18	77
		3	4	7	18	77

West San Gabriel Valley

1.00 Acres

	25	**50**	**100**	**200**	**500**
NOx	69	69	81	104	164
CO	535	783	1158	2229	7270
PM10	4	11	27	58	152
PM2.5	3	4	7	18	77

Acre Below		**Acre Above**	
SRA No.	Acres	SRA No.	Acres
8	1	8	1
Distance Increment Below			
25			
Distance Increment Above			
25			

Updated: 10/21/2009 - Table C-1. 2006 – 2008

Energy Calculations

Construction-Related Fuel/Energy Usage

CONSTRUCTION WORKER COMMUTE

Year	Gas		Diesel		Electricity	
	VMT	Gallons	VMT	Gallons	VMT	kWh
2022	62,081	2,190	455	10	962	316
2023	9,336	330	63	1	145	47
Total	**71,416**	**2,520**	**518**	**12**	**1,107**	**364**

CONSTRUCTION VENDOR TRIPS

Year	Gas		Diesel	
	VMT	Gallons	VMT	Gallons
2022	299	59	3,343	419
2023	68	13	774	92
Total	**367**	**73**	**4,117**	**511**

CONSTRUCTION OFF-ROAD EQUIPMENT

Year	Gasoline gallons	Diesel gallons
2022	1,132	31,560
2023	377	4,491
Total	**1,509**	**36,051**

CONSTRUCTION TOTAL

Year	Gas		Diesel		Electricity	
	VMT	Gallons	VMT	Gallons	VMT	kWh
2022	62,379	3,380	3,798	31,989	962	316
2023	9,404	720	837	4,584	145	47
Total	**71,783**	**4,101**	**4,635**	**36,574**	**1,107**	**364**

Operation-Related Vehicle Fuel/Energy Usage

PROPOSED PROJECT COMMUTE

Vehicle Type	Gas		Diesel		CNG		Electricity	
	VMT	Gallons	VMT	Gallons	VMT	Gallons	VMT	kWh
Passenger Vehicles	1,492,867	56,570	66,804	4,816	1,105	320	27,764	9,056

Construction Worker Trips Fuel Usage Worksheet

Note: Per CalEEMod methodology, worker vehicles are "LD_Mix", which is 50% LDA, 25% LDT1, and 25% LDT2

Activity[1]	Daily trips[1,2]	Trip miles[2]	Trip days[1]	Annual VMT
2022				
Demolition	15	14.7	30	6,615
Site Preparation	18	14.7	21	5,557
Grading	20	14.7	59	17,346
Trenching	5	14.7	32	2,352
Fencing	8	14.7	32	3,763
Paving	20	14.7	23	6,762
2023				
Demolition	8	14.7	10	1,176
Site Preparation	5	14.7	15	1,103
Grading	8	14.7	37	4,351
Trenching	3	14.7	10	441
Paving	10	14.7	17	2,499

[1] *Based on information provided.*
[2] *Based on CalEEMod defaults.*

Year	LDA VMT	LDT1 VMT	LDT2 VMT	Gasoline[1]						Diesel[1]						Electricity[1]			
				LDA mpg	LDA gallons	LDT1 mpg	LDT1 gallons	LDT2 mpg	LDT2 gallons	LDA mpg	LDA gallons	LDT1 mpg	LDT1 gallons	LDT2 mpg	LDT2 gallons	LDA m/kWh	LDA kWh	LDT1 m/kWh	LDT1 kWh
2022	42,395	10,599	10,599	30.28	1,359	26.12	402	24.33	429	47.29	8	21.78	0	34.76	2	3.04	287	3.04	29
2023	4,785	2,392	2,392	31.12	149	26.80	88	25.20	93	48.57	1	22.08	0	35.74	1	3.07	38	3.07	9

Gasoline		Diesel		Electricity	
VMT	Gallons	VMT	Gallons	VMT	kWh
62,081	2,190	455	10	962	316
9,336	330	63	1	145	47
71,416	**2,520**	**518**	**12**	**1,107**	**364**

[1] *EMFAC2017 v1.0.3.*

Year	VMT from gasoline			VMT from diesel			VMT from electricity	
	LDA	LDT1	LDT2	LDA	LDT1	LDT2	LDA	LDT1
2022	97.06%	99.12%	98.39%	0.88%	0.04%	0.72%	2.06%	0.84%
2023	96.62%	98.85%	98.14%	0.92%	0.03%	0.76%	2.46%	1.12%

Appendix C: Evidence Used to Define the Average Number of KWH Required to Displace a Gallong of Gasoline

Table A 3: Evidence from U.S. Department of Energy and U.S. Environmental Protection Agency's fuel economy website[32]

Vehicle	Model year	Electric consumption	Gasoline fuel economy	Number of kWh that are equivalent to 1 gallon
Ford Fusion Energi & Ford C-Max Energi	2013	0.34 kWh per mile	43 mpg	14.6
Chevrolet Volt	2013	0.35 kWh per mile	37 mpg	12.9
Chevrolet Volt	2012	0.36 kWh per mile	37 mpg	13.3
Fisker Karma	2012	0.62 kWh per mile	20 mpg	12.4
Toyota Prius	2013	0.29 kWh per mile & 0.2 gal	50 mpg	13.1
Average for five models	-	-	-	13.3 +/- 0.8

Table A 5: Average power consumption per mile traveled over time for different PEV categories

Year range	2012- 2020	2020-2030	2030-2040	2040-2050	2050
Efficiency improvement per year	0.3%	0.8%	0.9%	0.9%	
Year	2012	2020	2030	2040	2050
Relative energy efficiency	1.000	0.976	0.901	0.823	0.752

https://www.fhwa.dot.gov/environment/climate_change/mitigation/publications_and_tools/ev_deployment/page08.cfm

0.34	14.6
0.35	12.9
0.36	13.3
0.34	13.3

Year	Estimated Electric Consumption
2013	0.34
2014	0.34
2015	0.34
2016	0.34
2017	0.34
2018	0.34
2019	0.34
2020	0.33
2021	0.33
2022	0.33
2023	0.33
2024	0.32
2025	0.32
2026	0.32
2027	0.32
2028	0.31
2029	0.31
2030	0.31
2031	0.31
2032	0.30
2033	0.30
2034	0.30
2035	0.29

Vendor Trips Fuel Usage Worksheet

Note: Based on CalEEMod methodology, vendor vehicles HHDT (T7).

Activity[1]	Daily trips[1,2]	Trip miles[2]	Trip days[1]	Annual VMT
2022				
Demolition	4	6.9	30	828
Site Preparation	4	6.9	21	580
Grading	4	6.9	59	1,628
Trenching	0	6.9	32	0
Fencing	3	6.9	32	662
Paving	0	6.9	23	0
2023				
Demolition	2	6.9	10	138
Site Preparation	2	6.9	15	207
Grading	2	6.9	37	511
Trenching	0	6.9	10	0
Paving	0	6.9	17	0

[1] *Based on information provided.*

[2] *Based on CalEEMod defaults.*

Year	HHDT (T7) VMT	MHDT (T6) VMT	Gasoline[1]				Diesel[1]			
			HHDT (T7) mpg	HHDT (T7) gallons	MHDT (T6) mpg	MHDT (T6) gallons	HHDT (T7) mpg	HHDT (T7) gallons	MHDT (T6) mpg	MHDT (T6) gallons
2022	1,849	1,849	4.10	0	5.04	59	6.59	272	10.52	148
2023	428	428	4.20	0	5.12	13	7.00	59	11.00	33

[1] *EMFAC2017 v1.0.3.*

Year	VMT from gasoline		VMT from diesel	
	HHDT (T7)	MHDT (T6)	HHDT (T7)	MHDT (T6)
2022	0.08%	16.07%	96.85%	83.93%
2023	0.08%	15.81%	96.71%	84.19%

VENDOR

Gasoline		Diesel	
VMT	Gallons	VMT	Gallons
298.79	59.31	3,343	419
67.98	13.30	774	92
366.77	**72.61**	**4,117**	**511**

Off-Road Construction Equipment Fuel Usage Worksheet

Year	Total Gasoline	Total Diesel Gallons	Total Natural Gas
2022	1,132	31,560	0
2023	377	4,491	0
Total	**1,509**	**36,051**	**0**

Equipment Type[1]	Number of Equipment[1]	Horsepower	OFFROAD2017 Horsepower Category	Fuel Type	Working days[1]	Hours Per Day	Total Hours of Operation	Gasoline Gal/Hr[2]	Total Gasoline gallons	Diesel Gal/Hr[2]	Total Diesel gallons	Natural Gas Gal/Hr[2]	Total Natural Gas gallons
2022													
Demolition													
Concrete/Industrial Saws	1	81	*100*	*Gasoline*	30	8	240	4.71	1,132	0.00	0	0.00	0
Excavators	3	158	*175*	*Diesel*	30	8	720	0.00	0	2.89	2,077	0.00	0
Rubber Tired Dozers	2	247	*300*	*Diesel*	30	8	480	0.00	0	4.54	2,178	0.00	0
Site Preparation													
Rubber Tired Dozers	3	247	*300*	*Diesel*	21	8	504	0.00	0	4.54	2,287	0.00	0
Tractors/Loaders/Backhoes	4	97	*100*	*Diesel*	21	8	672	0.00	0	1.59	1,069	0.00	0
Grading													
Excavators	2	158	*175*	*Diesel*	59	8	944	0.00	0	2.89	2,724	0.00	0
Graders	1	187	*300*	*Diesel*	59	8	472	0.00	0	4.58	2,161	0.00	0
Rubber Tired Dozers	1	247	*300*	*Diesel*	59	8	472	0.00	0	4.54	2,142	0.00	0
Scrapers	2	367	*600*	*Diesel*	59	8	944	0.00	0	10.55	9,964	0.00	0
Tractors/Loaders/Backhoes	2	97	*100*	*Diesel*	59	8	944	0.00	0	1.59	1,502	0.00	0
Trenching													
Trenchers	2	78	*100*	*Diesel*	32	8	512	0.00	0	2.18	1,115	0.00	0
Select Equipment Type			*25*	*Select Fuel Type*	32		0	0.00	0	0.00	0	0.00	0
Fencing													
Cranes	1	231	*300*	*Diesel*	32	7	224	0.00	0	3.28	736	0.00	0
Tractors/Loaders/Backhoes	1	97	*100*	*Diesel*	32	7	224	0.00	0	1.59	356	0.00	0
Welders	1	46	*50*	*Diesel*	32	8	256	0.00	0	1.19	305	0.00	0
Paving													
Cement and Mortar Mixers	2	9	*25*	*Diesel*	23	6	276	0.00	0	0.33	91	0.00	0
Pavers	2	130	*175*	*Diesel*	23	8	368	0.00	0	3.40	1,251	0.00	0
Paving Equipment	2	132	*175*	*Diesel*	23	8	368	0.00	0	2.66	980	0.00	0
Rollers	2	80	*100*	*Diesel*	23	8	368	0.00	0	1.69	623	0.00	0
							TOTAL		**1,132**		**31,560**		**0**
2023													
Demolition													
Concrete/Industrial Saws	1	81	*100*	*Gasoline*	10	8	80	4.71	377	0.00	0	0.00	0
Rubber Tired Dozers	1	247	*300*	*Diesel*	10	6	60	0.00	0	4.47	268	0.00	0
Tractors/Loaders/Backhoes	1	97	*100*	*Diesel*	10	6	60	0.00	0	1.59	96	0.00	0
Site Preparation													
Rubber Tired Dozers	1	247	*300*	*Diesel*	15	8	120	0.00	0	4.47	536	0.00	0
Tractors/Loaders/Backhoes	1	97	*100*	*Diesel*	15	8	120	0.00	0	1.59	191	0.00	0
Grading													
Rubber Tired Loaders	1	203	*300*	*Diesel*	37	6	222	0.00	0	3.89	864	0.00	0
Rubber Tired Dozers	1	247	*300*	*Diesel*	37	6	222	0.00	0	4.47	992	0.00	0
Tractors/Loaders/Backhoes	1	97	*100*	*Diesel*	37	7	259	0.00	0	1.59	412	0.00	0
Trenching													
Trenchers	1	78	*100*	*Diesel*	10	8	80	0.00	0	2.18	174	0.00	0
Paving													
Cement and Mortar Mixers	1	9	*25*	*Diesel*	17	6	102	0.00	0	0.33	34	0.00	0
Pavers	1	130	*175*	*Diesel*	17	7	119	0.00	0	3.40	404	0.00	0
Rollers	1	80	*100*	*Diesel*	17	7	119	0.00	0	1.69	202	0.00	0
Paving Equipment	1	132	*175*	*Diesel*	17	7	119	0.00	0	2.67	317	0.00	0
							TOTAL		**377**		**4,491**		**0**

[1] Based on information provided.
[2] OFFROAD2017 v.1.0.1

OFFROAD 2022

	Equipment Type	Horsepower	Gas				Diesel				Natural Gas			
		HP	Fuel (Gal/Yr)	Population	Hrs/Yr	Gal/Hr	Fuel (Gal/Yr)	Population	Hrs/Yr	Gal/Hr	Fuel (Gal/Yr)	Population	Hrs/Yr	Gal/Hr
Air Compressors25	Air Compressors	25	425546.2	2891.18	1397595.95	0.304484426	20294	45.5	37040.2	0.54789121	0	0	0	0
Air Compressors50	Air Compressors	50	129761.15	119.78	57896.3	2.24126844	228632.35	274.81	223693.9	1.02207682	0	0	0	0
Air Compressors75	Air Compressors	75	0	0	0	0	0	0	0	0	0	0	0	0
Air Compressors100	Air Compressors	100	707183.85	388.45	187770.6	3.766211803	0	0	0	0	0	0	0	0
Air Compressors175	Air Compressors	175	86563.4	26.12	12629	6.85433526	0	0	0	0	0	0	0	0
Air Compressors300	Air Compressors	300	0	0	0	0	0	0	0	0	0	0	0	0
Air Compressors600	Air Compressors	600	0	0	0	0	0	0	0	0	0	0	0	0
Air Compressors750	Air Compressors	750	0	0	0	0	0	0	0	0	0	0	0	0
Air Compressors9999	Air Compressors	9999	0	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts25	Aerial Lifts	25	99207	302.95	113701.15	0.872524157	83201.75	453.6	181138.55	0.459326576	183598.65	413.89	155347.65	1.181856629
Aerial Lifts50	Aerial Lifts	50	207874.8	361.73	130706.5	1.590393745	282188.7887	1140.475579	345146.8993	0.817590392	0	0	0	0
Aerial Lifts75	Aerial Lifts	75	0	0	0	0	347969.5943	1000.001711	301851.1379	1.152785432	0	0	0	0
Aerial Lifts100	Aerial Lifts	100	372745.3	361.73	130706.5	2.851773248	144416.4648	381.5937638	115340.597	1.252087024	0	0	0	0
Aerial Lifts175	Aerial Lifts	175	0	0	0	0	30092.65612	47.90105074	14474.13824	2.079063749	0	0	0	0
Aerial Lifts300	Aerial Lifts	300	0	0	0	0	1798.270451	1.61464216	490.6279125	3.665242855	0	0	0	0
Aerial Lifts600	Aerial Lifts	600	0	0	0	0	1277.032639	0.538214053	163.5426375	7.808560865	0	0	0	0
Bore/Drill rigs25	Bore/Drill rigs	25	7099.25	43.41	5380.1	1.31953867	6832.8	12.68	10300.3	0.66335932	0	0	0	0
Bore/Drill rigs50	Bore/Drill rigs	50	1361.45	4.91	529.25	2.572413793	7223.272208	17.74363412	6315.673619	1.143705746	0	0	0	0
Bore/Drill rigs75	Bore/Drill rigs	75	0	0	0	0	11259.9836	13.63458201	6175.496005	1.823332666	0	0	0	0
Bore/Drill rigs100	Bore/Drill rigs	100	15457.75	22.49	2401.7	6.436170213	33992.15644	40.53019582	15471.81083	2.197038007	0	0	0	0
Bore/Drill rigs175	Bore/Drill rigs	175	5383.75	5.57	594.95	9.049079755	52719.1283	42.77149698	13539.40801	3.89375431	0	0	0	0
Bore/Drill rigs300	Bore/Drill rigs	300	0	0	0	0	75652.99323	43.51859736	14079.84926	5.373139432	0	0	0	0
Bore/Drill rigs600	Bore/Drill rigs	600	0	0	0	0	127419.845	36.04759352	12172.40957	10.46792291	0	0	0	0
Bore/Drill rigs750	Bore/Drill rigs	750	0	0	0	0	68967.7292	7.284228743	4109.103011	16.78413245	0	0	0	0
Bore/Drill rigs9999	Bore/Drill rigs	9999	0	0	0	0	39472.5925	1.120650576	817.3827113	48.29144532	0	0	0	0
Cement and Mortar Mixers25	Cement and Mortar Mixers	25	234194.95	6545.81	602731.8	0.388555822	17534.6	176.7	53041.8	0.330580787	0	0	0	0
Cement and Mortar Mixers50	Cement and Mortar Mixers	50	0	0	0	0	0	0	0	0	0	0	0	0
Cement and Mortar Mixers75	Cement and Mortar Mixers	75	0	0	0	0	0	0	0	0	0	0	0	0
Cement and Mortar Mixers100	Cement and Mortar Mixers	100	0	0	0	0	0	0	0	0	0	0	0	0
Cement and Mortar Mixers175	Cement and Mortar Mixers	175	0	0	0	0	0	0	0	0	0	0	0	0
Cement and Mortar Mixers300	Cement and Mortar Mixers	300	0	0	0	0	0	0	0	0	0	0	0	0
Cement and Mortar Mixers600	Cement and Mortar Mixers	600	0	0	0	0	0	0	0	0	0	0	0	0
Cement and Mortar Mixers750	Cement and Mortar Mixers	750	0	0	0	0	0	0	0	0	0	0	0	0
Cement and Mortar Mixers9999	Cement and Mortar Mixers	9999	0	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws25	Concrete/Industrial Saws	25	209710.75	921.34	261821.8	0.80096749	558.45	1.26	755.55	0.739130435	0	0	0	0
Concrete/Industrial Saws50	Concrete/Industrial Saws	50	30966.6	18.29	11165.35	2.773455378	8913.3	11.1	6449.55	1.382003396	0	0	0	0
Concrete/Industrial Saws75	Concrete/Industrial Saws	75	0	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws100	Concrete/Industrial Saws	100	30167.25	10.48	6398.45	4.714774672	0	0	0	0	0	0	0	0
Concrete/Industrial Saws175	Concrete/Industrial Saws	175	0	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws300	Concrete/Industrial Saws	300	0	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws600	Concrete/Industrial Saws	600	0	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws750	Concrete/Industrial Saws	750	0	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws9999	Concrete/Industrial Saws	9999	0	0	0	0	0	0	0	0	0	0	0	0
Cranes25	Cranes	25	0	0	0	0	139.5500519	0.703722276	337.097097	0.413975834	0	0	0	0
Cranes50	Cranes	50	4485.85	5.57	2303.15	1.94770206	2260.93939	7.506370945	3279.327721	0.689452102	0	0	0	0
Cranes75	Cranes	75	0	0	0	0	912.0081716	2.34574092	874.6303057	1.042735617	0	0	0	0
Cranes100	Cranes	100	15351.9	11.14	4628.2	3.3170347	51092.59028	88.19985861	39145.3334	1.305202584	0	0	0	0
Cranes175	Cranes	175	1000.1	0.45	189.8	5.269230769	156451.227	156.9300676	71689.13731	2.182356112	0	0	0	0
Cranes300	Cranes	300	0	0	0	0	269770.6591	174.2885504	82158.17267	3.283552327	0	0	0	0
Cranes600	Cranes	600	0	0	0	0	470359.9588	173.5848281	86061.3176	5.465405039	0	0	0	0
Cranes750	Cranes	750	0	0	0	0	9439.022408	2.34574092	1001.912596	9.421003835	0	0	0	0
Cranes9999	Cranes	9999	0	0	0	0	25984.121	3.753185473	1860.465139	13.96646487	0	0	0	0
Crawler Tractors25	Crawler Tractors	25	0	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors50	Crawler Tractors	50	0	0	0	0	7322.68925	20.81908657	7104.759396	1.030673784	0	0	0	0
Crawler Tractors75	Crawler Tractors	75	0	0	0	0	788.120844	2.498290388	507.0411405	1.554352854	0	0	0	0
Crawler Tractors100	Crawler Tractors	100	0	0	0	0	322614.1304	355.1736168	166072.3834	1.942611552	0	0	0	0
Crawler Tractors175	Crawler Tractors	175	0	0	0	0	352855.5615	235.0474873	106568.0614	3.311081734	0	0	0	0
Crawler Tractors300	Crawler Tractors	300	0	0	0	0	370164.2176	182.1670075	81293.53505	4.553427494	0	0	0	0
Crawler Tractors600	Crawler Tractors	600	0	0	0	0	1294398.697	318.7402153	151368.1903	8.551325705	0	0	0	0
Crawler Tractors750	Crawler Tractors	750	0	0	0	0	13294.01599	2.290099522	967.4687428	13.74102893	0	0	0	0
Crawler Tractors9999	Crawler Tractors	9999	0	0	0	0	74650.66314	6.24572597	3457.9635	21.58804254	0	0	0	0
Crushing/Proc. Equipment25	Crushing/Proc. Equipment	25	3135.35	10.92	3149.95	0.995365006	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment50	Crushing/Proc. Equipment	50	0	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment75	Crushing/Proc. Equipment	75	0	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment100	Crushing/Proc. Equipment	100	11906.3	6.44	1554.9	7.657276995	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment175	Crushing/Proc. Equipment	175	0	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment300	Crushing/Proc. Equipment	300	0	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment600	Crushing/Proc. Equipment	600	0	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment750	Crushing/Proc. Equipment	750	0	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment9999	Crushing/Proc. Equipment	9999	0	0	0	0	0	0	0	0	0	0	0	0
Dumpers/Tenders25	Dumpers/Tenders	25	22385.45	436.26	65046.65	0.344144549	1744.7	7.62	5037	0.346376812	0	0	0	0
Dumpers/Tenders100	Dumpers/Tenders	100	1281.15	4.02	511	2.507142857	0	0	0	0	0	0	0	0
Excavators25	Excavators	25	0	0	0	0	12357.30299	12.36582151	16566.57362	0.745917851	0	0	0	0
Excavators50	Excavators	50	0	0	0	0	292797.4646	509.0014941	372468.2039	0.786100562	0	0	0	0
Excavators75	Excavators	75	0	0	0	0	68.99993976	0.20860717	66.0090264	1.045310672	0	0	0	0
Excavators100	Excavators	100	0	0	0	0	380018.9542	366.7314043	237525.2602	1.599909643	0	0	0	0
Excavators175	Excavators	175	0	0	0	0	802090.9179	469.9919533	278005.7126	2.885159842	0	0	0	0
Excavators300	Excavators	300	0	0	0	0	1024027.992	406.5753737	236932.3704	4.322026536	0	0	0	0
Excavators600	Excavators	600	0	0	0	0	1821199.805	424.098376	272666.6071	6.679218349	0	0	0	0
Excavators750	Excavators	750	0	0	0	0	14503.33389	2.294678867	1125.966245	12.88078924	0	0	0	0
Excavators9999	Excavators	9999	0	0	0	0	50563.86261	3.129107545	2123.965532	23.80634801	0	0	0	0
Forklifts25	Forklifts	25	4310.65	6.94	6252.45	0.689433742	86.20029709	0.483312357	149.0685375	0.578259494	4869.1	3.98	4967.65	0.980161646
Forklifts50	Forklifts	50	3486976.4	1208.73	2174509.4	1.603569246	198567.5427	556.9788403	395097.3182	0.502578817	6468471.6	2689.41	4845123.15	1.335047923
Forklifts75	Forklifts	75	0	0	0	0	17534.02907	48.39462601	23067.4757	0.760119109	0	0	0	0
Forklifts100	Forklifts	100	16104325.6	4265.67	7640873.5	2.107655048	2926261.836	4639.234727	2980270.518	0.981877926	40482310.6	9438.97	17004860.9	2.380631682
Forklifts175	Forklifts	175	1126594.4	155.89	279235.95	4.034560736	867307.5244	859.1842592	547900.9423	1.582964104	3038296.5	345.41	622284.85	4.882485087
Forklifts300	Forklifts	300	0	0	0	0	168204.4643	105.79333	74521.76038	2.257118772	0	0	0	0
Forklifts600	Forklifts	600	0	0	0	0	43590.34931	16.78925315	11226.07402	3.882955807	0	0	0	0
Forklifts750	Forklifts	750	0	0	0	0	677.4028394	0.241656178	52.17398811	12.98353574	0	0	0	0
Forklifts9999	Forklifts	9999	0	0	0	0	3149.397788	0.436941286	344.4026628	9.144522179	0	0	0	0
Generator Sets25	Generator Sets	25	6184899.45	75938.47	8725135.2	0.708860013	530735.55	2585.49	872813.55	0.608074371	0	0	0	0
Generator Sets50	Generator Sets	50	1008286.95	3941.99	452764.25	2.226957959	629690.7	1333.85	450289.55	1.398412866	0	0	0	0
Generator Sets75	Generator Sets	75	0	0	0	0	0	0	0	0	0	0	0	0
Generator Sets100	Generator Sets	100	454943.3	761.3	87446.7	5.202521079	0	0	0	0	40730.35	56.63	6515.25	6.251540616
Generator Sets175	Generator Sets	175	74288.45	71.93	8267.25	8.985871965	0	0	0	0	58878.15	46.98	5391.05	10.92146242
Generator Sets300	Generator Sets	300	0	0	0	0	0	0	0	0	0	0	0	0
Generator Sets600	Generator Sets	600	0	0	0	0	0	0	0	0	0	0	0	0
Generator Sets750	Generator Sets	750	0	0	0	0	0	0	0	0	0	0	0	0
Generator Sets9999	Generator Sets	9999	0	0	0	0	0	0	0	0	0	0	0	0
Graders25	Graders	25	0	0	0	0	56.29162018	0.419259876	95.7872322	0.587673523	0	0	0	0
Graders50	Graders	50	0	0	0	0	1880.479361	6.079268199	2142.520916	0.877694751	0	0	0	0
Graders75	Graders	75	0	0	0	0	811.1768655	1.677039503	533.7743515	1.519699969	0	0	0	0
Graders100	Graders	100	0	0	0	0	43083.52342	61.63120175	23068.91807	1.867600522	0	0	0	0
Graders175	Graders	175	0	0	0	0	489889.8789	329.5382624	155476.0881	3.150901756	0	0	0	0
Graders300	Graders	300	0	0	0	0	1033169.492	297.255252	225712.7945	4.577363434	0	0	0	0
Graders600	Graders	600	0	0	0	0	44405.5389	7.756307703	5944.076694	7.470552818	0	0	0	0
Graders750	Graders	750	0	0	0	0	0	0	0	0	0	0	0	0
Graders9999	Graders	9999	0	0	0	0	35066.52632	1.257779627	916.6838122	38.25367684	0	0	0	0
Pavers25	Pavers	25	19126	42.51	16844.75	1.135427952	3317.85	4.75	3912.8	0.847947761	0	0	0	0
Pavers50	Pavers	50	14464.95	15.85	6212.3	2.328437133	8031.548898	24.42914185	8668.167471	0.926556729	0	0	0	0
Pavers75	Pavers	75	0	0	0	0	12268.53505	23.61483712	7984.230128	1.536595872	0	0	0	0
Pavers100	Pavers	100	12997.65	8.68	3416.4	3.804487179	65216.53329	94.45934847	37551.43914	1.73672527	0	0	0	0
Pavers175	Pavers	175	0	0	0	0	106034.6808	80.81974427	31195.54266	3.399033058	0	0	0	0
Pavers300	Pavers	300	0	0	0	0	82805.88655	38.88305077	17492.61032	4.733763859	0	0	0	0
Pavers600	Pavers	600	0	0	0	0	15059.38712	4.275099823	1860.421199	8.094611657	0	0	0	0
Pavers750	Pavers	750	0	0	0	0	3106.322473	0.407152364	192.7861467	16.11278884	0	0	0	0
Pavers9999	Pavers	9999	0	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment25	Paving Equipment	25	405606.25	4653.79	880358.1	0.460728708	3927.4	8.24	6840.1	0.574172892	0	0	0	0
Paving Equipment50	Paving Equipment	50	16914.1	43.24	7570.1	2.234329797	9999.692597	30.08082237	14172.41813	0.705574201	0	0	0	0
Paving Equipment75	Paving Equipment	75	0	0	0	0	1547.978119	3.048731997	1221.491977	1.26728472	0	0	0	0
Paving Equipment100	Paving Equipment	100	6978.8	11.15	1945.45	3.587242026	41578.81811	55.08042475	25401.2751	1.63687917	0	0	0	0
Paving Equipment175	Paving Equipment	175	0	0	0	0	45072.23222	36.78803277	16932.09379	2.661940855	0	0	0	0
Paving Equipment300	Paving Equipment	300	0	0	0	0	30249.93797	15.24365999	7133.921782	4.240295716	0	0	0	0
Paving Equipment600	Paving Equipment	600	0	0	0	0	32397.66168	9.552693591	4444.828439	7.288844132	0	0	0	0
Paving Equipment750	Paving Equipment	750	0	0	0	0	6466.590168	1.016243999	549.7990881	11.76173316	0	0	0	0
Paving Equipment9999	Paving Equipment	9999	0	0	0	0	2934.636621	0.4064976	189.4577939	15.489659	0	0	0	0
Rollers25	Rollers	25	94553.25	503.55	125395.75	0.754038713	72390.45	272.14	189314.55	0.382381861	0	0	0	0
Rollers50	Rollers	50	18790.2	11.14	6927.7	2.712328767	164688.3147	617.3209126	213769.2814	0.770402153	0	0	0	0
Rollers75	Rollers	75	0	0	0	0	1827.242138	5.86329225	1349.139761	1.354375722	0	0	0	0
Rollers100	Rollers	100	58973.05	20.97	13030.5	4.525770308	255880.2178	455.2427626	151062.27	1.693872452	0	0	0	0
Rollers175	Rollers	175	0	0	0	0	266342.9136	266.3609908	95537.27497	2.787842899	0	0	0	0
Rollers300	Rollers	300	0	0	0	0	44111.51497	34.13273703	10510.37284	4.19695054	0	0	0	0
Rollers600	Rollers	600	0	0	0	0	25854.2926	12.35479438	3794.335973	6.813917582	0	0	0	0
Rollers750	Rollers	750	0	0	0	0	0	0	0	0	0	0	0	0
Rollers9999	Rollers	9999	0	0	0	0	0	0	0	0	0	0	0	0
Rough Terrain Forklifts25	Rough Terrain Forklifts	25	0	0	0	0	86.20029709	0.483312357	149.0685375	0.578259494	0	0	0	0
Rough Terrain Forklifts50	Rough Terrain Forklifts	50	3044.1	2.23	927.1	3.283464567	8302.767049	27.54880435	7522.99219	1.103652222	0	0	0	0
Rough Terrain Forklifts75	Rough Terrain Forklifts	75	0	0	0	0	228.8860252	0.724968535	165.9077611	1.379598059	0	0	0	0
Rough Terrain Forklifts100	Rough Terrain Forklifts	100	66758.5	31.68	13096.2	5.09754738	655944.8031	1158.983032	327439.5325	2.003254763	0	0	0	0
Rough Terrain Forklifts175	Rough Terrain Forklifts	175	3763.15	1.13	459.9	8.182539683	144272.8707	202.0245652	55355.22112	2.606310079	0	0	0	0
Rough Terrain Forklifts300	Rough Terrain Forklifts	300	0	0	0	0	10588.81417	9.666247139	2421.811628	4.372269935	0	0	0	0
Rough Terrain Forklifts600	Rough Terrain Forklifts	600	0	0	0	0	3936.757727	1.933249428	494.6867021	7.958082784	0	0	0	0
Rough Terrain Forklifts750	Rough Terrain Forklifts	750	0	0	0	0	677.4028394	0.241656178	52.17398811	12.98353574	0	0	0	0
Rough Terrain Forklifts9999	Rough Terrain Forklifts	9999	0	0	0	0	0	0	0	0	0	0	0	0
Rubber Tired Dozers25	Rubber Tired Dozers	25	0	0	0	0	0	0	0	0	0	0	0	0
Rubber Tired Dozers50	Rubber Tired Dozers	50	0	0	0	0	7315.859953	8.16832542	7759.963377	0.942769907	0	0	0	0
Rubber Tired Dozers75	Rubber Tired Dozers	75	0	0	0	0	7354.833538	6.972960725	5225.805176	1.407406762	0	0	0	0
Rubber Tired Dozers100	Rubber Tired Dozers	100	0	0	0	0	23334.42838	15.53974104	13407.9386	1.740344215	0	0	0	0
Rubber Tired Dozers175	Rubber Tired Dozers	175	0	0	0	0	32858.02555	14.34437635	11272.28161	2.914940088	0	0	0	0
Rubber Tired Dozers300	Rubber Tired Dozers	300	0	0	0	0	35526.72911	11.15673716	7828.466442	4.538146696	0	0	0	0
Rubber Tired Dozers600	Rubber Tired Dozers	600	0	0	0	0	369656.1513	66.94042296	48639.45136	7.599924362	0	0	0	0
Rubber Tired Dozers750	Rubber Tired Dozers	750	0	0	0	0	10568.69103	0.796909797	794.7265775	13.29852471	0	0	0	0
Rubber Tired Dozers9999	Rubber Tired Dozers	9999	0	0	0	0	0	0	0	0	0	0	0	0
Rubber Tired Loaders25	Rubber Tired Loaders	25	0	0	0	0	3277.7	4.44	4252.25	0.770815451	0	0	0	0
Rubber Tired Loaders50	Rubber Tired Loaders	50	7044.5	5.55	2857.95	2.464878672	22915.8451	30.73299419	26410.76017	0.867670788	0	0	0	0
Rubber Tired Loaders75	Rubber Tired Loaders	75	0	0	0	0	0	0	0	0	0	0	0	0
Rubber Tired Loaders100	Rubber Tired Loaders	100	70820.95	37.03	18976.35	3.732063858	557717.9142	381.8782184	349997.2498	1.593492276	0	0	0	0
Rubber Tired Loaders175	Rubber Tired Loaders	175	0	0	0	0	1322496.478	500.8647432	472179.4544	2.800834441	0	0	0	0
Rubber Tired Loaders300	Rubber Tired Loaders	300	0	0	0	0	1917153.874	461.8255344	492351.0526	3.893875851	0	0	0	0
Rubber Tired Loaders600	Rubber Tired Loaders	600	0	0	0	0	2470512.139	413.2341787	402293.1073	6.141074987	0	0	0	0
Rubber Tired Loaders750	Rubber Tired Loaders	750	0	0	0	0	240293.1238	19.93491515	20033.30335	11.99468303	0	0	0	0
Rubber Tired Loaders9999	Rubber Tired Loaders	9999	0	0	0	0	171495.7771	8.098559281	9549.461749	17.95868517	0	0	0	0
Scrapers25	Scrapers	25	0	0	0	0	58.56335263	0.205317872	84.43520914	0.693589241	0	0	0	0
Scrapers50	Scrapers	50	0	0	0	0	466.1193715	1.231907234	441.1739677	1.056543236	0	0	0	0
Scrapers75	Scrapers	75	0	0	0	0	4113.375203	5.543582555	2429.388601	1.693173008	0	0	0	0
Scrapers100	Scrapers	100	0	0	0	0	18538.72607	13.55097958	8195.609758	2.262031333	0	0	0	0
Scrapers175	Scrapers	175	0	0	0	0	250103.4026	133.6619349	59699.21099	4.189392095	0	0	0	0
Scrapers300	Scrapers	300	0	0	0	0	294776.7383	130.5821669	53032.34761	5.55843276	0	0	0	0
Scrapers600	Scrapers	600	0	0	0	0	3652877.582	720.6657322	346083.9734	10.55488801	0	0	0	0
Scrapers750	Scrapers	750	0	0	0	0	56125.42179	9.855257876	3598.816247	15.59552306	0	0	0	0
Scrapers9999	Scrapers	9999	0	0	0	0	84412.75304	5.338264683	2118.854665	39.83885938	0	0	0	0
Skid Steer Loaders25	Skid Steer Loaders	25	309676.95	879.3	280736.1	1.103089165	319104.9	609.03	508357.4	0.627717625	0	0	0	0
Skid Steer Loaders50	Skid Steer Loaders	50	90268.15	152.11	47194.5	1.912683681	124648.2657	427.5717884	134624.1737	0.925898093	0	0	0	0
Skid Steer Loaders75	Skid Steer Loaders	75	0	0	0	0	652894.6906	1359.2416	485436.1672	1.344965074	0	0	0	0
Skid Steer Loaders100	Skid Steer Loaders	100	120552.2	90.99	28236.4	4.269389866	9512.441212	20.5624509	6662.956663	1.427660676	0	0	0	0
Skid Steer Loaders175	Skid Steer Loaders	175	0	0	0	0	4472.84324	5.723568808	1545.447553	2.89420578	0	0	0	0
Skid Steer Loaders300	Skid Steer Loaders	300	0	0	0	0	4156.636498	3.603728509	1063.554631	3.908249166	0	0	0	0
Skid Steer Loaders600	Skid Steer Loaders	600	0	0	0	0	1201.696559	0.42396806	133.1864861	9.022661336	0	0	0	0
Skid Steer Loaders750	Skid Steer Loaders	750	0	0	0	0	0	0	0	0	0	0	0	0
Skid Steer Loaders9999	Skid Steer Loaders	9999	0	0	0	0	1626.662009	0.42396806	85.48150834	19.02940227	0	0	0	0
Surfacing Equipment25	Surfacing Equipment	25	198052.65	1255.97	537371.25	0.368558329	0	0	0	0	0	0	0	0
Surfacing Equipment50	Surfacing Equipment	50	0	0	0	0	1155.306637	7.50022009	1829.111308	0.631621833	0	0	0	0
Surfacing Equipment75	Surfacing Equipment	75	0	0	0	0	696.6271679	2.692386699	669.6050043	1.040355379	0	0	0	0
Surfacing Equipment100	Surfacing Equipment	100	0	0	0	0	7147.395687	18.46208022	5124.631212	1.394714154	0	0	0	0
Surfacing Equipment175	Surfacing Equipment	175	0	0	0	0	5867.117516	10.96186013	2723.89516	2.153943955	0	0	0	0
Surfacing Equipment300	Surfacing Equipment	300	0	0	0	0	11897.01945	13.65424683	3360.766849	3.539971674	0	0	0	0
Surfacing Equipment600	Surfacing Equipment	600	0	0	0	0	41719.66887	22.6929736	6493.498923	6.424836497	0	0	0	0
Surfacing Equipment750	Surfacing Equipment	750	0	0	0	0	16154.28643	5.577086733	1621.507394	9.962511727	0	0	0	0
Surfacing Equipment9999	Surfacing Equipment	9999	0	0	0	0	6893.753691	1.923133356	511.2109072	13.48514594	0	0	0	0
Sweepers/Scrubbers25	Sweepers/Scrubbers	25	97265.2	397.68	107463.3	0.905101556	21367.1	45.73	29743.85	0.718370352	0	0	0	0
Sweepers/Scrubbers50	Sweepers/Scrubbers	50	455698.85	336.42	173750.95	2.622712854	76008.13404	115.1754155	81424.77905	0.9334767	0	0	0	0
Sweepers/Scrubbers75	Sweepers/Scrubbers	75	0	0	0	0	22533.85346	22.01583164	13100.09715	1.720128729	0	0	0	0
Sweepers/Scrubbers100	Sweepers/Scrubbers	100	649605.1	280.9	145069.25	4.477896591	94939.23834	71.75530314	50904.45886	1.865047591	0	0	0	0
Sweepers/Scrubbers175	Sweepers/Scrubbers	175	7610.25	1.61	839.5	9.065217391	29302.48154	10.80406553	7777.716952	3.767491376	0	0	0	0
Sweepers/Scrubbers300	Sweepers/Scrubbers	300	0	0	0	0	17597.47359	4.892407032	3560.051999	4.943038359	0	0	0	0
Sweepers/Scrubbers600	Sweepers/Scrubbers	600	0	0	0	0	2376.518375	0.407700586	305.5198994	7.778604207	0	0	0	0
Sweepers/Scrubbers750	Sweepers/Scrubbers	750	0	0	0	0	0	0	0	0	0	0	0	0
Sweepers/Scrubbers9999	Sweepers/Scrubbers	9999	0	0	0	0	3053.466033	0.203850293	152.7599497	19.98865566	0	0	0	0
Tractors/Loaders/Backhoes25	Tractors/Loaders/Backhoes	25	0	0	0	0	60871.05	89.44	84333.25	0.72179182	0	0	0	0
Tractors/Loaders/Backhoes50	Tractors/Loaders/Backhoes	50	0	0	0	0	246171.6444	598.3998931	309366.2746	0.795728768	0	0	0	0
Tractors/Loaders/Backhoes75	Tractors/Loaders/Backhoes	75	0	0	0	0	36252.16783	115.7184462	26526.97668	1.366615136	0	0	0	0
Tractors/Loaders/Backhoes100	Tractors/Loaders/Backhoes	100	50026.9	19.6	17092.95	2.926756353	3931683.53	3947.354277	2471598.783	1.59074505	0	0	0	0
Tractors/Loaders/Backhoes175	Tractors/Loaders/Backhoes	175	0	0	0	0	686041.4525	454.5337167	252326.3914	2.718865232	0	0	0	0
Tractors/Loaders/Backhoes300	Tractors/Loaders/Backhoes	300	0	0	0	0	432492.0443	193.0725788	108790.7579	3.9754484	0	0	0	0
Tractors/Loaders/Backhoes600	Tractors/Loaders/Backhoes	600	0	0	0	0	564553.9997	162.4228281	88040.81909	6.412411941	0	0	0	0
Tractors/Loaders/Backhoes750	Tractors/Loaders/Backhoes	750	0	0	0	0	10684.07897	1.876515344	890.5522455	11.99713888	0	0	0	0
Tractors/Loaders/Backhoes9999	Tractors/Loaders/Backhoes	9999	0	0	0	0	192783.9487	8.757071606	5465.499433	35.27288789	0	0	0	0
Trenchers25	Trenchers	25	190650.45	451.47	196107.2	0.972174658	28904.35	48.84	30214.7	0.956632037	0	0	0	0
Trenchers50	Trenchers	50	89899.5	101.5	40825.25	2.202056325	87281.88315	196.2209796	75591.19967	1.154656673	0	0	0	0
Trenchers75	Trenchers	75	0	0	0	0	5210.681916	10.47998414	2838.815499	1.835512705	0	0	0	0
Trenchers100	Trenchers	100	56147.95	33.68	13548.8	4.144127155	57538.27014	80.04924055	26419.19637	2.177896305	0	0	0	0
Trenchers175	Trenchers	175	0	0	0	0	13450.09483	12.48678961	3685.747893	3.649217262	0	0	0	0
Trenchers300	Trenchers	300	0	0	0	0	29044.29595	16.05444379	4950.670079	5.866740357	0	0	0	0
Trenchers600	Trenchers	600	0	0	0	0	44069.78149	12.04083284	4437.671029	9.930835613	0	0	0	0
Trenchers750	Trenchers	750	0	0	0	0	14156.1557	1.783827087	841.0739144	16.83104833	0	0	0	0
Trenchers9999	Trenchers	9999	0	0	0	0	1138.987576	0.222978386	50.9433019	22.35794566	0	0	0	0
Welders25	Welders	25	1544924.55	9279.76	1927805.9	0.801390093	239582.35	953.34	612229.1	0.391327936	0	0	0	0
Welders50	Welders	50	314166.45	625.96	130038.55	2.415948578	1049451.65	1373.5	882073.6	1.189755197	0	0	0	0
Welders75	Welders	75	0	0	0	0	0	0	0	0	0	0	0	0
Welders100	Welders	100	441522.25	638.91	132721.3	3.326687201	0	0	0	0	0	0	0	0
Welders175	Welders	175	55067.55	44.05	9150.55	6.017949741	0	0	0	0	0	0	0	0
Welders300	Welders	300	0	0	0	0	0	0	0	0	0	0	0	0
Welders600	Welders	600	0	0	0	0	0	0	0	0	0	0	0	0
Welders750	Welders	750	0	0	0	0	0	0	0	0	0	0	0	0
Welders9999	Welders	9999	0	0	0	0	0	0	0	0	0	0	0	0

Model Output: OFFROAD2017 (v1.0.1) Emissions Inventory
Region Type: Sub-Area
Region: Los Angeles (SC)
Calendar Year: 2022
Scenario: All Adopted Rules - Exhaust
Vehicle Classification: OFFROAD2017 Equipment Types
Units: tons/day for Emissions, gallons/year for Fuel, hours/year for Activity, Horsepower-hours/year for Horsepower-hours

Region	Calendar Year	Vehicle Category	Model Year	Horsepower Bi	Fuel	HC_tpd	ROG_tpd	TOG_tpd	CO_tpd	NOx_tpd	CO2_tpd	PM10_tpd	PM2.5_tpd	SOx_tpd	NH3_tpd	Fuel Consump	Total_Activity_hpy	Total_Population	Horsepower_Hours_hhpy
Los Angeles (SC)	2022	Agricultural - Agricultural Tractors	Aggregate	50	Diesel	0.00415234	0.005024331	0.00597937	0.013260138	0.012004766	0.169079291	0.001115266	0.001026044	1.44914E-06	1.38926E-06	39173.77432	35097.62866	109.3946977	1432061
Los Angeles (SC)	2022	Agricultural - Agricultural Tractors	Aggregate	75	Diesel	0.004017591	0.004861286	0.005785332	0.016359606	0.030047605	0.317243969	0.002336336	0.00214943	2.83222E-06	2.60667E-06	73501.8676	41590.28735	117.9832372	2623340
Los Angeles (SC)	2022	Agricultural - Agricultural Tractors	Aggregate	100	Diesel	0.004578695	0.005540221	0.006593321	0.031677858	0.037440062	0.706976603	0.003034553	0.002791789	6.44283E-06	5.80895E-06	163798.5452	68455.86576	123.5844156	5865294
Los Angeles (SC)	2022	Agricultural - Agricultural Tractors	Aggregate	175	Diesel	0.002868233	0.003470562	0.004130255	0.018736989	0.026306176	0.406861299	0.001527502	0.001405302	3.70082E-06	3.34302E-06	94265.1973	30186.20791	46.35430285	3658247
Los Angeles (SC)	2022	Agricultural - Agricultural Tractors	Aggregate	300	Diesel	0.002278164	0.002756578	0.003280556	0.008547679	0.023681061	0.417341406	0.001009034	0.000928311	3.81606E-06	3.42913E-06	96693.32032	17522.08851	21.15976872	3796920
Los Angeles (SC)	2022	Agricultural - Agricultural Tractors	Aggregate	600	Diesel	0.00122769	0.001485505	0.001767874	0.005511126	0.010786115	0.345975009	0.000490549	0.000451305	3.18333E-06	2.84274E-06	80158.52703	8693.503559	7.774536087	3195744
Los Angeles (SC)	2022	Agricultural - Bale Wagons (Self Propelled)	Aggregate	50	Diesel	1.6802E-06	2.03305E-06	2.41949E-06	1.15519E-05	1.19582E-05	0.000205348	6.21334E-07	5.71627E-07	1.86087E-09	1.68727E-09	47.57686859	46.64398981	0.072960484	1632.54
Los Angeles (SC)	2022	Agricultural - Bale Wagons (Self Propelled)	Aggregate	100	Diesel	1.20396E-05	1.4568E-05	1.73371E-05	0.000122526	0.000107782	0.002850321	9.00587E-06	8.2854E-06	2.61682E-08	2.342E-08	660.3873438	270.330082	0.435358426	22654.76
Los Angeles (SC)	2022	Agricultural - Bale Wagons (Self Propelled)	Aggregate	175	Diesel	3.09794E-05	3.74851E-05	4.46104E-05	0.000335795	0.000293051	0.008075809	1.80863E-05	1.66394E-05	7.42363E-08	6.63558E-08	1871.074328	559.021453	0.896678691	71934.18
Los Angeles (SC)	2022	Agricultural - Bale Wagons (Self Propelled)	Aggregate	300	Diesel	8.05893E-06	9.7513E-06	1.16049E-05	3.61382E-05	8.69724E-05	0.002455558	3.52247E-06	3.24067E-06	2.26134E-08	2.01764E-08	568.9251926	112.1818207	0.181095311	21702.87
Los Angeles (SC)	2022	Agricultural - Balers (Self Propelled)	Aggregate	50	Diesel	2.88581E-05	3.49183E-05	4.15557E-05	0.00013533	0.000149816	0.002499162	9.43918E-06	8.68405E-06	2.23952E-08	2.05346E-08	579.0278523	429.7745036	1.324629313	19800.67
Los Angeles (SC)	2022	Agricultural - Balers (Self Propelled)	Aggregate	75	Diesel	1.34218E-05	1.62404E-05	1.93274E-05	9.72912E-05	0.000132097	0.002290366	8.18867E-06	7.53358E-06	2.0915E-08	1.8819E-08	530.6521843	281.2568501	0.859782051	18254.75
Los Angeles (SC)	2022	Agricultural - Balers (Self Propelled)	Aggregate	100	Diesel	2.88417E-06	3.48984E-06	4.1532E-06	2.13456E-05	2.61093E-05	0.000502503	1.93916E-06	1.78403E-06	4.59053E-09	4.12887E-09	116.4243008	50.49813284	0.155388989	4001.508
Los Angeles (SC)	2022	Agricultural - Balers (Self Propelled)	Aggregate	175	Diesel	1.16328E-06	1.40757E-06	1.67513E-06	1.01381E-05	1.27997E-05	0.000249889	6.67303E-07	6.13919E-07	2.29094E-09	2.05324E-09	57.89639812	21.10288997	0.065061031	2221.322
Los Angeles (SC)	2022	Agricultural - Combine Harvesters	Aggregate	75	Diesel	2.61323E-06	3.16201E-06	3.76305E-06	1.64649E-05	2.29808E-05	0.000374963	1.67752E-06	1.54331E-06	3.41157E-09	3.08092E-09	86.8747009	60.3508206	0.165712142	3359.017
Los Angeles (SC)	2022	Agricultural - Combine Harvesters	Aggregate	100	Diesel	2.06237E-05	2.49547E-05	2.96981E-05	0.000130497	0.000176892	0.002968177	1.42347E-05	1.30959E-05	2.70076E-08	2.43884E-08	687.693222	305.8377297	0.848422998	25973.14
Los Angeles (SC)	2022	Agricultural - Combine Harvesters	Aggregate	175	Diesel	3.03575E-05	3.67326E-05	4.37148E-05	0.000227084	0.000318998	0.005503528	1.73122E-05	1.59272E-05	5.03134E-08	4.52203E-08	1275.105596	400.7773243	1.125691145	55984.7
Los Angeles (SC)	2022	Agricultural - Combine Harvesters	Aggregate	300	Diesel	0.000151884	0.000183779	0.000218712	0.000659237	0.001977835	0.039877641	7.29937E-05	6.71542E-05	3.66605E-07	3.27659E-07	9239.20181	1699.792102	4.54606255	393195
Los Angeles (SC)	2022	Agricultural - Combine Harvesters	Aggregate	600	Diesel	3.26886E-05	3.95533E-05	4.70716E-05	0.000237859	0.00040444	0.015221702	1.69324E-05	1.55778E-05	1.40695E-07	1.25071E-07	3526.697551	442.0093845	0.97866324	146243.6
Los Angeles (SC)	2022	Agricultural - Construction Equipment	Aggregate	50	Diesel	0.000293256	0.000354839	0.000422288	0.001048416	0.000974939	0.014428996	8.23729E-05	7.5783E-05	1.255E-07	1.18557E-07	3343.03638	3232.606056	8.369733738	143164
Los Angeles (SC)	2022	Agricultural - Construction Equipment	Aggregate	75	Diesel	0.000202849	0.000245447	0.000292102	0.001077321	0.001686739	0.023132044	0.000120754	0.000111093	2.09216E-07	1.90067E-07	5359.434962	3627.096735	10.00863438	228473.5
Los Angeles (SC)	2022	Agricultural - Construction Equipment	Aggregate	100	Diesel	0.000392983	0.000475509	0.000565895	0.002488141	0.003178839	0.05468155	0.00026081	0.000239946	4.9716E-07	4.49297E-07	12669.10148	6432.067538	13.25172434	542427.3
Los Angeles (SC)	2022	Agricultural - Construction Equipment	Aggregate	175	Diesel	0.000778175	0.000941591	0.001120572	0.005544894	0.007070145	0.123389699	0.000420877	0.000387207	1.12511E-06	1.01385E-06	28588.00848	11140.00153	17.98666807	1364602
Los Angeles (SC)	2022	Agricultural - Construction Equipment	Aggregate	300	Diesel	0.00042121	0.000509664	0.000606543	0.001648434	0.004600858	0.081465581	0.000195022	0.00017942	7.45605E-07	6.69371E-07	18874.66083	4558.502318	8.173767992	897144.6
Los Angeles (SC)	2022	Agricultural - Construction Equipment	Aggregate	600	Diesel	5.94983E-05	7.19929E-05	8.56775E-05	0.000268493	0.000581514	0.009837446	2.50612E-05	2.30563E-05	8.97772E-08	8.08305E-08	2279.225958	311.1949317	0.352486404	109915.9
Los Angeles (SC)	2022	Agricultural - Cotton Pickers	Aggregate	100	Diesel	5.28189E-06	6.39109E-06	7.60593E-06	6.8248E-05	5.67746E-05	0.001684483	4.25665E-06	3.91611E-06	1.55199E-08	1.38407E-08	390.2758486	167.6671611	0.371600924	15090.04
Los Angeles (SC)	2022	Agricultural - Cotton Pickers	Aggregate	175	Diesel	1.17737E-05	1.42461E-05	1.69541E-05	0.000161243	0.000132592	0.004100096	7.50032E-06	6.9003E-06	3.78085E-08	3.36889E-08	949.9463081	330.2353119	0.72279698	40083.57
Los Angeles (SC)	2022	Agricultural - Cotton Pickers	Aggregate	300	Diesel	1.05955E-05	1.28206E-05	1.52575E-05	5.85388E-05	0.000136318	0.004304969	5.22089E-06	4.80322E-06	3.97507E-08	3.53723E-08	997.4130245	173.4728482	0.375770372	42868.68
Los Angeles (SC)	2022	Agricultural - Cotton Pickers	Aggregate	600	Diesel	3.08257E-05	3.72991E-05	4.4389E-05	0.000171591	0.000386103	0.012894029	1.53979E-05	1.41656E-05	1.19087E-07	1.05945E-07	2987.401808	393.7766539	0.861878526	127956.5
Los Angeles (SC)	2022	Agricultural - Forage & Silage Harvesters	Aggregate	100	Diesel	1.06003E-06	1.28263E-06	1.52644E-06	6.71717E-06	9.10932E-06	0.000152973	7.32729E-07	6.7411E-07	1.392E-09	1.25692E-09	35.44215471	17.12966907	0.046837522	1370.374
Los Angeles (SC)	2022	Agricultural - Forage & Silage Harvesters	Aggregate	300	Diesel	1.03721E-06	1.25503E-06	1.49359E-06	4.19203E-06	1.3603E-05	0.000244003	4.9308E-07	4.53633E-07	2.23994E-09	2.00487E-09	56.53265418	11.04560765	0.031121947	2430.034
Los Angeles (SC)	2022	Agricultural - Forage & Silage Harvesters	Aggregate	600	Diesel	1.12531E-05	1.36162E-05	1.62044E-05	6.18766E-05	0.000143298	0.003664958	5.56353E-06	5.11845E-06	3.3774E-08	3.01135E-08	849.1295886	90.01318084	0.222970244	37665.92
Los Angeles (SC)	2022	Agricultural - Forage & Silage Harvesters	Aggregate	750	Diesel	2.09027E-05	2.52923E-05	3.00999E-05	0.000148313	0.000259947	0.009444581	1.07687E-05	9.90722E-06	8.72784E-08	7.76024E-08	2188.203508	154.6091812	0.338952434	93499.56
Los Angeles (SC)	2022	Agricultural - Forage & Silage Harvesters	Aggregate	9999	Diesel	1.28142E-05	1.55051E-05	1.84524E-05	8.92975E-05	0.000285143	0.005630295	6.71609E-06	6.1788E-06	5.20196E-08	4.62619E-08	1304.476271	65.20045812	0.141727356	56072.39
Los Angeles (SC)	2022	Agricultural - Forklifts	Aggregate	50	Diesel	2.4623E-05	2.97938E-05	3.54571E-05	0.000100448	9.39102E-05	0.00146915	7.07339E-06	6.50752E-06	1.29354E-08	1.20714E-08	340.385641	440.7762972	0.731080016	14599.87
Los Angeles (SC)	2022	Agricultural - Forklifts	Aggregate	75	Diesel	2.01214E-06	2.43469E-06	2.89749E-06	1.13664E-05	1.65202E-05	0.000236946	1.16486E-06	1.07167E-06	2.14502E-09	1.9469E-09	54.8978234	36.22594005	0.043057306	2354.686
Los Angeles (SC)	2022	Agricultural - Forklifts	Aggregate	100	Diesel	7.84187E-07	9.48867E-07	1.12923E-06	4.51741E-06	5.94193E-06	9.4171E-05	4.92038E-07	4.52675E-07	8.52972E-10	7.73767E-10	21.81836604	12.07531346	0.014352436	935.8368
Los Angeles (SC)	2022	Agricultural - Hay Squeeze/Stack retriever	Aggregate	75	Diesel	1.4824E-06	1.7937E-06	2.13465E-06	6.57347E-06	1.07507E-05	0.000127579	8.96014E-07	8.24333E-07	1.14297E-09	1.04827E-09	29.55867732	19.22045305	0.032549457	1207.462
Los Angeles (SC)	2022	Agricultural - Hay Squeeze/Stack retriever	Aggregate	100	Diesel	1.64151E-06	1.98623E-06	2.36377E-06	7.31536E-06	1.16574E-05	0.000141978	1.03604E-06	9.53154E-07	1.27222E-09	1.16658E-09	32.89471062	17.33855731	0.029342136	1343.738
Los Angeles (SC)	2022	Agricultural - Hay Squeeze/Stack retriever	Aggregate	175	Diesel	3.53903E-05	4.28223E-05	5.09621E-05	0.000187305	0.000315572	0.003895103	1.86248E-05	1.71348E-05	3.5192E-08	3.20045E-08	902.4516837	313.9389822	0.530195372	37841.22
Los Angeles (SC)	2022	Agricultural - Hay Squeeze/Stack retriever	Aggregate	300	Diesel	8.31391E-05	0.000100598	0.00011972	0.000286518	0.000867933	0.011080121	3.74671E-05	3.44698E-05	1.00634E-07	9.1041E-08	2567.139751	490.6870373	0.825749067	116516.6
Los Angeles (SC)	2022	Agricultural - Hay Squeeze/Stack retriever	Aggregate	600	Diesel	2.29142E-05	2.77262E-05	3.29965E-05	0.000118613	0.000237935	0.003317167	1.01422E-05	9.33085E-06	3.01871E-08	2.72559E-08	768.5503974	107.6378322	0.182661106	34232.83
Los Angeles (SC)	2022	Agricultural - Nut Harvester	Aggregate	50	Diesel	5.73016E-05	6.9335E-05	8.25143E-05	0.000644699	0.000793768	0.015712518	2.65874E-05	2.44604E-05	1.44525E-07	1.29104E-07	3640.414194	3522.459702	8.974924833	141095.7
Los Angeles (SC)	2022	Agricultural - Nut Harvester	Aggregate	75	Diesel	3.40186E-05	4.11625E-05	4.89867E-05	0.000553508	0.000542971	0.014226086	2.11023E-05	1.94141E-05	1.31389E-07	1.1689E-07	3296.024481	1967.352646	4.992759107	128413.6
Los Angeles (SC)	2022	Agricultural - Nut Harvester	Aggregate	100	Diesel	7.51636E-05	9.0948E-05	0.000108236	0.001919579	0.000983338	0.049653741	6.73882E-05	6.19972E-05	4.59898E-07	4.07985E-07	11504.21461	5440.990586	9.718681527	447648.8
Los Angeles (SC)	2022	Agricultural - Nut Harvester	Aggregate	175	Diesel	8.26275E-05	9.99793E-05	0.000118984	0.001519011	0.000965423	0.039382539	5.42035E-05	4.98672E-05	3.64075E-07	3.23591E-07	9124.492418	3107.540021	6.294991741	382474
Los Angeles (SC)	2022	Agricultural - Nut Harvester	Aggregate	300	Diesel	6.30433E-06	7.62824E-06	9.07824E-06	4.31816E-05	7.71576E-05	0.003198337	3.2211E-06	2.96341E-06	2.95794E-08	2.62795E-08	741.0187686	161.5134723	0.331594282	31999.63
Los Angeles (SC)	2022	Agricultural - Nut Harvester	Aggregate	600	Diesel	4.40579E-05	5.33101E-05	6.34434E-05	0.000351858	0.000577564	0.027597517	2.41827E-05	2.22481E-05	2.55542E-07	2.26758E-07	6394.034922	845.6770782	1.984648872	274845.1
Los Angeles (SC)	2022	Agricultural - Other Harvesters	Aggregate	50	Diesel	3.04419E-05	3.68347E-05	4.38364E-05	0.000188924	0.000176171	0.002930534	9.88796E-06	9.09692E-06	2.63627E-08	2.40791E-08	678.971901	688.7303064	0.546347887	26252.5
Los Angeles (SC)	2022	Agricultural - Other Harvesters	Aggregate	75	Diesel	3.66021E-05	4.42885E-05	5.2707E-05	0.000336617	0.000341611	0.007501586	2.03972E-05	1.87654E-05	6.8723E-08	6.16376E-08	1738.033344	1006.043111	0.71743871	67852.67
Los Angeles (SC)	2022	Agricultural - Other Harvesters	Aggregate	100	Diesel	0.000128936	0.000156012	0.000185667	0.001150825	0.000997909	0.025407951	8.81044E-05	8.10561E-05	2.32617E-07	2.08767E-07	5886.73707	2656.847352	2.14084152	227648.7
Los Angeles (SC)	2022	Agricultural - Other Harvesters	Aggregate	175	Diesel	9.3116E-05	0.00011267	0.000134087	0.000729331	0.000867991	0.016816246	5.18033E-05	4.76591E-05	1.53724E-07	1.38173E-07	3896.135395	1283.995529	1.894175295	170524.2
Los Angeles (SC)	2022	Agricultural - Other Harvesters	Aggregate	300	Diesel	7.88885E-05	9.54551E-05	0.000113599	0.000310865	0.000859897	0.016862171	3.54736E-05	3.26357E-05	1.54578E-07	1.3855E-07	3906.77589	778.0129336	1.171866959	166032.4
Los Angeles (SC)	2022	Agricultural - Other Harvesters	Aggregate	600	Diesel	2.09106E-05	2.53018E-05	3.01113E-05	0.000110743	0.000225976	0.004209798	9.47856E-06	8.72027E-06	3.85554E-08	3.45903E-08	975.3630301	109.3783566	0.182738339	42099.54
Los Angeles (SC)	2022	Agricultural - Others	Aggregate	50	Diesel	2.11365E-05	2.55752E-05	3.04366E-05	8.87387E-05	8.59165E-05	0.001361464	6.25427E-06	5.75393E-06	1.20377E-08	1.11866E-08	315.4359625	300.660646	0.572829153	13529.73
Los Angeles (SC)	2022	Agricultural - Others	Aggregate	75	Diesel	3.94519E-06	4.77368E-06	5.68108E-06	2.52788E-05	3.49851E-05	0.000561362	2.39458E-06	2.20301E-06	5.10652E-09	4.61249E-09	130.0612071	85.82470442	0.17383289	5578.606
Los Angeles (SC)	2022	Agricultural - Others	Aggregate	100	Diesel	1.60126E-05	1.93753E-05	2.30582E-05	0.000104127	0.000131471	0.002308763	1.05931E-05	9.74565E-06	2.10085E-08	1.89702E-08	534.9145259	263.5117819	0.528674867	22943.64
Los Angeles (SC)	2022	Agricultural - Others	Aggregate	175	Diesel	4.50488E-05	5.4509E-05	6.48702E-05	0.00034113	0.000446301	0.007929058	2.5205E-05	2.31886E-05	7.24483E-08	6.515E-08	1837.073858	687.0591409	1.39121158	87598.89
Los Angeles (SC)	2022	Agricultural - Others	Aggregate	300	Diesel	5.05254E-05	6.11357E-05	7.27566E-05	0.000208666	0.000571278	0.010384904	2.42874E-05	2.23444E-05	9.51418E-08	8.53287E-08	2406.065828	527.0235294	1.057349722	114730.7
Los Angeles (SC)	2022	Agricultural - Others	Aggregate	600	Diesel	0.000234225	0.000283413	0.000337285	0.001411241	0.002677747	0.052542648	0.000112064	0.000103099	4.82014E-07	4.31722E-07	12173.54188	1553.67422	3.146876576	580482.2
Los Angeles (SC)	2022	Agricultural - Sprayers/Spray rigs	Aggregate	50	Diesel	5.2906E-05	6.40163E-05	7.61847E-05	0.000213999	0.000206552	0.003264793	1.53882E-05	1.41571E-05	2.87999E-08	2.68255E-08	756.4159638	818.8874546	1.462933369	30761.05
Los Angeles (SC)	2022	Agricultural - Sprayers/Spray rigs	Aggregate	75	Diesel	1.12168E-05	1.35723E-05	1.61522E-05	6.84968E-05	9.79157E-05	0.001504338	6.74904E-06	6.20912E-06	1.36651E-08	1.23606E-08	348.5381241	235.8295143	0.4230389	14235.26
Los Angeles (SC)	2022	Agricultural - Sprayers/Spray rigs	Aggregate	100	Diesel	3.65709E-05	4.42508E-05	5.26621E-05	0.000226819	0.000295937	0.004975974	2.38125E-05	2.19075E-05	4.52168E-08	4.08856E-08	1152.877253	536.1108723	0.955012484	47426.98
Los Angeles (SC)	2022	Agricultural - Sprayers/Spray rigs	Aggregate	175	Diesel	4.74844E-05	5.74562E-05	6.83776E-05	0.000349063	0.00047121	0.008028868	2.63906E-05	2.42794E-05	7.33042E-08	6.59701E-08	1860.198706	692.6990153	1.239410714	82605.47
Los Angeles (SC)	2022	Agricultural - Sprayers/Spray rigs	Aggregate	300	Diesel	1.99277E-05	2.41125E-05	2.86959E-05	8.31165E-05	0.000224832	0.003928412	9.66017E-06	8.88735E-06	3.59659E-08	3.22782E-08	910.1689086	187.0667835	0.33736746	40978.37
Los Angeles (SC)	2022	Agricultural - Sprayers/Spray rigs	Aggregate	600	Diesel	1.21696E-06	1.47253E-06	1.75243E-06	7.7458E-06	1.39057E-05	0.000261136	5.85209E-07	5.38393E-07	2.39402E-09	2.14565E-09	60.50226313	8.3260756	0.015236128	2747.605
Los Angeles (SC)	2022	Agricultural - Swathers/Windrowers/Hay Conditioners	Aggregate	50	Diesel	9.79144E-06	1.18476E-05	1.40997E-05	7.21288E-05	8.12168E-05	0.00147366	3.76025E-06	3.45943E-06	1.34224E-08	1.21085E-08	341.4303842	280.890355	0.643271364	12437.3
Los Angeles (SC)	2022	Agricultural - Swathers/Windrowers/Hay Conditioners	Aggregate	75	Diesel	2.26527E-05	2.74098E-05	3.26199E-05	0.000273255	0.000283825	0.006723914	1.39254E-05	1.28114E-05	6.19033E-08	5.52478E-08	1557.855464	866.1247964	1.873938685	55767.52
Los Angeles (SC)	2022	Agricultural - Swathers/Windrowers/Hay Conditioners	Aggregate	100	Diesel	4.46027E-05	5.39693E-05	6.42279E-05	0.000571775	0.000459415	0.014058247	3.44658E-05	3.17085E-05	1.29509E-07	1.15511E-07	3257.138177	1377.926427	2.990828805	118067.9
Los Angeles (SC)	2022	Agricultural - Swathers/Windrowers/Hay Conditioners	Aggregate	175	Diesel	2.44289E-05	2.95589E-05	3.51776E-05	0.000362185	0.00027038	0.009223101	1.53322E-05	1.41057E-05	8.51112E-08	7.57826E-08	2136.888922	695.5173163	1.44977716	82376.05
Los Angeles (SC)	2022	Agricultural - Swathers/Windrowers/Hay Conditioners	Aggregate	300	Diesel	1.16563E-05	1.41041E-05	1.67851E-05	6.87286E-05	0.000141453	0.004951447	5.69656E-06	5.24084E-06	4.57359E-08	4.06841E-08	1147.19462	220.7229973	0.456670334	45373.82
Los Angeles (SC)	2022	AirGrSupp - A/C Tug Narrow Body	Aggregate	25	Diesel	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Los Angeles (SC)	2022	AirGrSupp - A/C Tug Narrow Body	Aggregate	50	Diesel	0.0002815	0.000340615	0.000405361	0.001186355	0.001008689	0.099969246	0.000107875	9.92449E-05	9.1582E-07	8.15936E-07	3243.392078	2441.784094	7.712762499	105336.4
Los Angeles (SC)	2022	AirGrSupp - A/C Tug Narrow Body	Aggregate	75	Diesel	4.33777E-06	5.24871E-06	6.24639E-06	0.000105878	9.0909E-05	0.016727433	6.23349E-06	5.73481E-06	1.54523E-07	1.36527E-07	542.7031454	340.819389	1.028368333	19597.11
Los Angeles (SC)	2022	AirGrSupp - A/C Tug Narrow Body	Aggregate	100	Diesel	0.000687503	0.000831878	0.000990004	0.006488888	0.00759093	0.946566021	0.000508148	0.000467496	8.73085E-06	7.72574E-06	30710.29208	12553.13673	38.04962833	1108344
Los Angeles (SC)	2022	AirGrSupp - A/C Tug Narrow Body	Aggregate	175	Diesel	0.001150254	0.001391807	0.001656365	0.017392845	0.016243151	2.933663451	0.000893607	0.000822118	2.70887E-05	2.39442E-05	95179.4798	26127.59934	79.69854583	3436840
Los Angeles (SC)	2022	AirGrSupp - A/C Tug Narrow Body	Aggregate	300	Diesel	0.000415097	0.000502267	0.00059774	0.00292716	0.007532067	1.530778314	0.000212206	0.00019523	1.41404E-05	1.2494E-05	49664.41654	8009.255642	24.16665583	1793392
Los Angeles (SC)	2022	AirGrSupp - A/C Tug Narrow Body	Aggregate	750	Diesel	0.000123093	0.000148943	0.000177254	0.000610573	0.001677752	0.101819158	7.72059E-05	7.10295E-05	9.37676E-07	8.31034E-07	3303.41045	170.4096945	0.514184167	119286.8
Los Angeles (SC)	2022	AirGrSupp - A/C Tug Wide Body	Aggregate	25	Diesel	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Los Angeles (SC)	2022	AirGrSupp - A/C Tug Wide Body	Aggregate	50	Diesel	3.17536E-06	3.84218E-06	4.57252E-06	6.6816E-05	5.29988E-05	0.010521523	2.19623E-07	2.02053E-07	9.71814E-08	8.58753E-08	341.3592404	235.504762	0.586000148	11068.72
Los Angeles (SC)	2022	AirGrSupp - A/C Tug Wide Body	Aggregate	75	Diesel	1.7301E-05	2.09342E-05	2.49135E-05	0.000240723	0.000235998	0.036766623	1.19612E-05	1.10043E-05	3.39407E-07	3.00084E-07	1192.852594	706.5142859	1.758000443	41684.34
Los Angeles (SC)	2022	AirGrSupp - A/C Tug Wide Body	Aggregate	100	Diesel	8.69713E-05	0.000105235	0.000125239	0.000946691	0.001215048	0.138741342	7.36495E-05	6.77575E-05	1.28012E-06	1.13239E-06	4501.310055	1884.038096	4.688001182	162262.8
Los Angeles (SC)	2022	AirGrSupp - A/C Tug Wide Body	Aggregate	175	Diesel	9.95262E-05	0.000120427	0.000143318	0.002080741	0.001314181	0.369507058	6.04498E-05	5.56138E-05	3.41329E-06	3.01587E-06	11988.24956	2826.057144	7.032001773	432151.2
Los Angeles (SC)	2022	AirGrSupp - A/C Tug Wide Body	Aggregate	300	Diesel	0.000658331	0.00079658	0.000947997	0.0064983	0.008848547	3.480809192	0.000269728	0.00024815	3.21621E-05	2.84099E-05	112931.0208	16849.8818	42.19201064	4070939
Los Angeles (SC)	2022	AirGrSupp - A/C Tug Wide Body	Aggregate	600	Diesel	0.000636544	0.000770218	0.000916624	0.004625085	0.011045701	1.711003235	0.000365178	0.000335964	1.58E-05	1.3965E-05	55511.61562	5439.192173	14.06400355	2001119
Los Angeles (SC)	2022	AirGrSupp - A/C Tug Wide Body	Aggregate	750	Diesel	7.88527E-05	9.54118E-05	0.000113548	0.000283246	0.001782112	0.138974942	4.59654E-05	4.22881E-05	1.28253E-06	1.13429E-06	4508.88894	258.0874104	1.172000296	162595.1
Los Angeles (SC)	2022	AirGrSupp - Baggage Tug	Aggregate	25	Diesel	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Los Angeles (SC)	2022	AirGrSupp - Baggage Tug	Aggregate	50	Diesel	0.000439521	0.00053182	0.00063291	0.002354503	0.001856616	0.219384339	0.000176925	0.000162771	2.01513E-06	1.79059E-06	7117.683267	7470.481302	10.32740147	335586.5
Los Angeles (SC)	2022	AirGrSupp - Baggage Tug	Aggregate	75	Diesel	0.000602439	0.000728951	0.000867512	0.010694223	0.008182704	1.570615012	0.00039404	0.000362517	1.4503E-05	1.28191E-05	50956.87434	40181.75436	54.54986417	2670916
Los Angeles (SC)	2022	AirGrSupp - Baggage Tug	Aggregate	100	Diesel	0.000559757	0.000677306	0.00080605	0.010776555	0.00805022	1.578468129	0.00025433	0.000233984	1.45769E-05	1.28832E-05	51211.66007	30018.66925	41.30960587	2687359
Los Angeles (SC)	2022	AirGrSupp - Baggage Tug	Aggregate	175	Diesel	1.28381E-06	1.5534E-06	1.84868E-06	7.59108E-05	7.0795E-06	0.014337755	2.46837E-07	2.2709E-07	1.32521E-07	1.17023E-07	465.1726643	195.05706	0.264805166	24382.13
Los Angeles (SC)	2022	AirGrSupp - Baggage Tug	Aggregate	300	Diesel	5.60355E-05	6.7803E-05	8.06912E-05	0.0001895	0.001184693	0.082585468	3.07204E-05	2.82628E-05	7.61863E-07	6.74051E-07	2679.394546	780.22824	1.059220663	140441.1
Los Angeles (SC)	2022	AirGrSupp - Belt Loader	Aggregate	25	Diesel	7.44228E-07	9.00516E-07	1.07169E-06	2.35116E-05	2.25049E-05	0.004736415	7.45417E-08	6.85784E-08	4.37682E-08	3.8658E-08	153.6677691	318.7123401	0.618506008	7967.809
Los Angeles (SC)	2022	AirGrSupp - Belt Loader	Aggregate	50	Diesel	0.000218648	0.000264564	0.000314853	0.001273979	0.001028474	0.136124568	7.99865E-05	7.35875E-05	1.25198E-06	1.11103E-06	4416.411684	4940.041271	9.58684313	228994.8
Los Angeles (SC)	2022	AirGrSupp - Belt Loader	Aggregate	75	Diesel	0.000646696	0.000782502	0.000931242	0.005809633	0.007379754	0.82022217	0.000527818	0.000485593	7.56396E-06	6.69454E-06	26611.205	24381.49402	47.31570964	1533962
Los Angeles (SC)	2022	AirGrSupp - Belt Loader	Aggregate	100	Diesel	0.000555762	0.000672472	0.000800298	0.005426285	0.006036111	0.759407563	0.0005078	0.000467176	7.00443E-06	6.19818E-06	24638.14204	16549.88737	32.47156544	1420239
Los Angeles (SC)	2022	AirGrSupp - Belt Loader	Aggregate	175	Diesel	2.16071E-05	2.61446E-05	3.11142E-05	0.000311548	0.000225035	0.05100177	1.51793E-05	1.39649E-05	4.70888E-07	4.1627E-07	1654.696257	705.5256075	1.546265021	95388.97
Los Angeles (SC)	2022	AirGrSupp - Belt Loader	Aggregate	300	Diesel	1.06513E-05	1.28881E-05	1.53379E-05	8.54485E-05	0.000124347	0.044905161	5.65541E-06	5.20297E-06	4.14851E-07	3.6651E-07	1456.898507	318.7123401	0.618506008	83980.7
Los Angeles (SC)	2022	AirGrSupp - Belt Loader	Aggregate	600	Diesel	2.93305E-06	3.54899E-06	4.22359E-06	6.8177E-05	1.89161E-05	0.038770111	6.3657E-07	5.85645E-07	3.58361E-07	3.16436E-07	1257.85355	159.35617	0.309253004	72507.06
Los Angeles (SC)	2022	AirGrSupp - Belt Loader	Aggregate	750	Diesel	3.95863E-05	4.78994E-05	5.70042E-05	0.000610784	0.000528463	0.022737473	2.68869E-05	2.4736E-05	2.09032E-07	1.8558E-07	737.6922644	68.10092737	0.309253004	42563.08
Los Angeles (SC)	2022	AirGrSupp - Bobtail	Aggregate	25	Diesel	1.68841E-06	2.04298E-06	2.43131E-06	3.28617E-05	4.10022E-05	0.00482366	1.50954E-06	1.38877E-06	4.45465E-08	3.93701E-08	156.4983446	295.1374014	0.636697362	7378.435
Los Angeles (SC)	2022	AirGrSupp - Bobtail	Aggregate	50	Diesel	2.31675E-05	2.80326E-05	3.33612E-05	0.000209058	0.000174667	0.03043453	6.67543E-06	6.1414E-06	2.80687E-07	2.48403E-07	987.4148116	1025.619996	2.546789446	46558.8
Los Angeles (SC)	2022	AirGrSupp - Bobtail	Aggregate	75	Diesel	6.72657E-06	8.13915E-06	9.68626E-06	8.94613E-05	0.000127826	0.012843232	7.12291E-06	6.55308E-06	1.1854E-07	1.04825E-07	416.684514	295.1374014	0.636697362	21840.17
Los Angeles (SC)	2022	AirGrSupp - Bobtail	Aggregate	100	Diesel	1.68989E-05	2.04476E-05	2.43344E-05	0.000384561	0.000297781	0.059183001	1.38103E-05	1.27055E-05	5.46669E-07	4.83044E-07	1920.127288	1180.549606	2.546789446	100641.9
Los Angeles (SC)	2022	AirGrSupp - Bobtail	Aggregate	175	Diesel	5.35666E-05	6.48156E-05	7.71359E-05	0.000611386	0.000585512	0.094503699	3.80973E-05	3.50495E-05	8.72127E-07	7.71326E-07	3066.068445	1320.757397	3.183486808	160719.5
Los Angeles (SC)	2022	AirGrSupp - Bobtail	Aggregate	300	Diesel	0.000141727	0.00017149	0.000204087	0.001218602	0.001679434	0.516773133	7.08887E-05	6.52176E-05	4.77357E-06	4.21783E-06	16766.13517	4272.131411	9.550460423	878804.9
Los Angeles (SC)	2022	AirGrSupp - Cargo Loader	Aggregate	25	Diesel	1.15493E-05	1.39746E-05	1.6631E-05	0.000140265	0.000133252	0.020192981	6.92531E-06	6.37128E-06	1.86348E-07	1.64812E-07	655.1390258	1360.883532	2.834819205	34022.09
Los Angeles (SC)	2022	AirGrSupp - Cargo Loader	Aggregate	50	Diesel	3.32527E-05	4.02358E-05	4.78839E-05	0.000329069	0.000312274	0.04506261	1.24027E-05	1.14104E-05	4.15629E-07	3.67795E-07	1462.006755	2030.088645	4.535710728	75919.82
Los Angeles (SC)	2022	AirGrSupp - Cargo Loader	Aggregate	100	Diesel	0.000626345	0.000757877	0.000901937	0.013295549	0.010125751	2.051521154	0.000393494	0.000362015	1.89485E-05	1.67442E-05	66559.3445	44524.61332	95.81688913	3840906
Los Angeles (SC)	2022	AirGrSupp - Cargo Loader	Aggregate	175	Diesel	0.00051136	0.000618746	0.000736358	0.017228724	0.006533609	3.026491052	0.000204591	0.000188224	2.79661E-05	2.47018E-05	98191.16911	43128.77131	90.14725072	5668829
Los Angeles (SC)	2022	AirGrSupp - Cargo Loader	Aggregate	300	Diesel	5.29858E-05	6.41128E-05	7.62995E-05	0.00056107	0.00056252	0.293254574	2.09227E-05	1.92489E-05	2.70969E-06	2.3935E-06	9514.321683	2574.442058	5.66963841	549272.6
Los Angeles (SC)	2022	AirGrSupp - Cargo Loader	Aggregate	600	Diesel	2.65549E-05	3.21314E-05	3.8239E-05	0.000496821	0.000136833	0.27550828	4.74024E-06	4.36102E-06	2.54641E-06	2.24866E-06	8938.562718	1633.060238	3.401783046	516047
Los Angeles (SC)	2022	AirGrSupp - Cargo Loader	Aggregate	750	Diesel	3.18388E-05	3.85249E-05	4.58479E-05	0.00055181	0.000151519	0.302826611	5.31081E-06	4.88594E-06	2.79883E-06	2.47163E-06	9824.875899	816.5301191	1.700891523	567216.3
Los Angeles (SC)	2022	AirGrSupp - Cargo Tractor	Aggregate	25	Diesel	7.08312E-06	8.57058E-06	1.01997E-05	0.000137014	0.000102773	0.019991331	4.54561E-07	4.18196E-07	1.84617E-07	1.63167E-07	648.5967165	1247.616442	1.798586946	31190.41
Los Angeles (SC)	2022	AirGrSupp - Cargo Tractor	Aggregate	50	Diesel	0.000138283	0.000167322	0.000199127	0.000926988	0.00075127	0.103356449	5.19189E-05	4.77654E-05	9.51433E-07	8.43581E-07	3353.286157	4762.72626	8.093641259	161244.5
Los Angeles (SC)	2022	AirGrSupp - Cargo Tractor	Aggregate	75	Diesel	0.001667065	0.002017148	0.002400573	0.013834051	0.016107571	1.901640062	0.001308572	0.001203887	1.75316E-05	1.55209E-05	61696.61753	54127.74033	80.48676585	3303727
Los Angeles (SC)	2022	AirGrSupp - Cargo Tractor	Aggregate	100	Diesel	0.000395922	0.000479066	0.000570128	0.004585698	0.004501404	0.690624569	0.000300406	0.000276373	6.37329E-06	5.63678E-06	22406.55356	13298.007	19.78445641	1197875
Los Angeles (SC)	2022	AirGrSupp - Cargo Tractor	Aggregate	175	Diesel	0.000211541	0.000255965	0.000304619	0.003287064	0.002261285	0.551392122	0.000129895	0.000119503	5.09155E-06	4.50039E-06	17889.31015	6649.0035	9.892228205	956377.2
Los Angeles (SC)	2022	AirGrSupp - Cargo Tractor	Aggregate	300	Diesel	0.000425129	0.000514406	0.000612186	0.002432285	0.006134158	0.805476677	0.000238717	0.000219619	7.43428E-06	6.57419E-06	26132.80371	6436.116567	9.892228205	1397068
Los Angeles (SC)	2022	AirGrSupp - Cargo Tractor	Aggregate	600	Diesel	0.000288376	0.000348934	0.000415261	0.001684524	0.003391721	0.835282396	0.000112734	0.000103715	7.71395E-06	6.81746E-06	27099.81744	3742.849327	5.395760839	1448795
Los Angeles (SC)	2022	AirGrSupp - Forklift	Aggregate	25	Diesel	4.38217E-07	5.30243E-07	6.31033E-07	9.96368E-06	8.26794E-06	0.001666795	3.24912E-08	2.98919E-08	1.53972E-08	1.36042E-08	54.0773166	186.9271918	0.475548879	4673.18
Los Angeles (SC)	2022	AirGrSupp - Forklift	Aggregate	50	Diesel	0.000149824	0.000181287	0.000215747	0.000755651	0.000668121	0.074732556	6.23386E-05	5.73515E-05	6.86445E-07	6.09957E-07	2424.615468	5443.403602	14.26646637	209532.8
Los Angeles (SC)	2022	AirGrSupp - Forklift	Aggregate	75	Diesel	5.80385E-05	7.02266E-05	8.35755E-05	0.000370294	0.000628473	0.044135605	4.65826E-05	4.2856E-05	4.06314E-07	3.60229E-07	1431.931097	1996.508074	5.70658655	137751.2
Los Angeles (SC)	2022	AirGrSupp - Forklift	Aggregate	100	Diesel	0.000621653	0.000752201	0.000895181	0.006050616	0.006906988	0.881864766	0.000505421	0.000464988	8.13463E-06	7.19766E-06	28611.13113	31105.31304	82.26995609	2745208
Los Angeles (SC)	2022	AirGrSupp - Forklift	Aggregate	175	Diesel	0.000356098	0.000430879	0.000512781	0.003006007	0.004288231	0.475032547	0.000259347	0.000238599	4.38123E-06	3.87715E-06	15411.90784	11283.17663	29.95957939	1479754
Los Angeles (SC)	2022	AirGrSupp - Forklift	Aggregate	300	Diesel	9.73778E-05	0.000117827	0.000140224	0.000873619	0.00123642	0.398710069	4.3698E-05	4.02022E-05	3.68335E-06	3.25422E-06	12935.70909	5256.47641	13.7909175	1242783
Los Angeles (SC)	2022	AirGrSupp - Forklift	Aggregate	600	Diesel	3.8232E-05	4.62608E-05	5.50542E-05	0.000136353	0.00085645	0.066089061	2.24382E-05	2.06432E-05	6.09879E-07	5.3941E-07	2144.18681	560.7815754	1.426646637	205993.8
Los Angeles (SC)	2022	AirGrSupp - Lift	Aggregate	25	Diesel	2.30859E-06	2.7934E-06	3.32437E-06	4.39792E-05	5.40376E-05	0.00631983	1.94933E-06	1.79338E-06	5.83607E-08	5.15816E-08	205.0399147	425.1818548	1.016206626	10629.55
Los Angeles (SC)	2022	AirGrSupp - Lift	Aggregate	50	Diesel	6.78147E-05	8.20558E-05	9.76532E-05	0.000953627	0.00094406	0.150250199	2.9328E-05	2.69817E-05	1.3871E-06	1.22632E-06	4874.702231	5639.254075	13.71878946	252714.7
Los Angeles (SC)	2022	AirGrSupp - Lift	Aggregate	75	Diesel	3.87486E-05	4.68858E-05	5.57979E-05	0.000891223	0.000645548	0.140205478	1.66676E-05	1.53342E-05	1.29511E-06	1.14434E-06	4548.812324	3725.935728	9.145859637	262169.4
Los Angeles (SC)	2022	AirGrSupp - Lift	Aggregate	100	Diesel	0.000214619	0.000259689	0.000309051	0.005696599	0.003579036	0.912922054	0.000135222	0.000124405	8.43398E-06	7.45115E-06	29618.75065	19882.84621	47.76171144	1707027
Los Angeles (SC)	2022	AirGrSupp - Lift	Aggregate	175	Diesel	8.16136E-05	9.87525E-05	0.000117524	0.001273817	0.000856907	0.212382214	5.61578E-05	5.16651E-05	1.96113E-06	1.73344E-06	6890.507048	3188.863911	7.621549697	397119.9
Los Angeles (SC)	2022	AirGrSupp - Lift	Aggregate	300	Diesel	7.63848E-05	9.24256E-05	0.000109994	0.00125004	0.000781247	0.445652201	3.30853E-05	3.04384E-05	4.11798E-06	3.63735E-06	14458.69486	3725.935728	9.145859637	833334.1
Los Angeles (SC)	2022	AirGrSupp - Other GSE	Aggregate	25	Diesel	5.24632E-06	6.34805E-06	7.5547E-06	0.000103605	7.88473E-05	0.015420781	3.42918E-07	3.15485E-07	1.42415E-07	1.25862E-07	500.3102691	1037.62737	2.127299262	25940.68
Los Angeles (SC)	2022	AirGrSupp - Other GSE	Aggregate	50	Diesel	0.001895368	0.002293395	0.00272933	0.014699441	0.013329188	1.845388054	0.000798727	0.000734829	1.70047E-05	1.50618E-05	59871.58308	90072.14561	189.3296343	3103078
Los Angeles (SC)	2022	AirGrSupp - Other GSE	Aggregate	75	Diesel	0.000399067	0.000482871	0.000574657	0.006370864	0.005447533	0.969531341	0.00029458	0.000271014	8.95183E-06	7.91318E-06	31455.37661	27396.40752	58.5007297	1813200
Los Angeles (SC)	2022	AirGrSupp - Other GSE	Aggregate	100	Diesel	0.000459412	0.000555889	0.000661554	0.008808245	0.006706828	1.35495619	0.000327934	0.000301699	1.25135E-05	1.1059E-05	43960.06135	29287.79375	60.62802896	2529678
Los Angeles (SC)	2022	AirGrSupp - Other GSE	Aggregate	175	Diesel	0.000797708	0.000965227	0.0011487	0.019075957	0.009462615	3.363693559	0.000395794	0.00036413	3.10751E-05	2.7454E-05	109131.3331	39094.89487	81.90102158	6290614
Los Angeles (SC)	2022	AirGrSupp - Other GSE	Aggregate	300	Diesel	0.000960916	0.001162708	0.001383719	0.00767753	0.013228935	3.585742616	0.000457492	0.000420893	3.31231E-05	2.92663E-05	116335.4702	29756.24855	62.75532823	6705905
Los Angeles (SC)	2022	AirGrSupp - Other GSE	Aggregate	600	Diesel	0.000518977	0.000627962	0.000747327	0.005255415	0.006052016	2.236680334	0.000246861	0.000227112	2.06636E-05	1.82555E-05	72566.63017	11648.12846	24.46394151	4182935
Los Angeles (SC)	2022	AirGrSupp - Passenger Stand	Aggregate	25	Diesel	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Los Angeles (SC)	2022	AirGrSupp - Passenger Stand	Aggregate	50	Diesel	1.117E-05	1.35158E-05	1.60849E-05	0.000102688	0.000127437	0.018731867	6.48402E-06	5.9653E-06	1.7285E-07	1.52887E-07	607.7347904	621.5750367	10.96728697	26872.63
Los Angeles (SC)	2022	AirGrSupp - Passenger Stand	Aggregate	75	Diesel	2.17636E-06	2.6334E-06	3.13396E-06	0.000116215	6.23387E-05	0.020015771	4.02652E-07	3.7044E-07	1.8499E-07	1.63366E-07	649.3896369	583.4415989	15.58509201	32067.68
Los Angeles (SC)	2022	AirGrSupp - Passenger Stand	Aggregate	100	Diesel	2.80508E-06	3.39415E-06	4.03932E-06	1.2676E-05	3.17972E-05	0.001348772	1.68865E-06	1.55356E-06	1.23859E-08	1.10085E-08	43.75940949	21.60894811	0.57722563	2160.895
Los Angeles (SC)	2022	AirGrSupp - Passenger Stand	Aggregate	175	Diesel	5.78448E-06	6.99922E-06	8.32965E-06	5.4829E-05	9.02915E-05	0.008813909	5.45143E-06	5.01532E-06	8.13154E-08	7.19379E-08	285.9575607	127.1114595	0.57722563	13982.26
Los Angeles (SC)	2022	AirGrSupp - Passenger Stand	Aggregate	300	Diesel	1.88884E-06	2.2855E-06	2.71993E-06	1.29134E-05	4.32119E-05	0.007350805	9.2303E-07	8.49187E-07	6.79052E-08	5.99963E-08	238.4887817	43.21789621	1.15445126	11776.88
Los Angeles (SC)	2022	AirGrSupp - Passenger Stand	Aggregate	600	Diesel	5.99008E-07	7.248E-07	8.62572E-07	1.4525E-05	4.03511E-06	0.008294945	1.35114E-07	1.24305E-07	7.66729E-08	6.77022E-08	269.1203684	43.21789621	1.15445126	13289.5
Los Angeles (SC)	2022	CHC - AE Barge and Dredge	Aggregate		Diesel	0.003488586	0.004221189	0.005023563	0.045762618	0.110011891	3.368749467	0.002819768	0.002594187	3.10411E-05	0.000195041	775301.1635	0	0	0
Los Angeles (SC)	2022	CHC - AE Charter Fishing	Aggregate		Diesel	0.002968503	0.003591888	0.004274644	0.012415206	0.016609103	0.224839779	0.000896253	0.000824553	1.9897E-06	1.30176E-05	51745.77219	0	0	0
Los Angeles (SC)	2022	CHC - AE Commercial Fishing	Aggregate		Diesel	0.002132215	0.00257998	0.00307039	0.009929917	0.019165488	0.171804732	0.001064325	0.000979179	1.52445E-06	9.94703E-06	39540.01633	0	0	0
Los Angeles (SC)	2022	CHC - AE Crew and Supply	Aggregate		Diesel	0.000703711	0.000851491	0.001013344	0.002625489	0.00330725	0.055169409	0.000123845	0.000113937	4.88957E-07	3.19416E-06	12696.96885	0	0	0
Los Angeles (SC)	2022	CHC - AE Ferry and Excursion	Aggregate		Diesel	0.009451675	0.011436526	0.013610411	0.05389606	0.064311027	1.106337722	0.00226367	0.002082576	9.94509E-06	6.40539E-05	254618.1993	0	0	0
Los Angeles (SC)	2022	CHC - AE Others	Aggregate		Diesel	0.000332789	0.000402674	0.000479216	0.001397717	0.001983793	0.024063127	0.000112421	0.000103427	2.12492E-07	1.39319E-06	5538.010647	0	0	0
Los Angeles (SC)	2022	CHC - AE Pilot Vessels	Aggregate		Diesel	6.16586E-05	7.46069E-05	8.87884E-05	0.000202481	0.000216489	0.003065196	1.39077E-05	1.2795E-05	2.64895E-08	1.77466E-07	705.4398136	0	0	0
Los Angeles (SC)	2022	CHC - AE Tow Boats	Aggregate		Diesel	8.92504E-05	0.000107993	0.000128521	0.000518365	0.000668614	0.010913175	2.57392E-05	2.36801E-05	9.82202E-08	6.31843E-07	2511.61379	0	0	0
Los Angeles (SC)	2022	CHC - AE Tug Boats	Aggregate		Diesel	0.002757227	0.003336244	0.003970406	0.016467901	0.020441128	0.346336857	0.000729218	0.000670881	3.11934E-06	2.0052E-05	79707.72854	0	0	0
Los Angeles (SC)	2022	CHC - AE Work Boats	Aggregate		Diesel	0.000283037	0.000342474	0.000407573	0.0017501	0.002387994	0.035315839	8.4599E-05	7.78311E-05	3.18021E-07	2.04469E-06	8127.76698	0	0	0
Los Angeles (SC)	2022	CHC - ME Barge and Dredge	Aggregate		Diesel	0.000573618	0.000694077	0.000826009	0.005316059	0.021179538	0.402727469	0.000587939	0.000540904	3.70621E-06	2.33168E-05	92685.75121	0	0	0
Los Angeles (SC)	2022	CHC - ME Charter Fishing	Aggregate		Diesel	0.024640739	0.029815294	0.035482664	0.16230943	0.324409068	3.744526299	0.013234946	0.012176151	3.38808E-05	0.000216798	861784.3578	0	0	0
Los Angeles (SC)	2022	CHC - ME Commercial Fishing	Aggregate		Diesel	0.00589029	0.007127251	0.008482017	0.02788115	0.104922136	0.669544365	0.004588096	0.004221048	6.01356E-06	3.87648E-05	154092.351	0	0	0
Los Angeles (SC)	2022	CHC - ME Crew and Supply	Aggregate		Diesel	0.013382343	0.016192635	0.019270574	0.098746991	0.108505243	2.070520163	0.002547947	0.002344112	1.87415E-05	0.000119877	476520.0581	0	0	0
Los Angeles (SC)	2022	CHC - ME Ferry and Excursion	Aggregate		Diesel	0.151080169	0.182807004	0.217555443	1.377014996	1.468778681	27.99195806	0.03777483	0.034752844	0.000254267	0.001620658	6442211.826	0	0	0
Los Angeles (SC)	2022	CHC - ME Others	Aggregate		Diesel	0.005898644	0.007137359	0.008494048	0.033332795	0.087168728	0.81008537	0.003966773	0.003649432	7.31268E-06	4.69017E-05	186437.1738	0	0	0
Los Angeles (SC)	2022	CHC - ME Pilot Vessels	Aggregate		Diesel	0.004390668	0.005312709	0.006322562	0.028604818	0.055307221	0.711848283	0.002335398	0.002148566	6.44967E-06	4.12141E-05	163828.3901	0	0	0
Los Angeles (SC)	2022	CHC - ME Tow Boats	Aggregate		Diesel	0.00077445	0.000937085	0.001115208	0.007075581	0.007471438	0.147120706	0.000170065	0.000156459	1.33697E-06	8.51789E-06	33859.10865	0	0	0
Los Angeles (SC)	2022	CHC - ME Tug Boats	Aggregate		Diesel	0.04698635	0.056853483	0.067660344	0.42113015	0.501814445	8.604972345	0.014843588	0.013656101	7.81476E-05	0.000498204	1980392.171	0	0	0
Los Angeles (SC)	2022	CHC - ME Work Boats	Aggregate		Diesel	0.00211061	0.002553838	0.003039278	0.014212617	0.025727141	0.321457304	0.001056984	0.000972425	2.90871E-06	1.86115E-05	73981.82149	0	0	0
Los Angeles (SC)	2022	CHE - Port Construction Equipment	Aggregate	50	Diesel	0.000370819	0.000448691	0.00053398	0.00346968	0.002421322	0.335418566	3.92024E-05	3.60662E-05	3.08999E-06	2.73764E-06	10882.28598	7644.576899	2.333227295	344006
Los Angeles (SC)	2022	CHE - Port Construction Equipment	Aggregate	75	Diesel	0.001043846	0.001263054	0.001503139	0.010358385	0.011076438	1.508120786	0.00020311	0.000186861	1.3912E-05	1.23091E-05	48929.31801	23051.32174	7.201680399	1545778
Los Angeles (SC)	2022	CHE - Port Construction Equipment	Aggregate	100	Diesel	0.000783543	0.000948087	0.001128302	0.012511783	0.00474722	1.87160098	0.00011096	0.000102084	1.72804E-05	1.52758E-05	60722.03258	22767.48538	7.796362261	1909923
Los Angeles (SC)	2022	CHE - Port Construction Equipment	Aggregate	175	Diesel	0.002449504	0.0029639	0.003527286	0.034215004	0.022763492	5.141839188	0.000353945	0.000325629	4.74654E-05	4.1967E-05	166821.3097	42524.55695	14.0910154	5890188
Los Angeles (SC)	2022	CHE - Port Construction Equipment	Aggregate	300	Diesel	0.0042847	0.005184487	0.006169968	0.027138395	0.039835047	10.30873334	0.000520678	0.000479024	9.51808E-05	8.41385E-05	334455.5001	48177.38584	16.44557528	11822780
Los Angeles (SC)	2022	CHE - Port Construction Equipment	Aggregate	600	Diesel	0.015442664	0.018685623	0.022237436	0.101466805	0.139172097	42.73118511	0.001614689	0.001485514	0.000394608	0.000348766	1386366.241	128085.2583	43.53165845	48334310
Los Angeles (SC)	2022	CHE - Port Container Handling Equipment	Aggregate	175	Diesel	0.00601651	0.007279977	0.008663775	0.104188942	0.048413947	16.55207988	0.000669552	0.000615988	0.000152852	0.000135096	537014.0027	115377.8041	47.32529207	17555153
Los Angeles (SC)	2022	CHE - Port Container Handling Equipment	Aggregate	300	Diesel	0.033246689	0.040228494	0.047875233	0.263098246	0.264672333	120.5514915	0.003234426	0.002975672	0.001113561	0.000983925	3911160.377	507534.0894	207.1660895	1.28E+08
Los Angeles (SC)	2022	CHE - Port Container Handling Equipment	Aggregate	600	Diesel	0.033669386	0.040739958	0.048483916	0.265079542	0.220170906	129.7992546	0.003148094	0.002896247	0.001199048	0.001059404	4211193.866	413428.5224	166.2786712	1.38E+08
Los Angeles (SC)	2022	CHE - Port Forklift	Aggregate	50	Diesel	0.000278076	0.000336471	0.000400429	0.003610223	0.002923702	0.437611914	6.64282E-05	6.1114E-05	4.0376E-06	3.57173E-06	14197.8366	19337.32035	20.93232621	817358.5
Los Angeles (SC)	2022	CHE - Port Forklift	Aggregate	75	Diesel	0.000312917	0.000378629	0.0004506	0.005036938	0.004700921	0.816438315	9.29613E-05	8.55244E-05	7.53899E-06	6.66366E-06	26488.44199	22432.02864	24.14672653	1527117
Los Angeles (SC)	2022	CHE - Port Forklift	Aggregate	100	Diesel	0.000909987	0.001101084	0.001310381	0.026557556	0.003816016	4.467740501	0.000160747	0.000147887	4.12792E-05	3.64651E-05	144950.9202	97348.32602	107.4537511	8390068
Los Angeles (SC)	2022	CHE - Port Forklift	Aggregate	175	Diesel	0.002626415	0.003177962	0.003782037	0.063339833	0.022983979	10.68513588	0.00044535	0.000409722	9.87106E-05	8.72106E-05	346667.4662	151972.657	162.3601448	22325758
Los Angeles (SC)	2022	CHE - Port Forklift	Aggregate	300	Diesel	0.001284643	0.001554417	0.001849885	0.011980894	0.00994641	5.892376285	0.000158415	0.000145741	5.44394E-05	4.80928E-05	191171.6593	58088.02534	64.60991418	12340190
Los Angeles (SC)	2022	CHE - Port Forklift	Aggregate	600	Diesel	0.000304362	0.000368278	0.000438281	0.003472425	0.001825356	1.816061132	3.66326E-05	3.3702E-05	1.67813E-05	1.48224E-05	58920.10339	11811.68666	13.01791249	3807658
Los Angeles (SC)	2022	CHE - Port Other General Industrial Equipment	Aggregate	50	Diesel	0.001405808	0.001701028	0.002024364	0.012530209	0.009133904	1.25313846	0.00017092	0.000157246	1.15437E-05	1.02279E-05	40656.69725	30314.94341	14.22888573	1383407
Los Angeles (SC)	2022	CHE - Port Other General Industrial Equipment	Aggregate	75	Diesel	0.000647755	0.000783784	0.000932768	0.006943592	0.007303657	1.04695865	0.00014416	0.000132627	9.66022E-06	8.54514E-06	33967.42038	18154.59492	9.450525614	1147613
Los Angeles (SC)	2022	CHE - Port Other General Industrial Equipment	Aggregate	100	Diesel	0.001248066	0.00151016	0.001797215	0.017676972	0.00755487	2.688310197	0.00018816	0.000173107	2.48173E-05	2.19416E-05	87219.2637	35782.43244	17.71299725	2985695
Los Angeles (SC)	2022	CHE - Port Other General Industrial Equipment	Aggregate	175	Diesel	0.002555664	0.003092353	0.003680156	0.034693691	0.024926005	5.410917902	0.000449988	0.000413989	4.99499E-05	4.41632E-05	175551.2723	49344.0117	26.11529229	6543463
Los Angeles (SC)	2022	CHE - Port Other General Industrial Equipment	Aggregate	300	Diesel	0.001745598	0.002112174	0.002513661	0.011316507	0.016650747	4.544707708	0.000218329	0.000200863	4.19657E-05	3.70933E-05	147448.0365	25268.07011	12.64064231	5742976
Los Angeles (SC)	2022	CHE - Port Other General Industrial Equipment	Aggregate	600	Diesel	0.00328018	0.003969018	0.004723459	0.032520021	0.032970435	6.551628095	0.000515657	0.000474404	6.04746E-05	5.34735E-05	212560.3582	17201.1392	7.786779801	7993660
Los Angeles (SC)	2022	CHE - Port RTG Crane	Aggregate	300	Diesel	0.000815247	0.000986449	0.001173956	0.00601625	0.006578085	2.284637198	9.44137E-05	8.68606E-05	2.10981E-05	1.86469E-05	74122.53781	31254.8942	16.82223682	7162033
Los Angeles (SC)	2022	CHE - Port RTG Crane	Aggregate	600	Diesel	0.009749757	0.011797206	0.01403965	0.069706926	0.072182816	33.33524695	0.00088371	0.000813013	0.000307908	0.000272078	1081525.375	210315.3259	109.8211631	1.05E+08
Los Angeles (SC)	2022	CHE - Port RTG Crane	Aggregate	750	Diesel	0.010531685	0.012743339	0.015165627	0.075471867	0.074974945	36.78768747	0.000926395	0.000852283	0.000339804	0.000300256	1193536.006	175478.0435	91.06402098	1.15E+08
Los Angeles (SC)	2022	CHE - Port RTG Crane	Aggregate	9999	Diesel	0.006476974	0.007837138	0.009326842	0.039295319	0.107517293	19.12941762	0.001415512	0.001302271	0.000176667	0.000156132	620632.8872	62511.86144	33.47189248	59980131
Los Angeles (SC)	2022	CHE - Port Yard Tractor	Aggregate	175	Diesel	0.021081385	0.025508476	0.030357195	1.809466587	0.126069821	290.3162668	0.004805627	0.004421177	0.002683485	0.002369552	9418991.55	2694911.587	1123.644107	4.67E+08
Los Angeles (SC)	2022	CHE - Port Yard Tractor	Aggregate	300	Diesel	0.019008162	0.022999876	0.027371754	0.575363257	0.102921971	269.9944376	0.003848957	0.003541041	0.002495662	0.002203658	8759672.184	1971502.401	771.4201265	4.34E+08
Los Angeles (SC)	2022	CHE - Port Yard Tractor	Aggregate	600	Diesel	0.000154562	0.000187019	0.000222569	0.004406838	0.000944973	2.170951403	3.10154E-05	2.85341E-05	2.00669E-05	1.7719E-05	70434.1274	10908.65418	4.960901135	3490769
Los Angeles (SC)	2022	CHE - Rail Container Handling Equipment	Aggregate	175	Diesel	0.001730736	0.00209419	0.002492259	0.022566849	0.016634162	3.463819122	0.000254472	0.000234114	3.19728E-05	2.82712E-05	112379.7967	25095.25445	8.397095169	3697553
Los Angeles (SC)	2022	CHE - Rail Container Handling Equipment	Aggregate	300	Diesel	0.003948885	0.004778151	0.005686394	0.024277005	0.035946837	10.0060689	0.000417774	0.000384352	9.23926E-05	8.16682E-05	324635.8858	49159.39408	12.11665937	10637731
Los Angeles (SC)	2022	CHE - Rail Container Handling Equipment	Aggregate	600	Diesel	0.001039691	0.001258027	0.001497156	0.006808936	0.009775073	2.405772483	0.000144159	0.000132627	2.22114E-05	1.96356E-05	78052.63873	7326.830613	3.353379623	2538113
Los Angeles (SC)	2022	CHE - Rail Forklift	Aggregate	75	Diesel	4.48485E-05	5.42667E-05	6.45819E-05	0.000556029	0.000585017	0.08676963	2.20006E-05	2.02405E-05	8.00883E-07	7.08202E-07	2815.145101	2617.385548	2.045439495	163150.4
Los Angeles (SC)	2022	CHE - Rail Forklift	Aggregate	100	Diesel	0.000127676	0.000154488	0.000183854	0.002842725	0.00045455	0.439540818	1.89458E-05	1.74302E-05	4.05994E-06	3.58747E-06	14260.41776	9899.466153	4.117015167	814686.6
Los Angeles (SC)	2022	CHE - Rail Forklift	Aggregate	175	Diesel	0.000145072	0.000175537	0.000208904	0.003351825	0.000731461	0.513886619	1.37001E-05	1.26041E-05	4.7468E-06	4.19429E-06	16672.55028	6814.377974	2.399324792	1058811
Los Angeles (SC)	2022	CHE - Rail Forklift	Aggregate	300	Diesel	3.5331E-05	4.27506E-05	5.08767E-05	0.000260752	0.000339347	0.117856272	6.44123E-06	5.92593E-06	1.08858E-06	9.61927E-07	3823.716954	1026.492691	0.802185483	246358.2
Los Angeles (SC)	2022	CHE - Rail Other General Industrial Equipment	Aggregate	50	Diesel	0.000609747	0.000737794	0.000878035	0.004732348	0.003404759	0.430369356	9.29841E-05	8.55454E-05	3.96069E-06	3.51262E-06	13962.8598	10200.13553	2.825273242	476006.3
Los Angeles (SC)	2022	CHE - Rail Other General Industrial Equipment	Aggregate	175	Diesel	1.26812E-05	1.53442E-05	1.82609E-05	0.000209885	0.000168658	0.037275867	2.34103E-06	2.15375E-06	3.44253E-07	3.04241E-07	1209.37446	398.5615484	0.871229557	45834.58
Los Angeles (SC)	2022	CHE - Rail Other General Industrial Equipment	Aggregate	300	Diesel	0.000278567	0.000337066	0.000401137	0.001792445	0.002888728	0.700252503	3.81012E-05	3.50531E-05	6.46582E-06	5.71537E-06	22718.92128	4136.126328	3.036857812	949736.3
Los Angeles (SC)	2022	CHE - Rail RTG Crane	Aggregate	300	Diesel	0.008198711	0.00992044	0.011806144	0.052290145	0.071984837	21.74620342	0.000754412	0.000694059	0.000200808	0.00017749	705531.6207	255052.6155	53.48522278	68192688
Los Angeles (SC)	2022	CHE - Rail RTG Crane	Aggregate	600	Diesel	0.001192138	0.001442487	0.001716679	0.007602242	0.008949724	3.58491499	9.56609E-05	8.8008E-05	3.31086E-05	2.92596E-05	116308.6188	30904.51268	6.195282921	11285210
Los Angeles (SC)	2022	CHE - Rail Yard Tractor	Aggregate	175	Diesel	0.012993378	0.015721987	0.018710464	0.883301036	0.057296166	142.6695358	0.002341823	0.002154478	0.001318661	0.00116445	4628755.966	1448241.899	337.3412772	2.29E+08
Los Angeles (SC)	2022	CHE - Rail Yard Tractor	Aggregate	300	Diesel	0.005596046	0.006771216	0.008058306	0.137639423	0.025958488	66.54016278	0.000997444	0.000917648	0.000615029	0.000543092	2158822.301	534964.4391	141.3856824	1.07E+08
Los Angeles (SC)	2022	ConstMin - Bore/Drill Rigs	Aggregate	25	Diesel	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Los Angeles (SC)	2022	ConstMin - Bore/Drill Rigs	Aggregate	50	Diesel	0.000196022	0.000237187	0.000282272	0.001627854	0.001609514	0.222638847	9.0365E-05	8.31358E-05	2.05253E-06	1.81715E-06	7223.272208	6315.673619	17.74363412	244436.5
Los Angeles (SC)	2022	ConstMin - Bore/Drill Rigs	Aggregate	75	Diesel	0.000123336	0.000149237	0.000177604	0.002219738	0.002258391	0.347060127	0.000111674	0.00010274	3.20504E-06	2.83266E-06	11259.9836	6175.496005	13.63458201	440850.7
Los Angeles (SC)	2022	ConstMin - Bore/Drill Rigs	Aggregate	100	Diesel	0.000297414	0.000359871	0.000428276	0.006568299	0.004233884	1.047721075	0.000172916	0.000159082	9.67778E-06	8.55136E-06	33992.15644	15471.81083	40.53019582	1318901
Los Angeles (SC)	2022	ConstMin - Bore/Drill Rigs	Aggregate	175	Diesel	0.000349675	0.000423106	0.000503531	0.008998108	0.003976934	1.624931972	0.00017728	0.000163098	1.50128E-05	1.32625E-05	52719.1283	13539.40801	42.77149698	2020588
Los Angeles (SC)	2022	ConstMin - Bore/Drill Rigs	Aggregate	300	Diesel	0.000448809	0.000543059	0.000646285	0.004744923	0.005607594	2.331809563	0.000183144	0.000168493	2.15453E-05	1.90319E-05	75652.99323	14079.84926	43.51859736	2941413
Los Angeles (SC)	2022	ConstMin - Bore/Drill Rigs	Aggregate	600	Diesel	0.000632367	0.000765164	0.000910609	0.007349399	0.007107437	3.927390053	0.000237615	0.000218605	3.62917E-05	3.20548E-05	127419.845	12172.40957	36.04759352	4967478
Los Angeles (SC)	2022	ConstMin - Bore/Drill Rigs	Aggregate	750	Diesel	0.000267558	0.000323745	0.000385283	0.003851466	0.002574903	2.125753438	0.000100855	9.27866E-05	1.96456E-05	1.73501E-05	68967.7292	4109.103011	7.284228743	2625509
Los Angeles (SC)	2022	ConstMin - Bore/Drill Rigs	Aggregate	9999	Diesel	0.000317127	0.000383724	0.000456663	0.002280865	0.008877977	1.216641467	0.000203875	0.000187565	1.12389E-05	9.93006E-06	39472.5925	817.3827113	1.120650576	1521439
Los Angeles (SC)	2022	ConstMin - Cranes	Aggregate	25	Diesel	7.08352E-06	8.57106E-06	1.02003E-05	3.99273E-05	3.51483E-05	0.004301273	2.69991E-06	2.48392E-06	3.95549E-08	3.51064E-08	139.5500519	337.097097	0.703722276	8427.427
Los Angeles (SC)	2022	ConstMin - Cranes	Aggregate	50	Diesel	0.000207001	0.000250471	0.000298081	0.000901202	0.000718327	0.06968766	7.43359E-05	6.83891E-05	6.38087E-07	5.68781E-07	2260.93939	3279.327721	7.506370945	135203.4
Los Angeles (SC)	2022	ConstMin - Cranes	Aggregate	75	Diesel	5.76636E-05	6.9773E-05	8.30356E-05	0.000240983	0.000525889	0.028110314	4.89905E-05	4.50712E-05	2.58164E-07	2.29433E-07	912.0081716	874.6303057	2.34574092	60860.76
Los Angeles (SC)	2022	ConstMin - Cranes	Aggregate	100	Diesel	0.001417369	0.001715017	0.002041011	0.011920111	0.015371371	1.574798108	0.001020914	0.000939241	1.45173E-05	1.28533E-05	51092.59028	39145.3334	88.19985861	3439404
Los Angeles (SC)	2022	ConstMin - Cranes	Aggregate	175	Diesel	0.003441949	0.004164758	0.004956406	0.031683497	0.041920406	4.822207973	0.002253042	0.002072799	4.44804E-05	3.93582E-05	156451.227	71689.13731	156.9300676	10486109
Los Angeles (SC)	2022	ConstMin - Cranes	Aggregate	300	Diesel	0.004286367	0.005186504	0.006172368	0.028449244	0.058899935	8.314988947	0.002439991	0.002244792	7.67476E-05	6.78658E-05	269770.6591	82158.17267	174.2885504	18123833
Los Angeles (SC)	2022	ConstMin - Cranes	Aggregate	600	Diesel	0.005363382	0.006489692	0.00772327	0.052176721	0.071535786	14.49763986	0.002868491	0.002639012	0.000133877	0.000118328	470359.9588	86061.3176	173.5848281	31588257
Los Angeles (SC)	2022	ConstMin - Cranes	Aggregate	750	Diesel	0.000153078	0.000185224	0.000220432	0.001445517	0.001893581	0.290933667	9.28395E-05	8.54124E-05	2.68523E-06	2.37456E-06	9439.022408	1001.912596	2.34574092	635235.8
Los Angeles (SC)	2022	ConstMin - Cranes	Aggregate	9999	Diesel	0.000849395	0.001027768	0.001223128	0.008640121	0.012022559	0.800893914	0.000552906	0.000508673	7.37918E-06	6.53679E-06	25984.121	1860.465139	3.753185473	1745610
Los Angeles (SC)	2022	ConstMin - Crawler Tractors	Aggregate	25	Diesel	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Los Angeles (SC)	2022	ConstMin - Crawler Tractors	Aggregate	50	Diesel	0.000613396	0.00074221	0.000883291	0.002752633	0.002103075	0.225703123	0.000210644	0.000193793	2.06834E-06	1.84216E-06	7322.68925	7104.759396	20.81908657	298686.7
Los Angeles (SC)	2022	ConstMin - Crawler Tractors	Aggregate	75	Diesel	7.41707E-05	8.97465E-05	0.000106806	0.000290937	0.000710742	0.024291804	5.21103E-05	4.79414E-05	2.22365E-07	1.98266E-07	788.120844	507.0411405	2.498290388	35464.44

Los Angeles (SC)	2022 ConstMin - Crawler Tractors	Aggregate	100	Diesel	0.009193795	0.011124491	0.013239064	0.073149314	0.094621298	9.943753475	0.007572577	0.006966771	9.16591E-05	8.11596E-05	322614.1304	166072.3834	355.1736168	14510137
Los Angeles (SC)	2022 ConstMin - Crawler Tractors	Aggregate	175	Diesel	0.006651019	0.008047733	0.009577467	0.067343417	0.079080976	10.87586806	0.004419638	0.004066067	0.000100353	8.87674E-05	352855.5615	106568.0614	235.0474873	15899232
Los Angeles (SC)	2022 ConstMin - Crawler Tractors	Aggregate	300	Diesel	0.006327835	0.00765668	0.009112082	0.042392181	0.090950768	11.40936301	0.003659337	0.00336659	0.000105295	9.31217E-05	370164.2176	81293.53505	182.1670075	16704134
Los Angeles (SC)	2022 ConstMin - Crawler Tractors	Aggregate	600	Diesel	0.013786774	0.016681997	0.019852955	0.116957075	0.179929863	39.89652134	0.006968171	0.006410718	0.00036845	0.00032563	1294398.697	151368.1903	318.7402153	58439984
Los Angeles (SC)	2022 ConstMin - Crawler Tractors	Aggregate	750	Diesel	0.000276719	0.00033483	0.000398476	0.002072298	0.004220215	0.409753961	0.00015094	0.000138865	3.78008E-06	3.34436E-06	13294.01599	967.4687428	2.290099522	603221.4
Los Angeles (SC)	2022 ConstMin - Crawler Tractors	Aggregate	9999	Diesel	0.001280378	0.001549257	0.001843744	0.006923682	0.026203389	2.300915307	0.000709721	0.000652943	2.12347E-05	1.87798E-05	74650.66314	3457.9635	6.24572597	3362348
Los Angeles (SC)	2022 ConstMin - Excavators	Aggregate	25	Diesel	1.54555E-05	1.87011E-05	2.22559E-05	5.25162E-05	3.56713E-05	0.002763324	4.97151E-06	4.57379E-06	2.50846E-08	2.25539E-08	89.65299221	163.4736177	0.625821509	4086.84
Los Angeles (SC)	2022 ConstMin - Excavators	Aggregate	50	Diesel	0.006051332	0.007322111	0.008713918	0.065585014	0.056800531	9.024731192	0.00244725	0.00225147	8.32566E-05	7.36586E-05	292797.4646	372468.2039	509.0014941	13338709
Los Angeles (SC)	2022 ConstMin - Excavators	Aggregate	75	Diesel	6.49364E-06	7.8573E-06	9.35084E-06	2.54715E-05	6.22254E-05	0.002126746	4.56225E-06	4.19727E-06	1.9468E-08	1.73582E-08	68.99993976	66.0090264	0.20860717	3498.478
Los Angeles (SC)	2022 ConstMin - Excavators	Aggregate	100	Diesel	0.004586893	0.005550141	0.006605126	0.077635795	0.057721984	11.71311	0.003029579	0.002787213	0.000108156	9.56008E-05	380018.9542	237525.2602	366.7314043	19329895
Los Angeles (SC)	2022 ConstMin - Excavators	Aggregate	175	Diesel	0.007461894	0.009028891	0.010745127	0.144035677	0.079184516	24.7223962	0.003846393	0.003538681	0.000228347	0.000201781	802090.9179	278005.7126	469.9919533	40597249
Los Angeles (SC)	2022 ConstMin - Excavators	Aggregate	300	Diesel	0.007504264	0.009080159	0.01080614	0.066607956	0.085548794	31.56303753	0.002724372	0.002506423	0.000291591	0.000257613	1024027.992	236932.3704	406.5753737	51794982
Los Angeles (SC)	2022 ConstMin - Excavators	Aggregate	600	Diesel	0.011207087	0.013560575	0.016138205	0.112192145	0.109047588	56.13381493	0.003666757	0.003373416	0.000518649	0.000458157	1821199.805	272666.6071	424.098376	92511276
Los Angeles (SC)	2022 ConstMin - Excavators	Aggregate	750	Diesel	0.000166152	0.000201043	0.000239258	0.001484764	0.00236713	0.447028085	7.90795E-05	7.27531E-05	4.12801E-06	3.64858E-06	14503.33389	1125.966245	2.294678867	722043.9
Los Angeles (SC)	2022 ConstMin - Excavators	Aggregate	9999	Diesel	0.000271316	0.000328292	0.000390695	0.002918796	0.008093656	1.558501433	0.000112261	0.00010328	1.4401E-05	1.27203E-05	50563.86261	2123.965532	3.129107545	2557045
Los Angeles (SC)	2022 ConstMin - Graders	Aggregate	25	Diesel	4.85637E-06	5.87621E-06	6.99317E-06	2.28773E-05	1.79968E-05	0.001735045	2.16879E-06	1.99529E-06	1.58957E-08	1.41612E-08	56.29162018	95.7872322	0.419259876	2394.681
Los Angeles (SC)	2022 ConstMin - Graders	Aggregate	50	Diesel	0.000183552	0.000222097	0.000264314	0.000781233	0.000559162	0.057960955	6.21912E-05	5.72159E-05	5.30371E-07	4.7307E-07	1880.479361	2142.520916	6.079268199	80002.65
Los Angeles (SC)	2022 ConstMin - Graders	Aggregate	75	Diesel	5.87194E-05	7.10505E-05	8.45559E-05	0.000239054	0.000554616	0.025002447	4.65621E-05	4.28371E-05	2.29398E-07	2.04067E-07	811.1768655	533.7743515	1.677039503	37447.38
Los Angeles (SC)	2022 ConstMin - Graders	Aggregate	100	Diesel	0.001842463	0.00222938	0.002653146	0.011260865	0.017530448	1.327939155	0.001393441	0.001281966	1.22222E-05	1.08385E-05	43083.52342	23068.91807	61.63120175	2067666
Los Angeles (SC)	2022 ConstMin - Graders	Aggregate	175	Diesel	0.010203803	0.012346602	0.014693477	0.098609522	0.115761534	15.09959957	0.006425898	0.005911826	0.000139297	0.000123241	489889.8789	155476.0881	329.5382624	23091941
Los Angeles (SC)	2022 ConstMin - Graders	Aggregate	300	Diesel	0.015217274	0.018412901	0.021912874	0.078501391	0.216951226	31.84480083	0.007179672	0.006605298	0.000293964	0.000259913	1033169.492	225712.7945	297.255252	48864148
Los Angeles (SC)	2022 ConstMin - Graders	Aggregate	600	Diesel	0.000728184	0.000881102	0.001048585	0.002938165	0.011536041	1.368686893	0.00035448	0.000326122	1.26323E-05	1.1171E-05	44405.5389	5944.076694	7.756307703	2092873
Los Angeles (SC)	2022 ConstMin - Graders	Aggregate	9999	Diesel	0.000794364	0.00096118	0.001143884	0.004035816	0.013265929	1.080835773	0.000406756	0.000374216	9.96903E-06	8.82164E-06	35066.52632	916.6838122	1.257779627	1658576
Los Angeles (SC)	2022 ConstMin - Off-Highway Tractors	Aggregate	25	Diesel	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Los Angeles (SC)	2022 ConstMin - Off-Highway Tractors	Aggregate	50	Diesel	0.004086232	0.004944341	0.005884174	0.032703276	0.027258061	3.742910583	0.001648908	0.001516995	3.44825E-05	3.05491E-05	121434.6118	128751.3736	195.3332512	4860131
Los Angeles (SC)	2022 ConstMin - Off-Highway Tractors	Aggregate	75	Diesel	0.001093923	0.001323647	0.00157525	0.015016557	0.013056712	2.151028564	0.000713125	0.000656075	1.98545E-05	1.75564E-05	69787.75283	43903.56474	72.04071435	3092972
Los Angeles (SC)	2022 ConstMin - Off-Highway Tractors	Aggregate	100	Diesel	0.001462256	0.001769329	0.002105648	0.018150043	0.017198543	2.606708069	0.001237246	0.001138266	2.40564E-05	2.12756E-05	84571.77254	47525.00573	69.77657762	3748404
Los Angeles (SC)	2022 ConstMin - Off-Highway Tractors	Aggregate	175	Diesel	0.001491847	0.001805135	0.002148259	0.024576904	0.017429427	4.072360507	0.00084087	0.0007736	3.76062E-05	3.32381E-05	132123.2517	37095.19925	54.13345107	5864969
Los Angeles (SC)	2022 ConstMin - Off-Highway Tractors	Aggregate	300	Diesel	0.000993606	0.001202263	0.001430793	0.007692412	0.011628402	3.43114806	0.00041075	0.00037789	3.16929E-05	2.80046E-05	111319.8201	23142.94067	35.60869595	4949538
Los Angeles (SC)	2022 ConstMin - Off-Highway Tractors	Aggregate	600	Diesel	0.00241699	0.002924558	0.003480465	0.022996966	0.02272532	11.47474887	0.000788655	0.000725563	0.000106017	9.36554E-05	372285.5898	46328.67462	67.30661027	16572706
Los Angeles (SC)	2022 ConstMin - Off-Highway Tractors	Aggregate	750	Diesel	0.000185132	0.00022401	0.000266591	0.001025128	0.001662636	0.503238593	8.38759E-05	7.71658E-05	4.64714E-06	4.10737E-06	16327.02192	1156.359355	1.6466449	736734.7
Los Angeles (SC)	2022 ConstMin - Off-Highway Tractors	Aggregate	9999	Diesel	0.000253775	0.000307068	0.000365437	0.001538381	0.004326011	0.6331482	0.000115615	0.000106366	5.84616E-06	5.16767E-06	20541.79607	557.488416	1.029153062	912372.9
Los Angeles (SC)	2022 ConstMin - Off-Highway Trucks	Aggregate	25	Diesel	4.8279E-05	5.84176E-05	6.95218E-05	0.000212245	0.000139167	0.014746079	1.49766E-05	1.37784E-05	1.34886E-07	1.20356E-07	478.4202804	871.9965583	0.611817466	21799.91
Los Angeles (SC)	2022 ConstMin - Off-Highway Trucks	Aggregate	50	Diesel	0.000358003	0.000433183	0.000515524	0.003192514	0.00255869	0.346247732	0.000153753	0.000141453	3.19049E-06	2.82603E-06	11233.62635	17830.15137	11.01271439	514315.8
Los Angeles (SC)	2022 ConstMin - Off-Highway Trucks	Aggregate	75	Diesel	5.3605E-05	6.4862E-05	7.71912E-05	0.000798122	0.000453516	0.103707529	1.84136E-05	1.69405E-05	9.57219E-07	8.46447E-07	3364.676557	2391.642177	1.631513243	170485.9
Los Angeles (SC)	2022 ConstMin - Off-Highway Trucks	Aggregate	100	Diesel	0.000131627	0.000159269	0.000189544	0.001864432	0.001433956	0.255875863	9.14028E-05	8.40906E-05	2.36175E-06	2.08842E-06	8301.610574	4801.921736	3.670904797	419369.9
Los Angeles (SC)	2022 ConstMin - Off-Highway Trucks	Aggregate	175	Diesel	0.003309222	0.004004159	0.00476528	0.0536595	0.03017881	8.564558195	0.001477562	0.001359357	7.90843E-05	6.99028E-05	277867.6585	89312.20319	63.62901648	14094869
Los Angeles (SC)	2022 ConstMin - Off-Highway Trucks	Aggregate	300	Diesel	0.005952604	0.00720265	0.008571749	0.043433845	0.054651821	17.46174399	0.002159785	0.001987002	0.000161264	0.00014252	566527.0532	136617.6088	107.2719957	28806582
Los Angeles (SC)	2022 ConstMin - Off-Highway Trucks	Aggregate	600	Diesel	0.022791962	0.027578274	0.032820425	0.174504945	0.210663128	74.68614399	0.007624768	0.007014787	0.000689827	0.000609578	2423109.69	326191.7107	239.6285076	1.23E+08
Los Angeles (SC)	2022 ConstMin - Off-Highway Trucks	Aggregate	750	Diesel	0.010482675	0.012684037	0.015095052	0.084513671	0.108155934	25.42087961	0.004215757	0.003878496	0.000234714	0.000207482	824752.4427	63078.92175	51.59660631	41824449
Los Angeles (SC)	2022 ConstMin - Off-Highway Trucks	Aggregate	9999	Diesel	0.014661533	0.017740455	0.021112607	0.105113585	0.299055765	44.90302469	0.006216522	0.0057192	0.000414711	0.000366492	1456829.184	57992.77992	40.99177023	73528600
Los Angeles (SC)	2022 ConstMin - Other Construction Equipment	Aggregate	25	Diesel	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Los Angeles (SC)	2022 ConstMin - Other Construction Equipment	Aggregate	50	Diesel	0.002598069	0.003143664	0.00374122	0.017663467	0.016206759	2.023378688	0.001188858	0.001093749	1.86292E-05	1.65145E-05	65646.29317	71728.72153	150.8008412	2735434
Los Angeles (SC)	2022 ConstMin - Other Construction Equipment	Aggregate	75	Diesel	0.000450479	0.00054508	0.00064869	0.00232977	0.004519182	0.263886538	0.000354551	0.000326187	2.42625E-06	2.15381E-06	8561.5081	5510.174727	18.26658911	403625.3
Los Angeles (SC)	2022 ConstMin - Other Construction Equipment	Aggregate	100	Diesel	0.003903695	0.00472347	0.00562132	0.041633765	0.044571391	6.073989703	0.003099571	0.002851605	5.60399E-05	4.95751E-05	197063.9066	111800.7172	247.6137634	9180561
Los Angeles (SC)	2022 ConstMin - Other Construction Equipment	Aggregate	175	Diesel	0.001609363	0.001947329	0.002317482	0.020725202	0.019730743	3.446705907	0.001031675	0.000949141	3.18182E-05	2.81316E-05	111824.5773	34321.85498	83.01149938	5225303
Los Angeles (SC)	2022 ConstMin - Other Construction Equipment	Aggregate	300	Diesel	0.001668043	0.002018332	0.002401981	0.011948731	0.02316644	4.527348858	0.000893524	0.000822042	4.18075E-05	3.69516E-05	146884.8477	31134.13335	76.51671215	6818557
Los Angeles (SC)	2022 ConstMin - Other Construction Equipment	Aggregate	600	Diesel	0.00488573	0.005911733	0.007035451	0.045731102	0.062454201	17.43738949	0.002302425	0.002118231	0.000161071	0.000142322	565736.8982	69147.75439	154.8600832	26349040
Los Angeles (SC)	2022 ConstMin - Other Construction Equipment	Aggregate	750	Diesel	0.001015204	0.001228397	0.001461894	0.007165559	0.014170845	3.450227089	0.000465925	0.000428651	3.18686E-05	2.81603E-05	111938.8182	8515.429494	17.0488165	5229524
Los Angeles (SC)	2022 ConstMin - Other Construction Equipment	Aggregate	9999	Diesel	0.000223929	0.000270954	0.000322457	0.002091115	0.00609026	1.116038756	0.00011077	0.000101908	1.03116E-05	9.10896E-06	36208.64835	1836.724909	3.856279922	1686473
Los Angeles (SC)	2022 ConstMin - Pavers	Aggregate	25	Diesel	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Los Angeles (SC)	2022 ConstMin - Pavers	Aggregate	50	Diesel	0.000378917	0.00045849	0.000545641	0.00214817	0.001856918	0.247551904	0.000138473	0.000127395	2.27737E-06	2.02049E-06	8031.548898	8668.167471	24.42914185	336160.3
Los Angeles (SC)	2022 ConstMin - Pavers	Aggregate	75	Diesel	0.000622417	0.000753124	0.00089628	0.002990726	0.005626763	0.37814614	0.000542394	0.000499002	3.47748E-06	3.08638E-06	12268.53505	7984.230128	23.61483712	576315.7
Los Angeles (SC)	2022 ConstMin - Pavers	Aggregate	100	Diesel	0.000759852	0.000919421	0.001094187	0.012987887	0.010832364	2.010132441	0.000570175	0.000524561	1.85619E-05	1.64064E-05	65216.53329	37551.43914	94.45934847	3047853
Los Angeles (SC)	2022 ConstMin - Pavers	Aggregate	175	Diesel	0.001117683	0.001352397	0.001609464	0.018548492	0.013657541	3.268247191	0.000656171	0.000603678	3.0183E-05	2.6675E-05	106034.6808	31195.54266	80.81974427	4925613
Los Angeles (SC)	2022 ConstMin - Pavers	Aggregate	300	Diesel	0.000597423	0.000722882	0.000860289	0.004898021	0.00962572	2.552279161	0.000294372	0.000270823	2.35792E-05	2.08314E-05	82805.88655	17492.61032	38.88305077	3853825
Los Angeles (SC)	2022 ConstMin - Pavers	Aggregate	600	Diesel	8.01828E-05	9.70212E-05	0.000115463	0.000855339	0.001118953	0.464167	3.24118E-05	2.98188E-05	4.28905E-06	3.78847E-06	15059.38712	1860.421199	4.275099823	700961.4
Los Angeles (SC)	2022 ConstMin - Pavers	Aggregate	750	Diesel	7.84223E-06	9.4891E-06	1.12928E-05	0.00016966	4.6967E-05	0.095744426	1.59475E-06	1.46717E-06	8.84969E-07	7.81453E-07	3106.322473	192.7861467	0.407152364	144589.6
Los Angeles (SC)	2022 ConstMin - Paving Equipment	Aggregate	25	Diesel	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Los Angeles (SC)	2022 ConstMin - Paving Equipment	Aggregate	50	Diesel	0.000249959	0.00030245	0.000359941	0.00224628	0.002030162	0.308214888	9.9633E-05	9.16624E-05	2.8421E-06	2.51561E-06	9999.692597	14172.41813	30.08082237	492433.8
Los Angeles (SC)	2022 ConstMin - Paving Equipment	Aggregate	75	Diesel	3.88684E-05	4.70308E-05	5.59705E-05	0.000350185	0.000496744	0.047712457	3.64781E-05	3.35599E-05	4.39959E-07	3.89423E-07	1547.978119	1221.491977	3.048731997	83605.73
Los Angeles (SC)	2022 ConstMin - Paving Equipment	Aggregate	100	Diesel	0.000521241	0.000630702	0.000750587	0.008346188	0.0065923	1.281560471	0.000349593	0.000321625	1.1833E-05	1.04599E-05	41578.81811	25401.2751	55.08042475	2260981
Los Angeles (SC)	2022 ConstMin - Paving Equipment	Aggregate	175	Diesel	0.0005257	0.000636097	0.000757008	0.008165876	0.006032893	1.389236005	0.000319327	0.000293781	1.28284E-05	1.13388E-05	45072.23222	16932.09379	36.78803277	2458587
Los Angeles (SC)	2022 ConstMin - Paving Equipment	Aggregate	300	Diesel	0.000288009	0.00034849	0.000414732	0.002045978	0.003965814	0.932376785	0.000151587	0.00013946	8.61165E-06	7.60993E-06	30249.93797	7133.921782	15.24365999	1646554
Los Angeles (SC)	2022 ConstMin - Paving Equipment	Aggregate	600	Diesel	0.000263083	0.000318331	0.00037884	0.002076388	0.003531358	0.998574863	0.000113667	0.000104574	9.22443E-06	8.15023E-06	32397.66168	4444.828439	9.552693591	1766646
Los Angeles (SC)	2022 ConstMin - Paving Equipment	Aggregate	750	Diesel	3.84043E-05	4.64692E-05	5.53022E-05	0.000368993	0.000439824	0.199316063	1.10689E-05	1.01834E-05	1.84162E-06	1.62679E-06	6466.590168	549.7990881	1.016243999	351727.5
Los Angeles (SC)	2022 ConstMin - Paving Equipment	Aggregate	9999	Diesel	1.42814E-05	1.72805E-05	2.05652E-05	0.000168959	0.000401006	0.09045265	6.60477E-06	6.07638E-06	8.35851E-07	7.38262E-07	2934.636621	189.4577939	0.4064976	159715.7
Los Angeles (SC)	2022 ConstMin - Rollers	Aggregate	25	Diesel	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Los Angeles (SC)	2022 ConstMin - Rollers	Aggregate	50	Diesel	0.005251978	0.006354894	0.007562849	0.037967311	0.035613463	5.076095084	0.002154584	0.001982217	4.67735E-05	4.14304E-05	164688.3147	213769.2814	617.3209126	7633421
Los Angeles (SC)	2022 ConstMin - Rollers	Aggregate	75	Diesel	0.000171766	0.000207837	0.000247343	0.000673935	0.001545858	0.056320054	0.00011177	0.000102828	5.15554E-07	4.59677E-07	1827.242138	1349.139761	5.86329225	93640.82
Los Angeles (SC)	2022 ConstMin - Rollers	Aggregate	100	Diesel	0.003685373	0.004459302	0.005306938	0.051355207	0.046708483	7.886851706	0.002672474	0.002458676	7.28073E-05	6.43714E-05	255880.2178	151062.27	455.2427626	13186839
Los Angeles (SC)	2022 ConstMin - Rollers	Aggregate	175	Diesel	0.002111749	0.002555216	0.003040918	0.045304411	0.026655331	8.209337482	0.001223719	0.001125821	7.5836E-05	6.70035E-05	266342.9136	95537.27497	266.3609908	13736636
Los Angeles (SC)	2022 ConstMin - Rollers	Aggregate	300	Diesel	0.00047016	0.000568893	0.00067703	0.003978942	0.006633543	1.359624359	0.0002494	0.000229448	1.25563E-05	1.10971E-05	44111.51497	10510.37284	34.13273703	2272966
Los Angeles (SC)	2022 ConstMin - Rollers	Aggregate	600	Diesel	0.000188404	0.000227968	0.000271301	0.002093487	0.002604257	0.796892286	8.81237E-05	8.10738E-05	7.36201E-06	6.50413E-06	25854.2926	3794.335973	12.35479438	1325218
Los Angeles (SC)	2022 ConstMin - Rough Terrain Forklifts	Aggregate	25	Diesel	1.4549E-06	1.76043E-06	2.09506E-06	1.80899E-05	2.25606E-05	0.002656903	1.26239E-06	1.1614E-06	2.45207E-08	2.16853E-08	86.20029709	149.0685375	0.483312357	3726.713
Los Angeles (SC)	2022 ConstMin - Rough Terrain Forklifts	Aggregate	50	Diesel	0.000285586	0.00034556	0.000411245	0.00187685	0.001756805	0.255911508	0.000103317	9.50514E-05	2.35746E-06	2.08872E-06	8302.767049	7522.99219	27.54880435	359353.2
Los Angeles (SC)	2022 ConstMin - Rough Terrain Forklifts	Aggregate	75	Diesel	1.95077E-05	2.36043E-05	2.80911E-05	7.91096E-05	0.000194546	0.007054825	1.32688E-05	1.22073E-05	6.46401E-08	5.75805E-08	228.8860252	165.9077611	0.724968535	11006.37
Los Angeles (SC)	2022 ConstMin - Rough Terrain Forklifts	Aggregate	100	Diesel	0.004105183	0.004967271	0.005911463	0.123023751	0.073803042	20.21781689	0.001982413	0.00182382	0.000186801	0.000165015	655944.8031	327439.5325	1158.983032	31528651
Los Angeles (SC)	2022 ConstMin - Rough Terrain Forklifts	Aggregate	175	Diesel	0.001754102	0.002122463	0.002525906	0.025299841	0.018841658	4.446841364	0.001257763	0.001157142	4.10606E-05	3.62945E-05	144272.8707	55355.22112	202.0245652	6939528
Los Angeles (SC)	2022 ConstMin - Rough Terrain Forklifts	Aggregate	300	Diesel	5.95166E-05	7.20151E-05	8.57039E-05	0.000610253	0.000968119	0.32637305	2.23024E-05	2.05182E-05	3.0157E-06	2.66381E-06	10588.81417	2421.811628	9.666247139	509210.6
Los Angeles (SC)	2022 ConstMin - Rough Terrain Forklifts	Aggregate	600	Diesel	1.31423E-05	1.59021E-05	1.89248E-05	0.000217552	0.000136458	0.121340464	2.06561E-06	1.90036E-06	1.12146E-06	9.90365E-07	3936.757727	494.6867021	1.933249428	190555.1
Los Angeles (SC)	2022 ConstMin - Rough Terrain Forklifts	Aggregate	750	Diesel	3.56865E-06	4.31806E-06	5.13885E-06	3.85554E-05	5.2965E-05	0.020879206	3.75109E-07	3.451E-07	1.92932E-07	1.70413E-07	677.4028394	52.17398811	0.241656178	32608.74
Los Angeles (SC)	2022 ConstMin - Rubber Tired Dozers	Aggregate	25	Diesel	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Los Angeles (SC)	2022 ConstMin - Rubber Tired Dozers	Aggregate	50	Diesel	0.000401035	0.000485252	0.00057749	0.002406836	0.001752722	0.225492627	0.000142668	0.000131254	2.07276E-06	1.84044E-06	7315.859953	7759.963377	8.16832542	321873.6
Los Angeles (SC)	2022 ConstMin - Rubber Tired Dozers	Aggregate	75	Diesel	0.000314657	0.000380734	0.000453105	0.001924711	0.003073194	0.226693888	0.000231025	0.000212543	2.08646E-06	1.85025E-06	7354.833538	5225.805176	6.972960725	357621.6
Los Angeles (SC)	2022 ConstMin - Rubber Tired Dozers	Aggregate	100	Diesel	0.000773575	0.000936026	0.001113948	0.005698101	0.00783445	0.719223932	0.000598863	0.000550954	6.62637E-06	5.87021E-06	23334.42838	13407.9386	15.53974104	1133283
Los Angeles (SC)	2022 ConstMin - Rubber Tired Dozers	Aggregate	175	Diesel	0.001020246	0.001234498	0.001469155	0.00729852	0.011232779	1.012764399	0.000717185	0.000659811	9.3329E-06	8.26605E-06	32858.02555	11272.28161	14.34437635	1606559
Los Angeles (SC)	2022 ConstMin - Rubber Tired Dozers	Aggregate	300	Diesel	0.000912669	0.001104329	0.001314243	0.006257247	0.012197902	1.095020344	0.000558306	0.000513642	1.00966E-05	8.93741E-06	35526.72911	7828.466442	11.15673716	1731889
Los Angeles (SC)	2022 ConstMin - Rubber Tired Dozers	Aggregate	600	Diesel	0.008336147	0.010086738	0.012004051	0.080091838	0.104238589	11.39370317	0.004676219	0.004302121	0.00010509	9.29939E-05	369656.1513	48639.45136	66.94042296	17952407
Los Angeles (SC)	2022 ConstMin - Rubber Tired Dozers	Aggregate	750	Diesel	0.000127699	0.000154515	0.000183886	0.000671663	0.002231365	0.325752806	6.25799E-05	5.75735E-05	3.00792E-06	2.65875E-06	10568.69103	794.7265775	0.796909797	516931.9
Los Angeles (SC)	2022 ConstMin - Rubber Tired Loaders	Aggregate	25	Diesel	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Los Angeles (SC)	2022 ConstMin - Rubber Tired Loaders	Aggregate	50	Diesel	0.001172034	0.001418161	0.001687729	0.007465492	0.005713232	0.706322175	0.000426344	0.000392236	6.49514E-06	5.76491E-06	22915.8451	26410.76017	30.73299419	1097832
Los Angeles (SC)	2022 ConstMin - Rubber Tired Loaders	Aggregate	100	Diesel	0.011975983	0.01449094	0.017245416	0.126468707	0.12408256	17.19022487	0.008775721	0.008073663	0.000158573	0.000140304	557717.9142	349997.2498	381.8782184	30084415
Los Angeles (SC)	2022 ConstMin - Rubber Tired Loaders	Aggregate	175	Diesel	0.018868236	0.022830566	0.02717026	0.255541968	0.194928785	40.76256342	0.010514321	0.009673176	0.000376304	0.000332699	1322496.478	472179.4544	500.8647432	70846022
Los Angeles (SC)	2022 ConstMin - Rubber Tired Loaders	Aggregate	300	Diesel	0.020881559	0.025266686	0.030069445	0.138593117	0.260198806	59.0913531	0.008773985	0.008072066	0.000545702	0.000482296	1917153.874	492351.0526	461.8255344	1.03E+08
Los Angeles (SC)	2022 ConstMin - Rubber Tired Loaders	Aggregate	600	Diesel	0.029293775	0.035445468	0.042183036	0.202778304	0.330167999	76.14720295	0.012396026	0.011404344	0.00070314	0.000621503	2470512.139	402293.1073	413.2341787	1.33E+08
Los Angeles (SC)	2022 ConstMin - Rubber Tired Loaders	Aggregate	750	Diesel	0.002058503	0.002490789	0.002964245	0.020687108	0.018209605	7.406419496	0.000643127	0.000591677	6.84143E-05	6.04502E-05	240293.1238	20033.30335	19.93491515	12944900
Los Angeles (SC)	2022 ConstMin - Rubber Tired Loaders	Aggregate	9999	Diesel	0.001683173	0.002036882	0.002424058	0.011406649	0.03772436	5.285917661	0.000791987	0.000728628	4.88204E-05	4.31429E-05	171495.7771	9549.461749	8.098559281	9148659
Los Angeles (SC)	2022 ConstMin - Scrapers	Aggregate	25	Diesel	3.35776E-07	4.06289E-07	4.83518E-07	9.46012E-06	8.6797E-06	0.001805065	3.02594E-08	2.78386E-08	1.66786E-08	1.47327E-08	58.56335263	84.43520914	0.205317872	2110.88
Los Angeles (SC)	2022 ConstMin - Scrapers	Aggregate	50	Diesel	6.90852E-05	8.35931E-05	9.94827E-05	0.000235552	0.000167153	0.014366935	2.32879E-05	2.14248E-05	1.30757E-07	1.17261E-07	466.1193715	441.1739677	1.231907234	17086.64
Los Angeles (SC)	2022 ConstMin - Scrapers	Aggregate	75	Diesel	0.000201125	0.000243361	0.00028962	0.001052437	0.001868814	0.126784245	0.000161524	0.000148602	1.16615E-06	1.0348E-06	4113.375203	2429.388601	5.543582555	164718
Los Angeles (SC)	2022 ConstMin - Scrapers	Aggregate	100	Diesel	0.000489684	0.000592517	0.000705145	0.004297319	0.006183267	0.571408703	0.000459604	0.000422835	5.26827E-06	4.66376E-06	18538.72607	8195.609758	13.55097958	739105.5
Los Angeles (SC)	2022 ConstMin - Scrapers	Aggregate	175	Diesel	0.004752809	0.005750899	0.006844045	0.049460799	0.056457164	7.708796189	0.003012465	0.002771468	7.11291E-05	6.29182E-05	250103.4026	59699.21099	133.6619349	9964984
Los Angeles (SC)	2022 ConstMin - Scrapers	Aggregate	300	Diesel	0.004828333	0.005842283	0.0069528	0.030392477	0.062718799	9.08573723	0.002734498	0.002515738	8.38573E-05	7.41566E-05	294776.7383	53032.34761	130.5821669	11844728
Los Angeles (SC)	2022 ConstMin - Scrapers	Aggregate	600	Diesel	0.043043156	0.052082218	0.061982144	0.385982277	0.56425861	112.5905865	0.021527856	0.019805628	0.001039665	0.000918949	3652877.582	346083.9734	720.6657322	1.46E+08
Los Angeles (SC)	2022 ConstMin - Scrapers	Aggregate	750	Diesel	0.001856932	0.002246887	0.002673981	0.020851788	0.030850143	1.729922236	0.001249135	0.001149204	1.59383E-05	1.41194E-05	56125.42179	3598.816247	9.855257876	2239537
Los Angeles (SC)	2022 ConstMin - Scrapers	Aggregate	9999	Diesel	0.002038274	0.002466311	0.002935114	0.024766922	0.033816299	2.601806701	0.001258804	0.0011581	2.39938E-05	2.12356E-05	84412.75304	2118.854665	5.338264683	3384163
Los Angeles (SC)	2022 ConstMin - Skid Steer Loaders	Aggregate	25	Diesel	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Los Angeles (SC)	2022 ConstMin - Skid Steer Loaders	Aggregate	50	Diesel	0.001964731	0.002377324	0.002829212	0.023815481	0.022360163	3.841963227	0.000670874	0.000617204	3.54619E-05	3.13576E-05	124648.2657	134624.1737	427.5717884	5866176
Los Angeles (SC)	2022 ConstMin - Skid Steer Loaders	Aggregate	75	Diesel	0.005141487	0.0062212	0.007403742	0.124440782	0.08282225	20.12380499	0.003028213	0.002785956	0.0001859	0.000164248	652894.6906	485436.1672	1359.2416	34253162
Los Angeles (SC)	2022 ConstMin - Skid Steer Loaders	Aggregate	100	Diesel	9.87994E-05	0.000119547	0.000142271	0.001913264	0.001760321	0.293196613	0.000115084	0.000105878	2.70778E-06	2.39303E-06	9512.441212	6662.956663	20.5624509	503275.7
Los Angeles (SC)	2022 ConstMin - Skid Steer Loaders	Aggregate	175	Diesel	3.37605E-05	4.08502E-05	4.86151E-05	0.000749158	0.00041185	0.137863926	1.86722E-05	1.71784E-05	1.27361E-06	1.12523E-06	4472.84324	1545.447553	5.723568808	235269.9
Los Angeles (SC)	2022 ConstMin - Skid Steer Loaders	Aggregate	300	Diesel	2.08075E-05	2.51771E-05	2.99628E-05	0.000238213	0.000301344	0.128117664	8.6376E-06	7.94659E-06	1.18389E-06	1.04568E-06	4156.636498	1063.554631	3.603728509	218129.7
Los Angeles (SC)	2022 ConstMin - Skid Steer Loaders	Aggregate	600	Diesel	9.25182E-06	1.11947E-05	1.33226E-05	6.95448E-05	0.000145611	0.037039216	6.30572E-06	5.80126E-06	3.42168E-07	3.02309E-07	1201.696559	133.1864861	0.42396806	62970.57
Los Angeles (SC)	2022 ConstMin - Skid Steer Loaders	Aggregate	9999	Diesel	2.48762E-05	3.01001E-05	3.58217E-05	0.000166072	0.000443376	0.050137686	1.47668E-05	1.35854E-05	4.62801E-07	4.09217E-07	1626.662009	85.48150834	0.42396806	85481.51
Los Angeles (SC)	2022 ConstMin - Surfacing Equipment	Aggregate	25	Diesel	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Los Angeles (SC)	2022 ConstMin - Surfacing Equipment	Aggregate	50	Diesel	2.10071E-05	2.54186E-05	3.02502E-05	0.000224126	0.000232382	0.035609365	9.17541E-06	8.44138E-06	3.28596E-07	2.90639E-07	1155.306637	1829.111308	7.50022009	66172.18
Los Angeles (SC)	2022 ConstMin - Surfacing Equipment	Aggregate	75	Diesel	1.89794E-05	2.29651E-05	2.73304E-05	0.000154106	0.000266133	0.021471746	1.63365E-05	1.50296E-05	1.97948E-07	1.7525E-07	696.6271679	669.6050043	2.692386699	44472.01
Los Angeles (SC)	2022 ConstMin - Surfacing Equipment	Aggregate	100	Diesel	7.08845E-05	8.57703E-05	0.000102074	0.001370747	0.001032911	0.220300148	4.87837E-05	4.4881E-05	2.03466E-06	1.79806E-06	7147.395687	5124.631212	18.46208022	456731.6
Los Angeles (SC)	2022 ConstMin - Surfacing Equipment	Aggregate	175	Diesel	9.16787E-05	0.000110931	0.000132017	0.00106705	0.001151839	0.180838856	6.25359E-05	5.7533E-05	1.66919E-06	1.47598E-06	5867.117516	2723.89516	10.96186013	376017.1
Los Angeles (SC)	2022 ConstMin - Surfacing Equipment	Aggregate	300	Diesel	0.000119386	0.000144457	0.000171916	0.000927716	0.002021333	0.366695124	6.66676E-05	6.13342E-05	3.3867E-06	2.99292E-06	11897.01945	3360.766849	13.65424683	762053.1
Los Angeles (SC)	2022 ConstMin - Surfacing Equipment	Aggregate	600	Diesel	0.000227151	0.000274853	0.000327098	0.002587445	0.003049808	1.285901805	0.000114661	0.000105488	1.1882E-05	1.04954E-05	41719.66887	6493.498923	22.6929736	2675851
Los Angeles (SC)	2022 ConstMin - Surfacing Equipment	Aggregate	750	Diesel	0.000100114	0.000121138	0.000144164	0.000963011	0.001421859	0.497914464	5.7185E-05	5.26102E-05	4.60046E-06	4.06391E-06	16154.28643	1621.507394	5.577086733	1035968
Los Angeles (SC)	2022 ConstMin - Surfacing Equipment	Aggregate	9999	Diesel	4.82117E-05	5.83361E-05	6.94248E-05	0.000448466	0.001322734	0.212482284	2.57003E-05	2.36443E-05	1.96306E-06	1.73425E-06	6893.753691	511.2109072	1.923133356	441985.9
Los Angeles (SC)	2022 ConstMin - Sweepers/Scrubbers	Aggregate	25	Diesel	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Los Angeles (SC)	2022 ConstMin - Sweepers/Scrubbers	Aggregate	50	Diesel	0.003321878	0.004019473	0.004783505	0.021733319	0.017903145	2.342755867	0.001333836	0.001227129	2.15603E-05	1.91213E-05	76008.13404	81424.77905	115.1754155	2901795
Los Angeles (SC)	2022 ConstMin - Sweepers/Scrubbers	Aggregate	75	Diesel	0.000553405	0.00066962	0.000796904	0.005027161	0.005711326	0.694548262	0.000419339	0.000385792	6.40484E-06	5.66881E-06	22533.85346	13100.09715	22.01583164	958035.1
Los Angeles (SC)	2022 ConstMin - Sweepers/Scrubbers	Aggregate	100	Diesel	0.001548018	0.001873102	0.002229147	0.020179609	0.017994885	2.926258624	0.001165089	0.001071882	2.70083E-05	2.38837E-05	94939.23834	50904.45886	71.75530314	4027483
Los Angeles (SC)	2022 ConstMin - Sweepers/Scrubbers	Aggregate	175	Diesel	0.000453257	0.000548441	0.000652691	0.005498332	0.005124007	0.90317387	0.0002468	0.000227056	8.33669E-06	7.37158E-06	29302.48154	7777.716952	10.80406553	1243131
Los Angeles (SC)	2022 ConstMin - Sweepers/Scrubbers	Aggregate	300	Diesel	0.000149335	0.000180695	0.000215042	0.001138287	0.002036164	0.542397008	6.48499E-05	5.96619E-05	5.01025E-06	4.42697E-06	17597.47359	3560.051999	4.892407032	746556.5
Los Angeles (SC)	2022 ConstMin - Sweepers/Scrubbers	Aggregate	600	Diesel	5.97711E-05	7.23231E-05	8.60704E-05	0.000972374	0.000818992	0.073250086	4.13571E-05	3.80486E-05	6.7544E-07	5.97857E-07	2376.518375	305.5198994	0.407700586	100821.6
Los Angeles (SC)	2022 ConstMin - Sweepers/Scrubbers	Aggregate	9999	Diesel	7.40167E-06	8.95602E-06	1.06584E-05	0.00016611	0.0004021	0.094115262	3.13685E-06	2.8859E-06	8.6992E-07	7.68156E-07	3053.466033	152.7599497	0.203850293	129540.4
Los Angeles (SC)	2022 ConstMin - Tractors/Loaders/Backhoes	Aggregate	25	Diesel	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Los Angeles (SC)	2022 ConstMin - Tractors/Loaders/Backhoes	Aggregate	50	Diesel	0.007496186	0.009070385	0.010794507	0.062756144	0.053140114	7.587609821	0.002870849	0.002641181	6.99263E-05	6.19291E-05	246171.6444	309366.2746	598.3998931	11712233
Los Angeles (SC)	2022 ConstMin - Tractors/Loaders/Backhoes	Aggregate	75	Diesel	0.002783917	0.00336854	0.004008841	0.011236012	0.02642512	1.117380133	0.002139321	0.001968175	1.02472E-05	9.11991E-06	36252.16783	26526.97668	115.7184462	1903139
Los Angeles (SC)	2022 ConstMin - Tractors/Loaders/Backhoes	Aggregate	100	Diesel	0.046623557	0.056414504	0.067137922	0.801049837	0.581766159	121.1840651	0.030570364	0.028124735	0.001119008	0.000989088	3931683.53	2471598.783	3947.354277	2.06E+08
Los Angeles (SC)	2022 ConstMin - Tractors/Loaders/Backhoes	Aggregate	175	Diesel	0.006677429	0.00807969	0.009615498	0.124442051	0.070829302	21.14546895	0.00360337	0.0033151	0.0001953	0.000172586	686041.4525	252326.3914	454.5337167	36186786
Los Angeles (SC)	2022 ConstMin - Tractors/Loaders/Backhoes	Aggregate	300	Diesel	0.003998663	0.004838382	0.005758075	0.031208696	0.050661431	13.33045847	0.00178204	0.001639477	0.000123127	0.000108801	432492.0443	108790.7579	193.0725788	22730932
Los Angeles (SC)	2022 ConstMin - Tractors/Loaders/Backhoes	Aggregate	600	Diesel	0.00449052	0.005433529	0.006466349	0.040545793	0.049291019	17.40092968	0.001810581	0.001665735	0.000160746	0.000142024	564553.9997	88040.81909	162.4228281	29846099
Los Angeles (SC)	2022 ConstMin - Tractors/Loaders/Backhoes	Aggregate	750	Diesel	0.000129609	0.000156827	0.000186638	0.001555584	0.001416765	0.329309343	5.40369E-05	4.9714E-05	3.04074E-06	2.68778E-06	10684.07897	890.5522455	1.876515344	578246.8
Los Angeles (SC)	2022 ConstMin - Tractors/Loaders/Backhoes	Aggregate	9999	Diesel	0.001522261	0.001841936	0.002192055	0.011469025	0.035756856	5.942070974	0.000677931	0.000623696	5.48917E-05	4.84984E-05	192783.9487	5465.499433	8.757071606	10115288
Los Angeles (SC)	2022 ConstMin - Trenchers	Aggregate	25	Diesel	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Los Angeles (SC)	2022 ConstMin - Trenchers	Aggregate	50	Diesel	0.002724265	0.003296361	0.003922942	0.020619395	0.01948036	2.690240281	0.001256775	0.001156233	2.47909E-05	2.19574E-05	87281.88315	75591.19967	196.2209796	3013372
Los Angeles (SC)	2022 ConstMin - Trenchers	Aggregate	75	Diesel	0.000219478	0.000265569	0.000316049	0.001334272	0.002215592	0.160605911	0.000152052	0.000139887	1.4783E-06	1.31084E-06	5210.681916	2838.815499	10.47998414	200229.7
Los Angeles (SC)	2022 ConstMin - Trenchers	Aggregate	100	Diesel	0.001382588	0.001672932	0.001990927	0.012431135	0.015768233	1.773469665	0.001124857	0.001034869	1.63551E-05	1.44748E-05	57538.27014	26419.19637	80.04924055	2211075
Los Angeles (SC)	2022 ConstMin - Trenchers	Aggregate	175	Diesel	0.000250442	0.000303034	0.000360636	0.002617004	0.003163969	0.414564691	0.00016119	0.000148294	3.82534E-06	3.38362E-06	13450.09483	3685.747893	12.48678961	518265.5
Los Angeles (SC)	2022 ConstMin - Trenchers	Aggregate	300	Diesel	0.000445645	0.00053923	0.000641729	0.002718796	0.006157602	0.895215961	0.000258143	0.000237492	8.26335E-06	7.30663E-06	29044.29595	4950.670079	16.05444379	1113424
Los Angeles (SC)	2022 ConstMin - Trenchers	Aggregate	600	Diesel	0.000416937	0.000504494	0.000600389	0.004694606	0.005171985	1.358338032	0.000215116	0.000197907	1.2546E-05	1.10866E-05	44069.78149	4437.671029	12.04083284	1687167
Los Angeles (SC)	2022 ConstMin - Trenchers	Aggregate	750	Diesel	3.54822E-05	4.29335E-05	5.10944E-05	0.000772622	0.00021393	0.436327207	7.2579E-06	6.67727E-06	4.033E-06	3.56124E-06	14156.1557	841.0739144	1.783827087	544360
Los Angeles (SC)	2022 ConstMin - Trenchers	Aggregate	9999	Diesel	6.42003E-05	7.76824E-05	9.24484E-05	0.000932903	0.000888119	0.035106372	4.12665E-05	3.79651E-05	3.2265E-07	2.86533E-07	1138.987576	50.9433019	0.222978386	43811.24
Los Angeles (SC)	2022 Industrial - Aerial Lifts	Aggregate	25	Diesel	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Los Angeles (SC)	2022 Industrial - Aerial Lifts	Aggregate	50	Diesel	0.001981361	0.002397447	0.002853161	0.046090092	0.043046193	8.697745958	0.00035945	0.000330694	8.03555E-05	7.09898E-05	282188.7887	345146.8993	1140.475579	15921247
Los Angeles (SC)	2022 Industrial - Aerial Lifts	Aggregate	75	Diesel	0.001790132	0.002166059	0.00257779	0.064672843	0.033631293	10.72527064	0.000611901	0.000562949	9.91067E-05	8.75382E-05	347969.5943	301851.1379	1000.001711	21827435
Los Angeles (SC)	2022 Industrial - Aerial Lifts	Aggregate	100	Diesel	0.000696803	0.000843131	0.001003396	0.026601395	0.013114499	4.451267283	0.000255648	0.000235196	4.11333E-05	3.63306E-05	144416.4648	115340.597	381.5937638	9058029
Los Angeles (SC)	2022 Industrial - Aerial Lifts	Aggregate	175	Diesel	0.000132749	0.000160627	0.000191159	0.00500941	0.001261945	0.927528975	4.77022E-05	4.3886E-05	8.57148E-06	7.57037E-06	30092.65612	14474.13824	47.90105074	1888344
Los Angeles (SC)	2022 Industrial - Aerial Lifts	Aggregate	300	Diesel	6.45654E-06	7.81241E-06	9.29742E-06	0.000100428	7.13973E-05	0.055427076	9.53792E-07	8.77488E-07	5.12257E-07	4.52388E-07	1798.270451	490.6279125	1.61464216	112844.4
Los Angeles (SC)	2022 Industrial - Aerial Lifts	Aggregate	600	Diesel	3.68525E-06	4.45915E-06	5.30675E-06	7.0745E-05	1.95031E-05	0.039361257	6.73109E-07	6.19261E-07	3.63804E-07	3.21261E-07	1277.032639	163.5426375	0.538214053	80135.89
Los Angeles (SC)	2022 Industrial - Forklifts	Aggregate	25	Diesel	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Los Angeles (SC)	2022 Industrial - Forklifts	Aggregate	50	Diesel	0.007072406	0.008557611	0.010184264	0.052825848	0.042945846	5.853932407	0.002686643	0.002471712	5.39103E-05	4.7779E-05	189924.39	387133.5497	528.698956	16413946
Los Angeles (SC)	2022 Industrial - Forklifts	Aggregate	75	Diesel	0.001335738	0.001616243	0.001923462	0.005381934	0.012668069	0.531694584	0.001025107	0.000943098	4.87571E-06	4.33962E-06	17250.24522	22865.342	47.62660017	1675098
Los Angeles (SC)	2022 Industrial - Forklifts	Aggregate	100	Diesel	0.038599056	0.046704858	0.055582641	0.485819151	0.436140326	69.97602956	0.028701942	0.026405787	0.000645805	0.000571135	2270295.214	2652818.911	3480.237342	2.19E+08
Los Angeles (SC)	2022 Industrial - Forklifts	Aggregate	175	Diesel	0.009547328	0.011552267	0.01374815	0.135037787	0.105065666	22.28568953	0.005618811	0.005169306	0.000205756	0.000181893	723034.6536	492545.7212	657.159694	69592622
Los Angeles (SC)	2022 Industrial - Forklifts	Aggregate	300	Diesel	0.001787588	0.002162982	0.002574127	0.012011425	0.021116983	4.858098331	0.000823564	0.000757679	4.48619E-05	3.96511E-05	157615.6501	72099.94875	96.1270829	15141104
Los Angeles (SC)	2022 Industrial - Forklifts	Aggregate	600	Diesel	0.000442833	0.000535828	0.00063768	0.002858334	0.004663961	1.2222203	0.000173883	0.000159972	1.12867E-05	9.9756E-06	39653.59158	10731.38732	14.85600372	3791026
Los Angeles (SC)	2022 Industrial - Forklifts	Aggregate	9999	Diesel	1.40943E-05	1.70541E-05	2.02958E-05	0.000185285	0.000436543	0.097072113	3.88877E-06	3.57767E-06	8.97057E-07	7.9229E-07	3149.397788	344.4026628	0.436941286	303074.3
Los Angeles (SC)	2022 Industrial - Other General Industrial Equipment	Aggregate	25	Diesel	7.64147E-06	9.24618E-06	1.10037E-05	2.54078E-05	1.74953E-05	0.001336921	2.40526E-06	2.21284E-06	1.21312E-08	1.09118E-08	43.37491489	88.27996866	0.386400649	2206.999
Los Angeles (SC)	2022 Industrial - Other General Industrial Equipment	Aggregate	50	Diesel	0.012399034	0.015002831	0.017854608	0.108548541	0.08975375	12.58801175	0.005082334	0.004675747	0.00011601	0.000102742	408404.1779	590234.5736	704.7947839	20735047
Los Angeles (SC)	2022 Industrial - Other General Industrial Equipment	Aggregate	75	Diesel	0.003157883	0.003821038	0.004547351	0.056435046	0.040362353	8.36359373	0.00200896	0.001848243	7.72308E-05	6.82625E-05	271347.5877	214806.3509	253.4788258	15345234
Los Angeles (SC)	2022 Industrial - Other General Industrial Equipment	Aggregate	100	Diesel	0.002123023	0.002568858	0.003057153	0.014056686	0.02025942	1.772201152	0.001747799	0.001607975	1.63212E-05	1.44645E-05	57497.11466	40751.79913	53.70969022	3236840
Los Angeles (SC)	2022 Industrial - Other General Industrial Equipment	Aggregate	175	Diesel	0.001930288	0.002335648	0.002779614	0.029306356	0.020463365	4.739678487	0.001085052	0.000998247	4.37628E-05	3.86846E-05	153773.6487	58538.44722	70.32491813	8691494
Los Angeles (SC)	2022 Industrial - Other General Industrial Equipment	Aggregate	300	Diesel	0.001626376	0.001967915	0.002341982	0.011828442	0.021164719	4.782856557	0.000684668	0.000629895	4.41711E-05	3.9037E-05	155174.5136	40795.05632	50.61848503	8760830
Los Angeles (SC)	2022 Industrial - Other General Industrial Equipment	Aggregate	600	Diesel	0.003707975	0.00448665	0.005339484	0.031326329	0.032666627	15.03958094	0.001134736	0.001043957	0.000138937	0.000122751	487942.6403	72635.87541	85.00814279	27592493
Los Angeles (SC)	2022 Industrial - Other General Industrial Equipment	Aggregate	750	Diesel	0.000641062	0.000775686	0.00092313	0.008521364	0.005865188	2.482200425	0.00030352	0.000279238	2.29299E-05	2.02594E-05	80532.25914	7188.637848	8.500814279	4544000
Los Angeles (SC)	2022 Industrial - Other General Industrial Equipment	Aggregate	9999	Diesel	0.000186704	0.000225912	0.000268854	0.001644168	0.005275452	0.857880298	8.72246E-05	8.02466E-05	7.92593E-06	7.0019E-06	27832.98148	1352.44912	1.545602596	1573913
Los Angeles (SC)	2022 Industrial - Other Material Handling Equipment	Aggregate	25	Diesel	1.48843E-05	1.801E-05	2.14334E-05	0.000124839	8.8232E-05	0.014272552	3.48022E-06	3.20181E-06	1.3151E-07	1.16491E-07	463.0572237	814.9561915	1.322764935	20373.9
Los Angeles (SC)	2022 Industrial - Other Material Handling Equipment	Aggregate	50	Diesel	0.00090159	0.001090924	0.00129829	0.005889069	0.004856956	0.574471	0.000383564	0.000352879	5.28422E-06	4.68876E-06	18638.07894	22745.23591	29.98267186	814998.4
Los Angeles (SC)	2022 Industrial - Other Material Handling Equipment	Aggregate	75	Diesel	0.000100226	0.000121273	0.000144325	0.000965312	0.001079677	0.125294937	8.5169E-05	7.83555E-05	1.15541E-06	1.02264E-06	4065.056259	2801.97855	4.409216449	199673
Los Angeles (SC)	2022 Industrial - Other Material Handling Equipment	Aggregate	100	Diesel	0.002062305	0.002495389	0.002969719	0.042508173	0.028113874	6.42890084	0.001050125	0.000966115	5.93765E-05	5.24718E-05	208578.6076	109559.7286	140.6540047	10192980
Los Angeles (SC)	2022 Industrial - Other Material Handling Equipment	Aggregate	175	Diesel	0.001968145	0.002381455	0.002834128	0.027921885	0.019355203	4.491430911	0.001252352	0.001152164	4.14665E-05	3.66585E-05	145719.5295	51497.37388	70.54746319	7117652
Los Angeles (SC)	2022 Industrial - Other Material Handling Equipment	Aggregate	300	Diesel	0.002825595	0.00341897	0.004068857	0.016136637	0.032800779	7.136050702	0.001305132	0.001200721	6.58916E-05	5.82435E-05	231521.3061	48191.71412	63.93363851	11320995
Los Angeles (SC)	2022 Industrial - Other Material Handling Equipment	Aggregate	600	Diesel	0.003069363	0.003713929	0.004419883	0.025533766	0.0349252	9.81151125	0.001279373	0.001177023	9.06202E-05	8.00802E-05	318323.677	47789.2295	55.99704891	15551153
Los Angeles (SC)	2022 Industrial - Other Material Handling Equipment	Aggregate	750	Diesel	0.000202839	0.000245436	0.000292089	0.000888223	0.002094492	0.420779495	0.000106008	9.75271E-05	3.88423E-06	3.43435E-06	13651.72732	1071.329925	1.322764935	667795.7
Los Angeles (SC)	2022 Industrial - Other Material Handling Equipment	Aggregate	9999	Diesel	8.92052E-05	0.000107938	0.000128455	0.001277715	0.003026754	0.680222681	2.62833E-05	2.41807E-05	6.28632E-06	5.55189E-06	22069.07577	1071.329925	1.322764935	1079543
Los Angeles (SC)	2022 Locomotive - Line haul	Aggregate	9999	Diesel	0.148021	0.179	0.213	0.947	4.05	0	0.097	0.089	0.004	0.003	0	0	0	2.45E+08
Los Angeles (SC)	2022 Locomotive - Passenger	Aggregate	9999	Diesel	0.018611866	1.3903E-05	1.65457E-05	0.258443187	0.412596853	0	0.007566543	0.00696122	0.000719966	0.000815928	0	0	0	0
Los Angeles (SC)	2022 Locomotive - Short line	Aggregate	9999	Diesel	0.008791429	9.66115E-07	1.14976E-06	0.064449169	0.297339217	0	0.004875219	0.004485202	0.00023747	0.00021183	0	0	0	0
Los Angeles (SC)	2022 Locomotive - Switcher	Aggregate	9999	Diesel	0.142246263	0.000412148	0.00049049	0.382133622	2.206336209	0	0.046603141	0.042874889	0.001272341	0.001144368	0	0	0	0
Los Angeles (SC)	2022 Ocean Going Vessels	Aggregate		Diesel	0.697480668	0.889913476	1.063310924	1.532417268	14.11838103	1476.407098	0.406334063	0.373827338	1.588749686	0.009587793	46588503.77	0	0	8.44E+08
Los Angeles (SC)	2022 OFF - Agricultural - 2-Wheel Tractors	Aggregate	25	Gasoline	0.000947237	0.000871269	0.001042377	0.034292359	0.000695522	0.061348899	0.000389792	0.00029451	1.8016E-06	1.58045E-06	4511.4	10898.9	42.92	76299.6
Los Angeles (SC)	2022 OFF - Agricultural - Agricultural Mowers	Aggregate	25	Gasoline	0.000753051	0.000692656	0.000828686	0.031841627	0.000562223	0.051785601	0.000390707	0.000295201	1.37025E-06	1.39121E-06	3971.2	6653.95	36.93	83125.1
Los Angeles (SC)	2022 OFF - Agricultural - Agricultural Tractors	Aggregate	25	Diesel	0.004355401	0.005183287	0.006271777	0.024737815	0.039529307	5.253630798	0.001496496	0.001376776	7.11458E-05	4.39775E-05	174813.1	241943.9	454.12	4372937
Los Angeles (SC)	2022 OFF - Agricultural - Agricultural Tractors	Aggregate	100	Gasoline	0.000630541	0.000579972	0.000693872	0.025435767	0.00157579	0.462343231	3.22357E-05	2.43558E-05	4.46688E-06	6.69006E-06	19096.8	3890.9	7.06	319053.8
Los Angeles (SC)	2022 OFF - Agricultural - Agricultural Tractors	Aggregate	175	Gasoline	8.73326E-05	8.03285E-05	9.61042E-05	0.003523391	0.000361821	0.09393803	6.73436E-06	5.08818E-06	9.33176E-07	1.32088E-06	3770.45	536.55	0.97	67068.75
Los Angeles (SC)	2022 OFF - Agricultural - Balers	Aggregate	50	Gasoline	0.000113334	0.000104245	0.000124717	0.006082395	0.000208668	0.079919014	5.50955E-06	4.16277E-06	9.71676E-07	1.19685E-06	3416.4	1762.95	25.77	61703.25
Los Angeles (SC)	2022 OFF - Agricultural - Balers	Aggregate	100	Gasoline	5.13794E-05	4.72588E-05	5.65399E-05	0.001608934	0.000182179	0.073900513	5.15252E-06	3.89302E-06	7.13982E-07	1.01783E-06	2905.4	901.55	13.18	57699.2
Los Angeles (SC)	2022 OFF - Agricultural - Combines	Aggregate	100	Gasoline	1.58917E-05	1.46172E-05	1.74878E-05	0.000736026	4.01162E-05	0.039467918	2.7518E-06	2.07914E-06	3.81315E-07	5.37046E-07	1533	219	1.78	22557
Los Angeles (SC)	2022 OFF - Agricultural - Combines	Aggregate	175	Gasoline	1.01487E-05	9.33477E-06	1.1168E-05	0.001089355	3.81137E-05	0.033954399	2.43417E-06	1.83915E-06	3.37301E-07	4.74391E-07	1354.15	120.45	0.97	19753.8
Los Angeles (SC)	2022 OFF - Agricultural - Combines	Aggregate	300	Gasoline	1.84386E-06	1.69598E-06	2.02905E-06	0.0002379	2.16177E-05	0.007205992	5.3159E-07	4.01645E-07	7.36621E-08	1.03573E-07	295.65	29.2	0.18	5664.8
Los Angeles (SC)	2022 OFF - Agricultural - Hydro Power Units	Aggregate	25	Gasoline	0.000740692	0.000681289	0.000815087	0.028689774	0.00054957	0.04824487	0.000342567	0.000258829	1.32916E-06	1.2774E-06	3646.35	6770.75	17.46	66528.55
Los Angeles (SC)	2022 OFF - Agricultural - Hydro Power Units	Aggregate	25	Diesel	2.95132E-05	3.51232E-05	4.2499E-05	0.000156273	0.000268212	0.035413064	1.00874E-05	9.2804E-06	4.64435E-07	2.96587E-07	1178.95	2562.3	3.16	42934.95
Los Angeles (SC)	2022 OFF - Agricultural - Hydro Power Units	Aggregate	50	Gasoline	6.68421E-06	6.14814E-06	7.35557E-06	0.00053205	1.03324E-05	0.005486434	3.7823E-07	2.85774E-07	6.6705E-08	8.4393E-08	240.9	105.85	0.25	4022.3
Los Angeles (SC)	2022 OFF - Agricultural - Hydro Power Units	Aggregate	100	Gasoline	5.05554E-07	4.65008E-07	5.56331E-07	2.48696E-05	1.26957E-06	0.001177752	8.21157E-08	6.2043E-08	1.13787E-08	1.53442E-08	43.8	10.95	0.03	722.7
Los Angeles (SC)	2022 OFF - Agricultural - Other Agricultural Equipment	Aggregate	25	Gasoline	9.7279E-05	8.94772E-05	0.00010705	0.00343626	6.70604E-05	0.006140706	3.66045E-05	2.76567E-05	1.77243E-07	1.57278E-07	448.95	978.2	6.79	8489.9
Los Angeles (SC)	2022 OFF - Agricultural - Other Agricultural Equipment	Aggregate	25	Diesel	6.83562E-05	8.13495E-05	9.84329E-05	0.000364167	0.000622093	0.081956897	2.40477E-05	2.21238E-05	1.07846E-06	6.85914E-07	2726.55	4839.9	10.85	93666.3
Los Angeles (SC)	2022 OFF - Agricultural - Other Agricultural Equipment	Aggregate	50	Gasoline	4.92764E-06	4.53244E-06	5.42256E-06	0.000314759	8.33816E-06	0.003753568	2.58768E-07	1.95513E-07	4.56366E-08	5.49833E-08	156.95	94.9	0.8	2752.1
Los Angeles (SC)	2022 OFF - Agricultural - Other Agricultural Equipment	Aggregate	100	Gasoline	2.91089E-05	2.67743E-05	3.20325E-05	0.001131899	8.77198E-05	0.04966803	3.46297E-06	2.61647E-06	4.79862E-07	6.82816E-07	1949.1	569.4	4.61	38149.8
Los Angeles (SC)	2022 OFF - Agricultural - Other Agricultural Equipment	Aggregate	175	Gasoline	4.55482E-06	4.18953E-06	5.0123E-06	0.000362787	2.2054E-05	0.011178626	8.01388E-07	6.05493E-07	1.11048E-07	1.53442E-07	438	47.45	0.52	6453.2
Los Angeles (SC)	2022 OFF - Agricultural - Other Agricultural Equipment	Aggregate	300	Gasoline	2.43629E-06	2.2409E-06	2.68099E-06	0.000243738	2.53885E-05	0.007298471	5.38412E-07	4.068E-07	7.46074E-08	1.02294E-07	292	10.95	0.14	2693.7
Los Angeles (SC)	2022 OFF - Agricultural - Sprayers	Aggregate	25	Gasoline	0.001617753	0.001488009	0.001780238	0.056849331	0.001013934	0.097394491	0.000592089	0.000447356	2.68245E-06	2.55992E-06	7307.3	16001.6	163.02	150168.3
Los Angeles (SC)	2022 OFF - Agricultural - Sprayers	Aggregate	25	Diesel	6.87731E-06	8.18456E-06	9.90332E-06	3.22981E-05	5.93134E-05	0.007518909	2.61483E-06	2.40565E-06	9.54007E-08	6.33575E-08	251.85	452.6	4.2	8599.4
Los Angeles (SC)	2022 OFF - Agricultural - Sprayers	Aggregate	50	Gasoline	2.19681E-05	2.02062E-05	2.41745E-05	0.001194151	3.99677E-05	0.015172777	1.046E-06	7.90309E-07	1.84473E-07	2.27605E-07	649.7	372.3	4.84	12285.9
Los Angeles (SC)	2022 OFF - Agricultural - Sprayers	Aggregate	100	Gasoline	3.70866E-05	3.41123E-05	4.08115E-05	0.00117724	0.000129656	0.052100937	3.6326E-06	2.74463E-06	5.03368E-07	7.18619E-07	2051.3	660.65	8.17	44924.2
Los Angeles (SC)	2022 OFF - Agricultural - Sprayers	Aggregate	175	Gasoline	1.08046E-05	9.93812E-06	1.18899E-05	0.000755156	6.59815E-05	0.02352583	1.68655E-06	1.27428E-06	2.33704E-07	3.299E-07	941.7	149.65	1.86	20951
Los Angeles (SC)	2022 OFF - Agricultural - Swathers	Aggregate	100	Gasoline	0.000197087	0.000181281	0.000216883	0.006356285	0.000677403	0.269048364	1.87587E-05	1.41732E-05	2.59938E-06	3.70818E-06	10585	2511.2	26.45	220985.6
Los Angeles (SC)	2022 OFF - Agricultural - Swathers	Aggregate	175	Gasoline	0.000139442	0.000128259	0.000153448	0.00948842	0.000834479	0.294048217	2.10801E-05	1.59272E-05	2.92106E-06	4.10073E-06	11705.55	1934.5	20.24	249550.5
Los Angeles (SC)	2022 OFF - Agricultural - Tillers	Aggregate	25	Gasoline	0.012621692	0.011609433	0.013889403	0.718656009	0.009310306	1.201737351	0.00055175	0.000416878	3.42648E-05	3.15873E-05	90165.95	186449.3	2622.03	1305145
Los Angeles (SC)	2022 OFF - AirGrSupp - A/C Tug Narrow Body	Aggregate	175	Gasoline	0.003317824	0.003051734	0.003651063	0.192035942	0.021602078	4.883351896	0.000350084	0.000264508	4.8511E-05	6.88877E-05	196640.1	20644.4	28.38	2683772
Los Angeles (SC)	2022 OFF - AirGrSupp - A/C Tug Wide Body	Aggregate	600	Gasoline	0.002186379	0.002011032	0.002405977	0.233236977	0.020852381	6.663808253	0.000491592	0.000371425	6.81197E-05	9.32747E-05	266252.9	7540.9	14.59	3770450
Los Angeles (SC)	2022 OFF - AirGrSupp - Air Conditioner	Aggregate	175	Gasoline	5.53253E-08	5.08882E-08	6.08821E-08	5.51709E-06	6.26725E-07	0.000175828	1.2605E-08	9.52378E-09	1.74667E-09	0	0	0	0	0
Los Angeles (SC)	2022 OFF - AirGrSupp - Air Conditioner	Aggregate	175	Nat Gas	0	0	2.68251E-08	2.331E-05	2.83957E-06	0.000944899	0	0	0	0	62.05		0.18	0
Los Angeles (SC)	2022 OFF - AirGrSupp - Air Start Unit	Aggregate	175	Gasoline	5.68907E-06	5.23281E-06	6.26047E-06	0.000531616	6.03123E-05	0.01663206	1.19234E-06	9.0088E-07	1.65222E-07	2.31441E-07	660.65	62.05	0.82	8066.5
Los Angeles (SC)	2022 OFF - AirGrSupp - Baggage Tug	Aggregate	100	Gasoline	0.029563883	0.02719286	0.03253325	2.18178489	0.175223342	54.0187264	0.003766316	0.002845661	0.000521896	0.000762813	2177451.3	419899.65	478.45	41989965
Los Angeles (SC)	2022 OFF - AirGrSupp - Baggage Tug	Aggregate	100	Nat Gas	0	0	0.001069997	0.392972259	0.045516043	8.873121829	0	0	0	0	493483.65	79175.8	95.28	7917580
Los Angeles (SC)	2022 OFF - AirGrSupp - Belt Loader	Aggregate	100	Gasoline	0.007145726	0.006572639	0.007863436	0.535842745	0.041994075	12.80313004	0.000892665	0.000674458	0.000123696	0.000181192	517212.3	182452.55	224.85	10947153
Los Angeles (SC)	2022 OFF - AirGrSupp - Belt Loader	Aggregate	100	Nat Gas	0	0	7.69118E-05	0.03335804	0.003749023	0.850220536	0	0	0	0	46887.9	13899.2	25.19	833952
Los Angeles (SC)	2022 OFF - AirGrSupp - Bobtail	Aggregate	100	Gasoline	0.003592218	0.003304122	0.003953017	0.265102327	0.02129085	6.56364539	0.000457633	0.000345767	6.3414E-05	9.26878E-05	264577.55	51019.7	58.13	5101970
Los Angeles (SC)	2022 OFF - AirGrSupp - Bobtail	Aggregate	100	Nat Gas	0	0	8.43733E-06	0.00579504	0.000525229	0.161816964	0	0	0	0	8869.5	1445.4	1.64	144540
Los Angeles (SC)	2022 OFF - AirGrSupp - Cargo Loader	Aggregate	100	Gasoline	0.002619013	0.002408969	0.002882064	0.196323963	0.015399647	4.698396874	0.000327583	0.000247508	4.53931E-05	6.64837E-05	189778.1	57385.3	79.67	4016971
Los Angeles (SC)	2022 OFF - AirGrSupp - Cargo Loader	Aggregate	100	Nat Gas	0	0	0.000142108	0.047831249	0.005637881	0.997250792	0	0	0	0	55801.2	13990.45	13.53	979331.5
Los Angeles (SC)	2022 OFF - AirGrSupp - Cargo Tractor	Aggregate	100	Gasoline	0.075455578	0.069404041	0.083034261	6.79247357	0.35747699	79.82762304	0.005565773	0.004205251	0.000659065	0.001203326	3434898.2	665274.55	492.33	63201082
Los Angeles (SC)	2022 OFF - AirGrSupp - Cargo Tractor	Aggregate	175	Nat Gas	0	0	5.03219E-05	0.037357433	0.00447986	1.424235413	0	0	0	0	76872.65	8322	53.4	1294903
Los Angeles (SC)	2022 OFF - AirGrSupp - Cart	Aggregate	25	Gasoline	5.08963E-05	4.68144E-05	5.60082E-05	0.003223056	4.00933E-05	0.005450431	2.4569E-06	1.85632E-06	1.55407E-07	1.41934E-07	405.15	708.1	4.65	8497.2
Los Angeles (SC)	2022 OFF - AirGrSupp - Catering Truck	Aggregate	300	Gasoline	0.010439663	0.009602402	0.011488212	0.537496131	0.059879086	12.22844754	0.000902099	0.000681586	0.000106821	0.000173795	496097.05	52162.15	51.31	10635862
Los Angeles (SC)	2022 OFF - AirGrSupp - Catering Truck	Aggregate	300	Nat Gas	0	0	4.74945E-05	0.027801706	0.003236756	0.936484499	0	0	0	0	50833.55	4310.65	9.52	883683.3
Los Angeles (SC)	2022 OFF - AirGrSupp - Deicer	Aggregate	100	Gasoline	2.55813E-05	2.35297E-05	2.81507E-05	0.000879938	0.000166536	0.051448353	3.5871E-06	2.71026E-06	4.97063E-07	6.9816E-07	1992.9	240.9	11.29	22403.7
Los Angeles (SC)	2022 OFF - AirGrSupp - Forklift	Aggregate	50	Gasoline	0.002729701	0.002510779	0.003003869	0.253531674	0.006060328	1.936019785	0.000133467	0.000100842	2.35385E-05	3.10822E-05	88724.2	54556.55	75.02	2727828
Los Angeles (SC)	2022 OFF - AirGrSupp - Forklift	Aggregate	50	Nat Gas	0	0	0.000177375	0.048146754	0.013025484	3.901957199	0	0	0	0	206298	127677	175.55	6383850
Los Angeles (SC)	2022 OFF - AirGrSupp - Fuel Truck	Aggregate	175	Gasoline	2.50054E-05	2.3E-05	2.7517E-05	0.002460063	0.000283242	0.078438621	5.62321E-06	4.24865E-06	7.79206E-07	1.09071E-06	3113.45	1051.2	48.14	136656
Los Angeles (SC)	2022 OFF - AirGrSupp - Fuel Truck	Aggregate	175	Nat Gas	0	0	1.39413E-05	0.007640313	0.000880904	0.246432075	0	0	0	0	13410.1	3452.9	6.09	483406

Los Angeles (SC)	2022 OFF - AirGrSupp - Generator	Aggregate	100	Gasoline	0.000892086	0.000820541	0.000981687	0.0520351	0.00326391	0.652922223	4.55233E-05	3.43954E-05		5.39059E-06	9.78191E-06	27922.5	3343.4	3.72	357743.8
Los Angeles (SC)	2022 OFF - AirGrSupp - Ground Power Unit	Aggregate	175	Gasoline	0.004396412	0.00404382	0.004837983	0.451217653	0.040143532	13.05170933	0.000935668	0.00070695		0.000129655	0.000182569	521143.35	50994.15	63.95	7649123
Los Angeles (SC)	2022 OFF - AirGrSupp - Hydrant truck	Aggregate	175	Gasoline	0.009815373	0.00902818	0.010801219	0.436001168	0.047895167	8.922207541	0.000639627	0.000483274		7.57408E-05	0.000127844	364930.65	46121.4	30.15	5603750
Los Angeles (SC)	2022 OFF - AirGrSupp - Lav Cart	Aggregate	25	Gasoline	5.61206E-05	5.16197E-05	6.17573E-05	0.003553886	4.42087E-05	0.006009889	2.70909E-06	2.04687E-06		1.71358E-07	1.55999E-07	445.3	773.8	5.15	9285.6
Los Angeles (SC)	2022 OFF - AirGrSupp - Lav Truck	Aggregate	175	Gasoline	0.002424644	0.002230187	0.002668173	0.18151091	0.015734616	4.579383803	0.000328293	0.000248044		4.54914E-05	6.45887E-05	184368.8	61936.85	51.03	8051791
Los Angeles (SC)	2022 OFF - AirGrSupp - Lav Truck	Aggregate	175	Nat Gas	0	0	4.52664E-06	0.002766808	0.000324055	0.095656018	0	0		0	0	5186.65	1445.4	3.72	187902
Los Angeles (SC)	2022 OFF - AirGrSupp - Lift	Aggregate	100	Gasoline	0.004054936	0.00372973	0.004462209	0.201582125	0.018900275	4.784131635	0.000333561	0.000252024		4.62214E-05	6.78097E-05	193563.15	40912.85	108.58	4091285
Los Angeles (SC)	2022 OFF - AirGrSupp - Lift	Aggregate	100	Nat Gas	0	0	9.58601E-06	0.005015118	0.000547344	0.141606185	0	0		0	0	7763.55	1394.3	4.09	139430
Los Angeles (SC)	2022 OFF - AirGrSupp - Maint. Truck	Aggregate	175	Gasoline	0.002112147	0.001942753	0.002324289	0.174633274	0.017102801	4.937273651	0.00035395	0.000267429		4.90466E-05	6.91715E-05	197450.4	33397.5	74.22	4341675
Los Angeles (SC)	2022 OFF - AirGrSupp - Other	Aggregate	50	Nat Gas	0	0	0.000180805	0.022193973	0.007154276	1.309232232	0	0		0	0	69948.6	25703.3	25.21	1285165
Los Angeles (SC)	2022 OFF - AirGrSupp - Other GSE	Aggregate	50	Gasoline	0.00213423	0.001963064	0.00234859	0.147086033	0.004441961	1.44790765	9.98175E-05	7.54176E-05		1.76039E-05	2.23705E-05	63856.75	24484.2	133.5	1224210
Los Angeles (SC)	2022 OFF - AirGrSupp - Passenger Stand	Aggregate	175	Gasoline	0.000781692	0.000719	0.000860204	0.064469984	0.007366817	1.942123815	0.00013923	0.000105196		1.71883E-05	2.71195E-05	77412.85	11570.5	61.57	1447470
Los Angeles (SC)	2022 OFF - AirGrSupp - Passenger Stand	Aggregate	175	Nat Gas	0	0	1.47912E-07	0.000130307	1.58935E-05	0.005307286	0	0		0	0	288.35	3.65	2.22	602.25
Los Angeles (SC)	2022 OFF - AirGrSupp - Service Truck	Aggregate	300	Gasoline	0.012955239	0.011916228	0.01425645	0.713337293	0.079931572	17.0406801	0.001257099	0.000949808		0.000174196	0.000241357	688955.75	214119.95	254.35	38541591
Los Angeles (SC)	2022 OFF - AirGrSupp - Service Truck	Aggregate	300	Nat Gas	0	0	0.000151926	0.083302119	0.007522193	2.379231736	0	0		0	0	130268.5	32433.9	24.92	5838102
Los Angeles (SC)	2022 OFF - AirGrSupp - Sweeper	Aggregate	50	Nat Gas	0	0	1.39954E-06	0.000347159	0.000107724	0.028985635	0	0		0	0	1529.35	613.2	2.22	27594
Los Angeles (SC)	2022 OFF - AirGrSupp - Sweeper	Aggregate	100	Gasoline	0.000113805	0.000104678	0.000125235	0.005620614	0.00053601	0.136743415	9.53408E-06	7.20353E-06		1.12897E-06	1.93337E-06	5518.8	2146.2	5.91	114392.5
Los Angeles (SC)	2022 OFF - AirGrSupp - Water Truck	Aggregate	175	Gasoline	0.000154434	0.000142049	0.000169946	0.011476604	0.001306556	0.332169658	2.3813E-05	1.79921E-05		3.29976E-06	4.65184E-06	13278.7	4865.45	15.67	729817.5
Los Angeles (SC)	2022 OFF - ConstMin - Asphalt Pavers	Aggregate	25	Gasoline	0.003675879	0.003381073	0.00404508	0.154188372	0.002685427	0.248099767	0.00187184	0.001414279		6.43972E-06	6.70029E-06	19126	16844.75	42.51	289777.2
Los Angeles (SC)	2022 OFF - ConstMin - Asphalt Pavers	Aggregate	50	Gasoline	0.000617461	0.000567941	0.000679478	0.044230226	0.000883332	0.310399513	2.13987E-05	1.61679E-05		3.77389E-06	5.06741E-06	14464.95	6212.3	15.85	198793.6
Los Angeles (SC)	2022 OFF - ConstMin - Asphalt Pavers	Aggregate	100	Gasoline	0.0003116	0.00028661	0.000342897	0.013397852	0.000829534	0.321366392	2.24064E-05	1.69293E-05		3.10485E-06	4.55338E-06	12997.65	3416.4	8.68	208400.4
Los Angeles (SC)	2022 OFF - ConstMin - Bore/Drill Rigs	Aggregate	25	Gasoline	0.001306054	0.001201308	0.001437232	0.057395389	0.000942857	0.091978247	0.000693949	0.000524317		2.36046E-06	2.48703E-06	7099.25	5380.1	43.41	89658.6
Los Angeles (SC)	2022 OFF - ConstMin - Bore/Drill Rigs	Aggregate	25	Diesel	0.00017107	0.000203587	0.000246341	0.000918549	0.001554266	0.205477195	5.85301E-05	5.38477E-05		2.71185E-06	1.71892E-06	6832.8	10300.3	12.68	159643.7
Los Angeles (SC)	2022 OFF - ConstMin - Bore/Drill Rigs	Aggregate	50	Gasoline	4.76018E-05	4.37841E-05	5.23829E-05	0.002656798	8.44156E-05	0.031424346	2.16637E-06	1.63681E-06		3.82063E-07	4.76948E-07	1361.45	529.25	4.91	16936
Los Angeles (SC)	2022 OFF - ConstMin - Bore/Drill Rigs	Aggregate	100	Gasoline	0.000293856	0.000270288	0.00032337	0.009590665	0.000996828	0.392275239	2.73504E-05	2.06647E-05		3.78993E-06	5.41521E-06	15457.75	2401.7	22.49	211349.6
Los Angeles (SC)	2022 OFF - ConstMin - Bore/Drill Rigs	Aggregate	175	Gasoline	6.57367E-05	6.04646E-05	7.23393E-05	0.004381358	0.000387315	0.135211977	9.69326E-06	7.3238E-06		1.34319E-06	1.88605E-06	5383.75	594.95	5.57	74963.7
Los Angeles (SC)	2022 OFF - ConstMin - Cement and Mortar Mixers	Aggregate	25	Gasoline	0.051444532	0.047318681	0.056611569	1.767903564	0.034724828	3.198155864	0.01793933	0.01355416		9.62299E-05	8.2044E-05	234194.95	602731.8	6545.81	4179506
Los Angeles (SC)	2022 OFF - ConstMin - Cement and Mortar Mixers	Aggregate	25	Diesel	0.000430976	0.000512897	0.000620605	0.003009117	0.003883748	0.526249152	0.00015245	0.000140254		7.88649E-06	4.41115E-06	17534.6	53041.8	176.7	547397.8
Los Angeles (SC)	2022 OFF - ConstMin - Concrete/Industrial Saws	Aggregate	25	Gasoline	0.040113017	0.036895953	0.044141929	1.660451809	0.030655329	2.767417315	0.020369924	0.015390609		7.61554E-05	7.34666E-05	209710.75	261821.8	921.34	2735660
Los Angeles (SC)	2022 OFF - ConstMin - Concrete/Industrial Saws	Aggregate	25	Diesel	1.42033E-05	1.69031E-05	2.04528E-05	6.9808E-05	0.000129245	0.016953794	4.82928E-06	4.44294E-06		2.15112E-07	1.40488E-07	558.45	755.55	1.26	13599.9
Los Angeles (SC)	2022 OFF - ConstMin - Concrete/Industrial Saws	Aggregate	50	Gasoline	0.000807144	0.000742411	0.000888212	0.059979488	0.001300899	0.72108923	4.97113E-05	3.75596E-05		8.76713E-06	1.08483E-05	30966.6	11165.35	18.29	390787.3
Los Angeles (SC)	2022 OFF - ConstMin - Concrete/Industrial Saws	Aggregate	50	Diesel	0.000214318	0.000255056	0.000308617	0.002072983	0.001846305	0.266454279	7.42906E-05	6.83473E-05		3.44459E-06	2.24231E-06	8913.3	6449.55	11.1	212835.2
Los Angeles (SC)	2022 OFF - ConstMin - Concrete/Industrial Saws	Aggregate	100	Gasoline	0.000331705	0.000305103	0.000365022	0.016347897	0.000832708	0.77062342	5.37297E-05	4.05958E-05		7.4453E-06	1.05683E-05	30167.25	6398.45	10.48	422297.7
Los Angeles (SC)	2022 OFF - ConstMin - Cranes	Aggregate	50	Gasoline	0.000217339	0.000199908	0.000239168	0.014427191	0.000312823	0.09527312	6.56804E-06	4.96252E-06		1.15835E-06	1.5715E-06	4485.85	2303.15	5.57	85216.55
Los Angeles (SC)	2022 OFF - ConstMin - Cranes	Aggregate	100	Gasoline	0.000443067	0.000407533	0.000487568	0.017206568	0.001184399	0.376811078	2.62722E-05	1.98501E-05		3.64052E-06	5.37813E-06	15351.9	4628.2	11.14	342486.8
Los Angeles (SC)	2022 OFF - ConstMin - Cranes	Aggregate	175	Gasoline	1.96628E-05	1.80858E-05	2.16377E-05	0.000889807	8.79026E-05	0.024761656	1.77515E-06	1.34122E-06		2.45981E-07	3.50359E-07	1000.1	189.8	0.45	23725
Los Angeles (SC)	2022 OFF - ConstMin - Crushing/Proc. Equipment	Aggregate	25	Gasoline	0.000588916	0.000541685	0.000648066	0.025018425	0.000446176	0.040954475	0.00030899	0.000233459		1.09791E-06	1.09839E-06	3135.35	3149.95	10.92	37062.1
Los Angeles (SC)	2022 OFF - ConstMin - Crushing/Proc. Equipment	Aggregate	100	Gasoline	0.00027816	0.000255851	0.000306098	0.010019178	0.000834384	0.297770173	2.07613E-05	1.56863E-05		2.87688E-06	4.17106E-06	11906.3	1554.9	6.44	149270.4
Los Angeles (SC)	2022 OFF - ConstMin - Dumpers/Tenders	Aggregate	25	Gasoline	0.004712501	0.004334559	0.00518582	0.172683912	0.003364669	0.301056991	0.001986954	0.001501254		8.58677E-06	7.84215E-06	22385.45	65046.65	436.26	566111.4
Los Angeles (SC)	2022 OFF - ConstMin - Dumpers/Tenders	Aggregate	25	Diesel	4.40946E-05	5.24762E-05	6.34962E-05	0.000216721	0.000401245	0.052633546	1.50796E-05	1.38732E-05		6.6782E-07	4.38912E-07	1744.7	5037	7.62	80592
Los Angeles (SC)	2022 OFF - ConstMin - Dumpers/Tenders	Aggregate	100	Gasoline	2.50869E-05	2.30749E-05	2.76066E-05	0.000833999	8.33327E-05	0.032298327	2.25192E-06	1.70145E-06		3.12047E-07	4.48817E-07	1281.15	511	4.02	33726
Los Angeles (SC)	2022 OFF - ConstMin - Excavators	Aggregate	25	Diesel	0.000309102	0.000367857	0.000445107	0.00151921	0.00281272	0.368960315	0.000105098	9.66903E-05		4.68141E-06	3.08616E-06	12267.65	16403.1	11.74	377271.3
Los Angeles (SC)	2022 OFF - ConstMin - Other Construction Equipment	Aggregate	25	Diesel	0.000996702	0.001186157	0.00143525	0.007037968	0.009003293	1.224907668	0.000348914	0.000321001		1.84232E-05	1.02676E-05	40814.3	84771.25	122.76	1151082
Los Angeles (SC)	2022 OFF - ConstMin - Other Construction Equipment	Aggregate	175	Gasoline	0.000309404	0.00028459	0.000340048	0.026348667	0.001020625	0.797585827	5.71784E-05	4.32015E-05		7.92318E-06	1.11309E-05	31773.25	5796.2	15.6	730321.2
Los Angeles (SC)	2022 OFF - ConstMin - Pavers	Aggregate	25	Diesel	8.36744E-05	9.95795E-05	0.000120491	0.000411117	0.000761702	0.099845198	2.89089E-05	2.65962E-05		1.26685E-06	8.34667E-07	3317.85	3912.8	4.75	93907.2
Los Angeles (SC)	2022 OFF - ConstMin - Paving Equipment	Aggregate	25	Gasoline	0.084653951	0.077864704	0.093156509	3.084476304	0.062231449	5.522225877	0.035224383	0.026613978		0.000162115	0.000142093	405606.25	880358.1	4653.79	7216838
Los Angeles (SC)	2022 OFF - ConstMin - Paving Equipment	Aggregate	25	Diesel	9.90762E-05	0.000117909	0.00014267	0.000486951	0.000901559	0.118262525	3.3687E-05	3.09921E-05		1.50053E-06	9.8801E-07	3927.4	6840.1	8.24	129961.9
Los Angeles (SC)	2022 OFF - ConstMin - Paving Equipment	Aggregate	50	Gasoline	0.000463454	0.000426285	0.000510003	0.034249012	0.000752789	0.391359771	2.698E-05	2.03849E-05		4.75822E-06	5.92541E-06	16914.1	7570.1	43.24	280093.7
Los Angeles (SC)	2022 OFF - ConstMin - Paving Equipment	Aggregate	100	Gasoline	8.39843E-05	7.72487E-05	9.24196E-05	0.004049256	0.000223351	0.177901657	1.24037E-05	9.37171E-06		1.71878E-06	2.44484E-06	6978.8	1945.45	11.15	128399.7
Los Angeles (SC)	2022 OFF - ConstMin - Plate Compactors	Aggregate	25	Gasoline	0.035714465	0.032850165	0.03930159	1.152276532	0.024584415	2.183114513	0.01192933	0.009013271		6.64765E-05	5.4904E-05	156723.7	498684.9	2572.49	3060540
Los Angeles (SC)	2022 OFF - ConstMin - Plate Compactors	Aggregate	25	Diesel	0.000292729	0.000348372	0.00042153	0.002211094	0.002639779	0.362122396	0.00010315	9.48984E-05		5.63494E-06	3.03657E-06	12070.55	61334.6	102.14	490676.8
Los Angeles (SC)	2022 OFF - ConstMin - Rollers	Aggregate	25	Gasoline	0.018242424	0.016779381	0.020074674	0.752563482	0.013493378	1.240968759	0.009034074	0.006825745		3.34304E-05	3.31242E-05	94553.25	125395.75	503.55	1543311
Los Angeles (SC)	2022 OFF - ConstMin - Rollers	Aggregate	25	Diesel	0.001787409	0.002127164	0.002573868	0.011247725	0.01618842	2.174058648	0.00061928	0.000569737		3.09018E-05	1.82112E-05	72390.45	189314.55	272.14	2262098
Los Angeles (SC)	2022 OFF - ConstMin - Rollers	Aggregate	50	Gasoline	0.001051829	0.000967473	0.001157474	0.07388267	0.001385868	0.376129795	2.59301E-05	1.95916E-05		4.57305E-06	6.58265E-06	18790.2	6927.7	11.14	256324.9
Los Angeles (SC)	2022 OFF - ConstMin - Rollers	Aggregate	100	Gasoline	0.002072959	0.001906708	0.002281165	0.08494325	0.005027845	1.417256346	9.88145E-05	7.46599E-05		1.36927E-05	2.06597E-05	58973.05	13030.5	20.97	977287.5
Los Angeles (SC)	2022 OFF - ConstMin - Rough Terrain Forklifts	Aggregate	50	Gasoline	0.000146988	0.0001352	0.000161752	0.0097505	0.000211779	0.064576002	4.45181E-06	3.36359E-06		7.85126E-07	1.06642E-06	3044.1	927.1	2.23	43573.7
Los Angeles (SC)	2022 OFF - ConstMin - Rough Terrain Forklifts	Aggregate	100	Gasoline	0.001923485	0.001769221	0.002116678	0.074648977	0.005147596	1.639735865	0.000114326	8.63799E-05		1.58421E-05	2.33871E-05	66758.5	13096.2	31.68	1113177
Los Angeles (SC)	2022 OFF - ConstMin - Rough Terrain Forklifts	Aggregate	175	Gasoline	7.43031E-05	6.8344E-05	8.17661E-05	0.003368796	0.000332596	0.093808599	6.72508E-06	5.08117E-06		9.3189E-07	1.31832E-06	3763.15	459.9	1.13	65305.8
Los Angeles (SC)	2022 OFF - ConstMin - Rubber Tired Loaders	Aggregate	25	Diesel	8.25631E-05	9.82569E-05	0.000118891	0.00040579	0.000751295	0.098551576	2.80724E-05	2.58266E-05		1.25043E-06	8.24566E-07	3277.7	4252.25	4.44	106306.3
Los Angeles (SC)	2022 OFF - ConstMin - Rubber Tired Loaders	Aggregate	50	Gasoline	0.000350233	0.000322145	0.00038541	0.024792115	0.000474529	0.145997854	1.0065E-05	7.60464E-06		1.77507E-06	2.46785E-06	7044.5	2857.95	5.55	114318
Los Angeles (SC)	2022 OFF - ConstMin - Rubber Tired Loaders	Aggregate	100	Gasoline	0.002105536	0.001936672	0.002317014	0.087930684	0.005322751	1.725362168	0.000120296	9.08906E-05		1.66694E-05	2.48102E-05	70820.95	18976.35	37.03	1366297
Los Angeles (SC)	2022 OFF - ConstMin - Signal Boards	Aggregate	25	Gasoline	0.000911569	0.000838461	0.001003126	0.03748409	0.000724936	0.064129525	0.000465869	0.00035199		1.84342E-06	1.68019E-06	4796.1	8322	31.37	65064.9
Los Angeles (SC)	2022 OFF - ConstMin - Signal Boards	Aggregate	25	Diesel	0.004575144	0.005444799	0.006588207	0.034557828	0.041257858	5.6597151	0.001612167	0.001483194		8.80702E-05	4.74741E-05	188712.3	670256.8	892.9	4021541
Los Angeles (SC)	2022 OFF - ConstMin - Signal Boards	Aggregate	50	Diesel	9.40451E-05	0.000111921	0.000135425	0.000896274	0.000804407	0.117779024	3.20022E-05	2.9442E-05		1.52259E-06	9.92602E-07	3945.65	2376.15	4.45	87917.55
Los Angeles (SC)	2022 OFF - ConstMin - Skid Steer Loaders	Aggregate	25	Gasoline	0.059974792	0.055164814	0.0659986	2.507104082	0.042772217	3.996753931	0.030154345	0.022783283		0.000101434	0.000108487	309676.95	280736.1	879.3	5313290
Los Angeles (SC)	2022 OFF - ConstMin - Skid Steer Loaders	Aggregate	25	Diesel	0.008131908	0.009677643	0.011709948	0.03967471	0.073866587	9.597315895	0.00290508	0.002672674		0.000121772	8.02768E-05	319104.9	508357.4	609.03	10167148
Los Angeles (SC)	2022 OFF - ConstMin - Skid Steer Loaders	Aggregate	50	Gasoline	0.002471572	0.002273352	0.002719814	0.193732709	0.003859408	2.072080987	0.000142847	0.000107929		2.51927E-05	3.16231E-05	90268.15	47194.5	152.11	1510224
Los Angeles (SC)	2022 OFF - ConstMin - Skid Steer Loaders	Aggregate	100	Gasoline	0.00142068	0.001306741	0.001563372	0.074549864	0.003580415	3.064191196	0.000213643	0.000161419		2.96044E-05	4.22323E-05	120552.2	28236.4	90.99	2258912
Los Angeles (SC)	2022 OFF - ConstMin - Surfacing Equipment	Aggregate	25	Gasoline	0.040790229	0.037518853	0.044887159	1.532584283	0.031588862	2.657295715	0.018604806	0.014056964		7.672E-05	6.93825E-05	198052.65	537371.25	1255.97	4181495
Los Angeles (SC)	2022 OFF - ConstMin - Tampers/Rammers	Aggregate	25	Gasoline	0.004684694	0.004308981	0.00515522	0.218510782	0.003969541	0.412626514	0.003113147	0.002352156		1.65022E-05	1.02742E-05	29327.75	137064.8	752.41	578517.7
Los Angeles (SC)	2022 OFF - ConstMin - Tractors/Loaders/Backhoes	Aggregate	25	Diesel	0.00153392	0.001825492	0.002208845	0.007539084	0.013958132	1.830966387	0.000521374	0.000479664		2.32315E-05	1.53132E-05	60871.05	84333.25	89.44	1939665
Los Angeles (SC)	2022 OFF - ConstMin - Tractors/Loaders/Backhoes	Aggregate	100	Gasoline	0.001005815	0.000925149	0.001106839	0.069708145	0.002591173	1.208814695	8.42815E-05	6.36793E-05		1.16788E-05	1.75256E-05	50026.9	17092.95	19.6	1076856
Los Angeles (SC)	2022 OFF - ConstMin - Trenchers	Aggregate	25	Gasoline	0.036964928	0.034000341	0.040677648	1.527946	0.027686063	2.48469349	0.01874629	0.014163864		6.597E-05	6.67894E-05	190650.45	196107.2	451.47	2902790
Los Angeles (SC)	2022 OFF - ConstMin - Trenchers	Aggregate	25	Diesel	0.000722803	0.000860195	0.001040836	0.003916099	0.006565977	0.868756379	0.000247465	0.000227668		1.15126E-05	7.27143E-06	28904.35	30214.7	48.84	674877.7
Los Angeles (SC)	2022 OFF - ConstMin - Trenchers	Aggregate	50	Gasoline	0.004300401	0.003955509	0.004732329	0.284163503	0.006230829	1.912429271	0.000131841	9.96133E-05		2.32517E-05	3.14939E-05	89899.5	40825.25	101.5	1224758
Los Angeles (SC)	2022 OFF - ConstMin - Trenchers	Aggregate	100	Gasoline	0.001598334	0.001470148	0.00175887	0.061798831	0.004304213	1.380596958	9.62585E-05	7.27287E-05		1.33385E-05	1.967E-05	56147.95	13548.8	33.68	894220.8
Los Angeles (SC)	2022 OFF - Industrial - Aerial Lifts	Aggregate	25	Gasoline	0.019406411	0.017850017	0.021355571	0.803210765	0.013843956	1.279538548	0.009653747	0.007293942		3.24934E-05	3.47546E-05	99207	113701.15	302.95	2144707
Los Angeles (SC)	2022 OFF - Industrial - Aerial Lifts	Aggregate	25	Diesel	0.002094149	0.00249221	0.003015574	0.011958552	0.018941225	2.499987493	0.000746382	0.000686672		3.40609E-05	2.09309E-05	83201.75	181138.55	453.6	3166422
Los Angeles (SC)	2022 OFF - Industrial - Aerial Lifts	Aggregate	25	Nat Gas	0	0	0.001753114	0.466840539	0.01284707	2.746516514	0	0		0	0	183598.65	155347.65	413.89	2930362
Los Angeles (SC)	2022 OFF - Industrial - Aerial Lifts	Aggregate	50	Gasoline	0.006002052	0.005520688	0.006604893	0.494758157	0.009066204	4.693520604	0.000323567	0.000244473		5.70646E-05	7.28234E-05	207874.8	130706.5	361.73	4313315
Los Angeles (SC)	2022 OFF - Industrial - Aerial Lifts	Aggregate	100	Gasoline	0.004732311	0.00435278	0.00520762	0.26297507	0.011956185	9.42221158	0.000656939	0.000496354		9.10317E-05	0.000130581	372745.3	130706.5	361.73	8757336
Los Angeles (SC)	2022 OFF - Industrial - Forklifts	Aggregate	25	Gasoline	0.000572411	0.000526504	0.000629904	0.03539314	0.000482367	0.055950104	2.81418E-05	2.12627E-05		1.41803E-06	1.51012E-06	4310.65	6252.45	6.94	143806.4
Los Angeles (SC)	2022 OFF - Industrial - Forklifts	Aggregate	25	Nat Gas	0	0	8.45255E-05	0.01339134	0.0003739	0.069832605	0	0		0	0	4869.1	4967.65	3.98	114256
Los Angeles (SC)	2022 OFF - Industrial - Forklifts	Aggregate	50	Gasoline	0.152028765	0.139836058	0.167298382	17.96620048	0.354481306	63.2442589	0.004360003	0.003294224		0.000768935	0.001220504	3483932.3	2173582.3	1206.5	89116874
Los Angeles (SC)	2022 OFF - Industrial - Forklifts	Aggregate	50	Nat Gas	0	0	0.011746663	1.94967246	0.509873043	121.4244081	0	0		0	0	6468471.6	4845123.15	2689.41	1.99E+08
Los Angeles (SC)	2022 OFF - Industrial - Forklifts	Aggregate	100	Gasoline	0.320911315	0.295174228	0.353143327	30.5537786	1.600395671	374.6708437	0.026122948	0.019737338		0.003619843	0.005618338	16037567.1	7627777.3	4233.99	5.34E+08
Los Angeles (SC)	2022 OFF - Industrial - Forklifts	Aggregate	100	Nat Gas	0	0	0.069676079	32.86723426	3.29680423	727.593285	0	0		0	0	40482310.6	17004860.9	9438.97	1.19E+09
Los Angeles (SC)	2022 OFF - Industrial - Forklifts	Aggregate	175	Gasoline	0.016754958	0.01541121	0.018437809	1.171214713	0.098957115	27.77684295	0.001991304	0.001504541		0.000275934	0.000393354	1122831.25	278776.05	154.76	40701303
Los Angeles (SC)	2022 OFF - Industrial - Forklifts	Aggregate	175	Nat Gas	0	0	0.003195762	1.925288997	0.163953967	55.53477681	0	0		0	0	3038296.5	622284.85	345.41	90853588
Los Angeles (SC)	2022 OFF - Industrial - Other General Industrial Equipment	Aggregate	25	Gasoline	0.01603024	0.014744615	0.017640301	0.981756369	0.013003237	1.623211379	0.000782774	0.000591429		4.4994E-05	4.28397E-05	122285.95	219430.7	565.48	2317728
Los Angeles (SC)	2022 OFF - Industrial - Other General Industrial Equipment	Aggregate	25	Diesel	0.002558538	0.003044871	0.003684294	0.014497832	0.023833493	3.15916361	0.000899886	0.000827896		4.22363E-05	2.64366E-05	105087.15	200315.65	140.45	3609178
Los Angeles (SC)	2022 OFF - Industrial - Other General Industrial Equipment	Aggregate	50	Gasoline	0.004717755	0.004339391	0.005191602	0.454137759	0.010552856	3.159926474	0.000217843	0.000164592		3.8419E-05	5.15884E-05	147259.25	82460.8	115.54	2473824
Los Angeles (SC)	2022 OFF - Industrial - Other General Industrial Equipment	Aggregate	100	Gasoline	0.001459438	0.001342391	0.001606022	0.106566833	0.008702252	2.703788015	0.000188515	0.000142433		2.61224E-05	3.81264E-05	108832.05	27101.25	37.96	2140999
Los Angeles (SC)	2022 OFF - Industrial - Other General Industrial Equipment	Aggregate	175	Gasoline	0.000204819	0.000188392	0.00022539	0.019792405	0.001752166	0.560495458	4.01816E-05	3.03594E-05		5.56794E-06	7.84982E-06	22407.35	2620.7	3.69	456001.8
Los Angeles (SC)	2022 OFF - Industrial - Other Material Handling Equipment	Aggregate	50	Gasoline	6.69218E-05	6.15547E-05	7.36434E-05	0.00495915	0.000132434	0.032433438	2.23593E-06	1.68937E-06		3.94331E-07	5.38325E-07	1536.65	631.45	1.63	25889.45
Los Angeles (SC)	2022 OFF - Industrial - Other Material Handling Equipment	Aggregate	100	Gasoline	0.001833555	0.001686504	0.002017716	0.08357112	0.00797212	1.869000785	0.000130311	9.84574E-05		1.80572E-05	2.66042E-05	75941.9	27922.5	72.25	1507815
Los Angeles (SC)	2022 OFF - Industrial - Sweepers/Scrubbers	Aggregate	25	Gasoline	0.012236474	0.011255109	0.013465493	0.789061308	0.010009873	1.280330008	0.000598749	0.000452388		3.37189E-05	3.40743E-05	97265.2	107463.3	397.68	1390380
Los Angeles (SC)	2022 OFF - Industrial - Sweepers/Scrubbers	Aggregate	25	Diesel	0.000509532	0.000606385	0.000733726	0.00312801	0.004815514	0.642314221	0.000182963	0.000168326		8.84794E-06	5.37529E-06	21367.1	29743.85	45.73	550244.8
Los Angeles (SC)	2022 OFF - Industrial - Sweepers/Scrubbers	Aggregate	50	Gasoline	0.013067646	0.012019621	0.014380147	1.132702325	0.02860665	10.21384588	0.000704133	0.000532012		0.000124182	0.000159642	455698.85	173750.95	336.42	6081283
Los Angeles (SC)	2022 OFF - Industrial - Sweepers/Scrubbers	Aggregate	100	Gasoline	0.007626747	0.007015081	0.008392769	0.484160094	0.048652124	16.38267041	0.001142239	0.000863025		0.000158279	0.000227572	649605.1	145069.25	280.9	9864709
Los Angeles (SC)	2022 OFF - Industrial - Sweepers/Scrubbers	Aggregate	175	Gasoline	5.90507E-05	5.43149E-05	6.49817E-05	0.006441711	0.00057687	0.190718613	1.36725E-05	1.03303E-05		1.89459E-06	2.66605E-06	7610.25	839.5	1.61	117530
Los Angeles (SC)	2022 OFF - Light Commercial - Air Compressors	Aggregate	25	Gasoline	0.123470157	0.113567851	0.135871376	2.849451207	0.074080967	6.256102445	0.023826891	0.01800254		0.000195411	0.000149079	425546.2	1397595.95	2891.18	8613821
Los Angeles (SC)	2022 OFF - Light Commercial - Air Compressors	Aggregate	25	Diesel	0.000551612	0.000656463	0.000794321	0.002851114	0.004799882	0.609562811	0.000212879	0.000195848		8.08714E-06	5.10533E-06	20294	37040.2	45.5	739825.8
Los Angeles (SC)	2022 OFF - Light Commercial - Air Compressors	Aggregate	50	Gasoline	0.006592865	0.006064118	0.007255046	0.457015856	0.008893179	2.684916352	0.000185096	0.00013985		3.26437E-05	4.54584E-05	129761.15	57896.3	119.78	2026371
Los Angeles (SC)	2022 OFF - Light Commercial - Air Compressors	Aggregate	50	Diesel	0.007112015	0.008463885	0.010241301	0.060357714	0.049648765	6.818597923	0.002303633	0.002119342		8.81475E-05	5.75167E-05	228632.35	223693.9	274.81	8276674
Los Angeles (SC)	2022 OFF - Light Commercial - Air Compressors	Aggregate	100	Gasoline	0.021754229	0.02000954	0.023939202	0.884313892	0.055171003	17.21685213	0.0012004	0.000906969		0.000166339	0.000247743	707183.85	187770.6	388.45	13143942
Los Angeles (SC)	2022 OFF - Light Commercial - Air Compressors	Aggregate	175	Gasoline	0.001874249	0.001723934	0.002062497	0.079358803	0.007752527	2.156295865	0.000154583	0.000116796		2.14205E-05	3.03252E-05	86563.4	12629	26.12	1692286
Los Angeles (SC)	2022 OFF - Light Commercial - Gas Compressors	Aggregate	50	Nat Gas	0	0	0.000399358	0.07073168	0.014501151	4.8163885	0	0		0	0	255908.8	74854.2	8.81	2395334
Los Angeles (SC)	2022 OFF - Light Commercial - Gas Compressors	Aggregate	100	Nat Gas	0	0	0.002177712	1.1311117	0.08580756	27.065618	0	0		0	0	1497646.1	154697.95	18.2	13613420
Los Angeles (SC)	2022 OFF - Light Commercial - Gas Compressors	Aggregate	175	Nat Gas	0	0	0.000607357	0.23009892	0.0229617	7.0439156	0	0		0	0	384618.75	24951.4	2.93	3642904
Los Angeles (SC)	2022 OFF - Light Commercial - Gas Compressors	Aggregate	300	Nat Gas	0	0	0.000467244	0.26477137	0.022211681	7.2596606	0	0		0	0	398335.45	19961.85	2.35	4191989
Los Angeles (SC)	2022 OFF - Light Commercial - Gas Compressors	Aggregate	600	Nat Gas	0	0	0.000658036	0.37288635	0.03128144	10.224023	0	0		0	0	560986.75	17465.25	2.06	5903255
Los Angeles (SC)	2022 OFF - Light Commercial - Generator Sets	Aggregate	25	Gasoline	0.918826239	0.845136375	1.011112228	49.08824524	0.649133231	82.53630555	0.054575527	0.041234842		0.002260838	0.002166716	6184899.45	8725135.2	75938.47	93588482
Los Angeles (SC)	2022 OFF - Light Commercial - Generator Sets	Aggregate	25	Diesel	0.013135511	0.015632343	0.018915136	0.081889049	0.124948236	15.94006069	0.005420467	0.004986829		0.000222481	0.000133516	530735.55	872813.55	2585.49	12550675
Los Angeles (SC)	2022 OFF - Light Commercial - Generator Sets	Aggregate	50	Gasoline	0.033311505	0.030639922	0.036657279	2.044627657	0.069542913	23.3062547	0.001606712	0.00121396		0.000283362	0.000353227	1008286.95	452764.25	3941.99	14488456
Los Angeles (SC)	2022 OFF - Light Commercial - Generator Sets	Aggregate	50	Diesel	0.013626971	0.016217222	0.019622839	0.129765523	0.127366359	18.87225236	0.005022254	0.004620474		0.000243971	0.00015841	629690.7	450289.55	1333.85	14859555
Los Angeles (SC)	2022 OFF - Light Commercial - Generator Sets	Aggregate	100	Gasoline	0.007699397	0.007081905	0.008472716	0.287864015	0.042764424	11.54382718	0.000804863	0.000608119		0.000111529	0.000159377	454943.3	87446.7	761.3	7258076
Los Angeles (SC)	2022 OFF - Light Commercial - Generator Sets	Aggregate	100	Nat Gas	0	0	3.60248E-05	0.023522558	0.002647235	0.748459148	0	0		0	0	40730.35	6515.25	56.63	540765.8
Los Angeles (SC)	2022 OFF - Light Commercial - Generator Sets	Aggregate	175	Gasoline	0.000756635	0.000695953	0.000832631	0.060511056	0.007492757	1.865975146	0.000133771	0.000101071		1.85365E-05	2.6025E-05	74288.45	8267.25	71.93	1207019
Los Angeles (SC)	2022 OFF - Light Commercial - Generator Sets	Aggregate	175	Nat Gas	0	0	4.01334E-05	0.028188461	0.003665782	1.091454273	0	0		0	0	58878.15	5391.05	46.98	787093.3
Los Angeles (SC)	2022 OFF - Light Commercial - Pressure Washers	Aggregate	25	Gasoline	0.097978642	0.090120755	0.107819518	3.576015598	0.050422684	6.952024785	0.009624119	0.007271556		0.000208236	0.000172013	491012.6	910842.9	7927.42	6306525
Los Angeles (SC)	2022 OFF - Light Commercial - Pressure Washers	Aggregate	25	Diesel	7.15479E-05	8.51479E-05	0.000103029	0.000515023	0.000702612	0.090046462	3.08591E-05	2.83903E-05		1.33548E-06	7.5019E-07	2982.05	12362.55	85.45	174707.3
Los Angeles (SC)	2022 OFF - Light Commercial - Pressure Washers	Aggregate	50	Gasoline	0.000293691	0.000270137	0.000323189	0.019135988	0.000498791	0.235974539	1.62679E-05	1.22913E-05		2.86902E-06	3.54578E-06	10121.45	4036.9	35.24	117070.1
Los Angeles (SC)	2022 OFF - Light Commercial - Pressure Washers	Aggregate	50	Diesel	4.64988E-05	5.53374E-05	6.69583E-05	0.000529872	0.000587684	0.090681362	1.97256E-05	1.81476E-05		1.17228E-06	7.58454E-07	3014.9	4628.2	32	175871.6
Los Angeles (SC)	2022 OFF - Light Commercial - Pumps	Aggregate	25	Gasoline	0.30616745	0.28161282	0.336918602	10.3411768	0.210332623	19.20291039	0.119395621	0.090210025		0.000585525	0.000486752	1389434.55	3867331.95	17522.88	21458737
Los Angeles (SC)	2022 OFF - Light Commercial - Pumps	Aggregate	25	Diesel	0.007283071	0.008667456	0.010487622	0.043898857	0.064197013	8.18312626	0.002916724	0.002683386		0.000117005	6.85942E-05	272665.95	586277.6	1456.62	6443166
Los Angeles (SC)	2022 OFF - Light Commercial - Pumps	Aggregate	50	Gasoline	0.005055136	0.004649714	0.005562869	0.362263357	0.007989612	3.518616495	0.00024257	0.000183275		4.278E-05	5.4445E-05	155413.35	69539.8	315.05	2155734
Los Angeles (SC)	2022 OFF - Light Commercial - Pumps	Aggregate	50	Diesel	0.008752385	0.010416062	0.012603434	0.079786895	0.075542168	11.04566679	0.003119806	0.002870222		0.000142793	9.2805E-05	368905.5	235052.7	583.96	8696950
Los Angeles (SC)	2022 OFF - Light Commercial - Pumps	Aggregate	100	Gasoline	0.008394444	0.007721209	0.009237573	0.374730482	0.02358863	13.22895811	0.000922355	0.00069689		0.00012781	0.000183548	523939.25	88132.9	399.29	8196360
Los Angeles (SC)	2022 OFF - Light Commercial - Pumps	Aggregate	175	Gasoline	0.000285738	0.000262822	0.000314437	0.020040927	0.00118534	0.600575877	4.30549E-05	3.25304E-05		5.96609E-06	8.38943E-06	23947.65	2657.2	12.05	382636.8
Los Angeles (SC)	2022 OFF - Light Commercial - Welders	Aggregate	25	Gasoline	0.299021185	0.275039686	0.329054574	12.45672976	0.217196823	20.01892658	0.151036966	0.114116819		0.000517002	0.000541224	1544924.55	1927805.9	9279.76	30266180
Los Angeles (SC)	2022 OFF - Light Commercial - Welders	Aggregate	25	Diesel	0.00645493	0.0076819	0.009295099	0.036167103	0.056536814	7.193540867	0.002538619	0.002335529		9.92199E-05	6.02714E-05	239582.35	612229.1	953.34	9313902
Los Angeles (SC)	2022 OFF - Light Commercial - Welders	Aggregate	50	Gasoline	0.012382307	0.011389246	0.013625974	0.760002426	0.0198276	7.059961493	0.000486707	0.000367735		8.58363E-05	0.00011006	314166.45	130038.55	625.96	5851735
Los Angeles (SC)	2022 OFF - Light Commercial - Welders	Aggregate	50	Diesel	0.030516473	0.036317125	0.043943721	0.259942221	0.223387842	31.33719985	0.010178246	0.009363986		0.000405112	0.000264009	1049451.65	882073.6	1373.5	40575386
Los Angeles (SC)	2022 OFF - Light Commercial - Welders	Aggregate	100	Gasoline	0.009708706	0.008930068	0.010683839	0.35006834	0.029348931	11.08288617	0.000772725	0.000583837		0.000107076	0.000154676	441522.25	132721.3	638.91	9290491
Los Angeles (SC)	2022 OFF - Light Commercial - Welders	Aggregate	175	Gasoline	0.000805416	0.000740822	0.000886311	0.046242084	0.004107793	1.379902004	9.89243E-05	7.47428E-05		1.37079E-05	1.92915E-05	55067.55	9150.55	44.05	1189572
Los Angeles (SC)	2022 OFF - Military - A/C unit	Aggregate	100	Diesel	6.22752E-05	7.41126E-05	8.96762E-05	0.001017529	0.00082691	0.173547776	4.14803E-05	3.81619E-05		2.0358E-06	1.44988E-06	5763.35	1660.75	5.54	167735.8
Los Angeles (SC)	2022 OFF - Military - A/C unit	Aggregate	300	Diesel	3.13555E-05	3.73156E-05	4.51519E-05	0.00026507	0.000410033	0.149208051	1.21934E-05	1.1218E-05		1.67885E-06	1.23869E-06	4923.85	697.15	2.31	145007.2
Los Angeles (SC)	2022 OFF - Military - A/C unit	Aggregate	600	Diesel	1.80575E-05	2.14899E-05	2.60027E-05	0.000155774	0.000225973	0.089334648	7.07806E-06	6.51181E-06		8.76849E-07	7.39171E-07	2938.25	273.75	0.9	86231.25
Los Angeles (SC)	2022 OFF - Military - Aircraft Support	Aggregate	100	Diesel	1.13979E-05	1.35644E-05	1.64129E-05	0.000186232	0.000151345	0.03176343	7.59189E-06	6.98454E-06		3.72601E-07	2.68122E-07	1065.8	456.25	1.49	31025
Los Angeles (SC)	2022 OFF - Military - Aircraft Support	Aggregate	175	Diesel	2.52435E-05	3.00418E-05	3.63506E-05	0.000478	0.000307688	0.093421849	1.35311E-05	1.24486E-05		1.05116E-06	7.80492E-07	3102.5	649.7	2.16	90958
Los Angeles (SC)	2022 OFF - Military - Cart	Aggregate	100	Diesel	5.81865E-06	6.92468E-06	8.37886E-06	9.50724E-05	7.7262E-05	0.016215365	3.87569E-06	3.56564E-06		1.90215E-07	1.34979E-07	536.55	189.8	0.65	15373.8
Los Angeles (SC)	2022 OFF - Military - Cart	Aggregate	175	Diesel	2.06906E-06	2.46236E-06	2.97945E-06	3.9179E-05	2.52194E-05	0.007657255	1.10906E-06	1.02034E-06		8.61573E-08	6.33575E-08	251.85	58.4	0.16	8935.2
Los Angeles (SC)	2022 OFF - Military - Cart	Aggregate	300	Diesel	6.90634E-06	8.21912E-06	9.94513E-06	5.83841E-05	9.03137E-05	0.032864472	2.68572E-06	2.47086E-06		3.69782E-07	2.72713E-07	1084.05	160.6	0.52	31638.2
Los Angeles (SC)	2022 OFF - Military - Communications	Aggregate	50	Diesel	1.74178E-06	2.07286E-06	2.50816E-06	1.77334E-05	1.80029E-05	0.002669196	6.81207E-07	6.2671E-07		3.4506E-08	1.65281E-08	65.7	58.4	0.17	2336
Los Angeles (SC)	2022 OFF - Military - Communications	Aggregate	100	Diesel	2.87341E-06	3.41959E-06	4.13771E-06	4.69493E-05	3.81541E-05	0.008007587	1.91392E-06	1.76081E-06		9.39331E-08	6.61122E-08	262.8	87.6	0.32	7008
Los Angeles (SC)	2022 OFF - Military - Compressor (Military)	Aggregate	50	Diesel	2.13368E-06	2.53925E-06	3.07249E-06	2.17234E-05	2.20536E-05	0.003269765	8.34478E-07	7.6772E-07		4.22699E-08	2.66285E-08	105.85	58.4	0.17	2861.6
Los Angeles (SC)	2022 OFF - Military - Compressor (Military)	Aggregate	100	Diesel	6.41788E-05	7.63781E-05	9.24175E-05	0.001048632	0.000852188	0.178852788	4.27483E-05	3.93284E-05		2.09803E-06	1.49763E-06	5953.15	2441.85	8.13	173371.3
Los Angeles (SC)	2022 OFF - Military - Compressor (Military)	Aggregate	175	Diesel	3.01119E-06	3.58356E-06	4.33611E-06	5.70186E-05	3.67027E-05	0.011143892	1.61406E-06	1.48494E-06		1.25388E-07	9.18225E-08	365	58.4	0.17	9752.8
Los Angeles (SC)	2022 OFF - Military - Compressor (Military)	Aggregate	300	Diesel	6.25427E-06	7.4431E-06	9.00615E-06	5.28717E-05	8.17866E-05	0.029761533	2.43214E-06	2.23757E-06		3.34868E-07	2.45166E-07	974.55	124.1	0.42	27674.3
Los Angeles (SC)	2022 OFF - Military - Compressor (Military)	Aggregate	600	Diesel	3.52179E-05	4.19122E-05	5.07138E-05	0.00030381	0.000440722	0.174231753	1.38045E-05	1.27002E-05		1.71014E-06	1.4462E-06	5748.75	456.25	1.49	170181.2
Los Angeles (SC)	2022 OFF - Military - Crane	Aggregate	100	Diesel	4.52161E-06	5.38108E-06	6.51111E-06	0.000157234	8.04231E-05	0.028026557	1.19913E-06	1.1032E-06		3.28766E-07	2.31393E-07	919.8	255.5	0.85	26827.5
Los Angeles (SC)	2022 OFF - Military - Crane	Aggregate	175	Diesel	8.97758E-07	1.06841E-06	1.29277E-06	3.50341E-05	8.49916E-06	0.007056686	2.30555E-07	2.12111E-07		7.93998E-08	5.96846E-08	237.25	32.85	0.16	4631.85
Los Angeles (SC)	2022 OFF - Military - Crane	Aggregate	300	Diesel	8.20878E-07	9.76913E-07	1.18207E-06	1.2078E-05	5.73966E-06	0.007140098	1.71052E-07	1.57368E-07		8.03384E-08	5.96846E-08	237.25	32.85	0.09	7029.9
Los Angeles (SC)	2022 OFF - Military - Deicer	Aggregate	100	Diesel	2.63396E-06	3.13463E-06	3.7929E-06	4.30369E-05	3.49746E-05	0.007340288	1.75443E-06	1.61407E-06		8.61053E-08	6.24393E-08	248.2	58.4	0.17	6424
Los Angeles (SC)	2022 OFF - Military - Generator (Military)	Aggregate	50	Diesel	1.11691E-05	1.32922E-05	1.60836E-05	0.000113715	0.000115444	0.017116217	4.36824E-06	4.01878E-06		2.2127E-07	1.44161E-07	573.05	434.35	1.45	16505.3
Los Angeles (SC)	2022 OFF - Military - Generator (Military)	Aggregate	100	Diesel	0.00033389	0.000397357	0.000480802	0.00545551	0.004433505	0.930481614	0.000222398	0.000204606		1.0915E-05	7.7792E-06	30922.8	10891.6	36.23	904002.8
Los Angeles (SC)	2022 OFF - Military - Generator (Military)	Aggregate	175	Diesel	0.000358489	0.000426632	0.000516224	0.006788205	0.004369549	1.326707105	0.000192158	0.000176785		1.49277E-05	1.10775E-05	44033.6	8770.95	29.16	1289330
Los Angeles (SC)	2022 OFF - Military - Generator (Military)	Aggregate	300	Diesel	0.000111795	0.000133045	0.000160985	0.000945081	0.001461935	0.531987393	4.34746E-05	3.99966E-05		5.98577E-06	4.41758E-06	17560.15	2314.1	7.7	516044.3
Los Angeles (SC)	2022 OFF - Military - Generator (Military)	Aggregate	600	Diesel	6.80619E-05	8.09993E-05	9.80092E-05	0.000587141	0.000851736	0.336719054	2.66785E-05	2.45442E-05		3.30501E-06	2.79508E-06	11110.6	938.05	3.12	326441.4
Los Angeles (SC)	2022 OFF - Military - Generator (Military)	Aggregate	750	Diesel	3.63917E-06	4.33091E-06	5.24041E-06	3.10635E-05	4.59173E-05	0.017814581	1.42587E-06	1.3118E-06		1.79121E-07	1.47834E-07	587.65	25.55	0.14	13669.25
Los Angeles (SC)	2022 OFF - Military - Hydraulic unit	Aggregate	100	Diesel	3.81026E-05	4.53452E-05	5.48677E-05	0.000622567	0.000505939	0.106183944	2.53794E-05	2.33491E-05		1.24559E-06	8.86087E-07	3522.25	1084.05	3.61	102984.8
Los Angeles (SC)	2022 OFF - Military - Lift (Military)	Aggregate	100	Diesel	1.13739E-06	1.35359E-06	1.63784E-06	1.85841E-05	1.51027E-05	0.00316967	7.57594E-07	6.96987E-07		3.71819E-08	2.57103E-08	102.2	25.55	0.14	2427.25
Los Angeles (SC)	2022 OFF - Military - Light	Aggregate	50	Diesel	2.72152E-06	3.23884E-06	3.919E-06	2.77084E-05	2.81296E-05	0.004170618	1.06439E-06	9.79234E-07		5.39157E-08	3.21379E-08	127.75	62.05	0.25	3102.5
Los Angeles (SC)	2022 OFF - Military - Other tactical support equipment	Aggregate	50	Diesel	5.44305E-07	6.47768E-07	7.83799E-07	5.54169E-06	5.62592E-06	0.000834124	2.12877E-07	1.95847E-07		1.07831E-08	0	0	0	0	0
Los Angeles (SC)	2022 OFF - Military - Other tactical support equipment	Aggregate	100	Diesel	7.56664E-06	9.00493E-06	1.0896E-05	0.000123633	0.000100472	0.021086646	5.04E-06	4.6368E-06		2.47357E-07	1.76299E-07	700.8	255.5	0.85	20184.5
Los Angeles (SC)	2022 OFF - Military - Other tactical support equipment	Aggregate	175	Diesel	1.06744E-05	1.27034E-05	1.53711E-05	0.000202126	0.000130108	0.039504096	5.72171E-06	5.26397E-06		4.44489E-07	3.30561E-07	1314	255.5	0.85	37814
Los Angeles (SC)	2022 OFF - Military - Other tactical support equipment	Aggregate	300	Diesel	4.58553E-06	5.45716E-06	6.60316E-06	3.87647E-05	5.99646E-05	0.021820674	1.78321E-06	1.64055E-06		2.4552E-07	1.8089E-07	719.05	87.6	0.32	19096.8
Los Angeles (SC)	2022 OFF - Military - Other tactical support equipment	Aggregate	600	Diesel	1.82092E-06	2.16704E-06	2.62212E-06	1.57083E-05	2.27872E-05	0.009008536	7.13754E-07	6.56653E-07		8.84217E-08	7.43763E-08	295.65	25.55	0.14	6898.5
Los Angeles (SC)	2022 OFF - Military - Other tactical support equipment	Aggregate	750	Diesel	2.13335E-06	2.53886E-06	3.07202E-06	1.821E-05	2.69176E-05	0.010443228	8.35869E-07	7.68999E-07		1.05004E-07	8.63132E-08	343.1	0	0	0
Los Angeles (SC)	2022 OFF - Military - Pressure Washers	Aggregate	175	Diesel	2.05554E-06	2.44626E-06	2.95998E-06	3.89229E-05	2.50546E-05	0.007607208	1.10181E-06	1.01367E-06		8.55941E-08	6.33575E-08	251.85	58.4	0.16	8876.8
Los Angeles (SC)	2022 OFF - Military - Pump (Military)	Aggregate	50	Diesel	2.46244E-05	2.9305E-05	3.54591E-05	0.000250706	0.000254517	0.037735757	9.63056E-06	8.86011E-06		4.87829E-07	3.17706E-07	1262.9	938.05	3.12	36583.95
Los Angeles (SC)	2022 OFF - Military - Pump (Military)	Aggregate	100	Diesel	2.69382E-05	3.20587E-05	3.8791E-05	0.00044015	0.000357695	0.075071128	1.7943E-05	1.65076E-05		8.80623E-07	6.27148E-07	2492.95	730	2.43	73000
Los Angeles (SC)	2022 OFF - Military - Start Cart	Aggregate	100	Diesel	5.98627E-07	7.12415E-07	8.62023E-07	9.78111E-06	7.94877E-06	0.001668247	3.98734E-07	3.66835E-07		1.95694E-08	1.46916E-08	58.4	0	0	0
Los Angeles (SC)	2022 OFF - Military - Start Cart	Aggregate	600	Diesel	9.54297E-07	1.13569E-06	1.37419E-06	8.23231E-06	1.19422E-05	0.00472114	3.7406E-07	3.44135E-07		4.63395E-08	3.76472E-08	149.65	0	0	0
Los Angeles (SC)	2022 OFF - Military - Test Stand	Aggregate	100	Diesel	1.81743E-05	2.16289E-05	2.6171E-05	0.000296954	0.000241325	0.050647988	1.21056E-05	1.11371E-05		5.94127E-07	4.23302E-07	1682.65	532.9	1.78	49026.8
Los Angeles (SC)	2022 OFF - Military - Test Stand	Aggregate	175	Diesel	1.28021E-06	1.52355E-06	1.8435E-06	2.42415E-05	1.56042E-05	0.004737822	6.86218E-07	6.31321E-07		5.33086E-08	3.85655E-08	153.3	25.55	0.14	3628.1
Los Angeles (SC)	2022 OFF - Military - Test Stand	Aggregate	300	Diesel	2.14097E-05	2.54793E-05	3.08298E-05	0.00018099	0.00027997	0.101879868	8.32573E-06	7.65967E-06		1.14632E-06	8.47522E-07	3368.95	500.05	1.67	98509.85
Los Angeles (SC)	2022 OFF - Military - Test Stand	Aggregate	600	Diesel	1.38795E-05	1.65177E-05	1.99864E-05	0.000119732	0.000173689	0.06866506	5.44039E-06	5.00516E-06		6.7397E-07	5.71136E-07	2270.3	189.8	0.65	65101.4
Los Angeles (SC)	2022 OFF - Military - Welder	Aggregate	50	Diesel	8.00128E-06	9.52219E-06	1.15218E-05	8.14628E-05	8.2701E-05	0.012261618	3.12929E-06	2.87895E-06		1.58512E-07	1.02841E-07	408.8	335.8	1.13	11753
Los Angeles (SC)	2022 OFF - Military - Welder	Aggregate	100	Diesel	2.15266E-05	2.56185E-05	3.09983E-05	0.000351729	0.000285838	0.059990173	1.43385E-05	1.31914E-05		7.03716E-07	5.02269E-07	1996.55	938.05	3.12	58159.1
Los Angeles (SC)	2022 OFF - Oil Drilling - Compressors (Workover)	Aggregate	25	Diesel	2.77353E-06	3.30073E-06	3.99388E-06	1.36575E-05	2.51614E-05	0.003199756	1.06985E-06	9.8426E-07		4.05988E-08	2.57103E-08	102.2	160.6	0.16	3854.4
Los Angeles (SC)	2022 OFF - Oil Drilling - Generator (Drilling)	Aggregate	50	Diesel	2.29923E-06	2.73627E-06	3.31089E-06	2.00375E-05	1.56408E-05	0.002074605	7.19086E-07	6.61559E-07		2.68195E-08	1.46916E-08	58.4	58.4	0	1927.2
Los Angeles (SC)	2022 Oil Drilling - Drill Rig (Mobile)	Aggregate	25	Diesel	8.56917E-07	1.03687E-06	1.23396E-06	1.46056E-05	9.90313E-06	0.001848787	4.92041E-08	4.52678E-08		1.70672E-08	1.50896E-08	59.98186794	82.99293074	0.052065829	2074.823
Los Angeles (SC)	2022 Oil Drilling - Drill Rig (Mobile)	Aggregate	50	Diesel	8.34689E-05	0.000100997	0.000120195	0.000301473	0.000212999	0.017950726	2.80137E-05	2.57726E-05		1.63459E-07	1.46511E-07	582.3915438	477.5998455	0.416526629	20146.77
Los Angeles (SC)	2022 Oil Drilling - Drill Rig (Mobile)	Aggregate	75	Diesel	6.09726E-06	7.37768E-06	8.78005E-06	7.92989E-05	7.2048E-05	0.01071673	4.32971E-06	3.98334E-06		9.89886E-08	8.74685E-08	347.6925115	191.0815909	0.208263314	13375.71
Los Angeles (SC)	2022 Oil Drilling - Drill Rig (Mobile)	Aggregate	100	Diesel	3.86318E-05	4.67445E-05	5.56298E-05	0.000360894	0.000418515	0.04743643	3.01968E-05	2.77811E-05		4.37414E-07	3.8717E-07	1539.022727	685.186304	0.520658286	58646.79
Los Angeles (SC)	2022 Oil Drilling - Drill Rig (Mobile)	Aggregate	175	Diesel	0.000237034	0.000286812	0.00034133	0.002944053	0.00214903	0.445863547	0.00013362	0.000122931		4.11512E-06	3.63908E-06	14465.55176	3876.405069	3.228081371	554162.4
Los Angeles (SC)	2022 Oil Drilling - Drill Rig (Mobile)	Aggregate	300	Diesel	0.000199736	0.00024168	0.00028762	0.001347869	0.002110615	0.605715977	6.85052E-05	6.30248E-05		5.59415E-06	4.94377E-06	19651.7878	3236.880496	2.499159771	754536.8
Los Angeles (SC)	2022 Oil Drilling - Drill Rig (Mobile)	Aggregate	600	Diesel	0.000283859	0.000343469	0.000408757	0.001808494	0.00344447	0.845175304	0.000111658	0.000102725		7.80555E-06	6.89821E-06	27420.78194	2406.482597	1.770238171	1049693
Los Angeles (SC)	2022 Oil Drilling - Drill Rig (Mobile)	Aggregate	750	Diesel	8.29958E-05	0.000100425	0.000119514	0.000411246	0.00079723	0.191065756	3.32812E-05	3.06187E-05		1.76401E-06	1.55945E-06	6198.918018	372.7392667	0.260329143	237633.1
Los Angeles (SC)	2022 Oil Drilling - Drill Rig (Mobile)	Aggregate	9999	Diesel	6.90504E-05	8.35509E-05	9.94325E-05	0.000331975	0.001400371	0.160004824	3.53572E-05	3.25287E-05		1.47725E-06	1.30594E-06	5191.180302	259.6002213	0.156197486	199652.3
Los Angeles (SC)	2022 Oil Drilling - Workover Rig (Mobile)	Aggregate	25	Diesel	0	0	0	0	0	0	0	0		0	0	0	0	0	0
Los Angeles (SC)	2022 Oil Drilling - Workover Rig (Mobile)	Aggregate	75	Diesel	5.52392E-07	6.68394E-07	7.95444E-07	5.03799E-06	7.18548E-06	0.000642616	5.30038E-07	4.87635E-07		5.92473E-09	5.24495E-09	20.84897308	10.83726027	0.054186301	801.9573
Los Angeles (SC)	2022 Oil Drilling - Workover Rig (Mobile)	Aggregate	175	Diesel	8.22534E-06	9.95266E-06	1.18445E-05	9.97324E-05	8.22011E-05	0.014805731	5.93356E-06	5.45888E-06		1.3664E-07	1.20842E-07	480.3556365	108.8602795	0.108372603	18477.8
Los Angeles (SC)	2022 Oil Drilling - Workover Rig (Mobile)	Aggregate	300	Diesel	8.91796E-05	0.000107907	0.000128419	0.000551078	0.000794018	0.211560081	2.9594E-05	2.72265E-05		1.9533E-06	1.72672E-06	6863.833828	1197.896564	2.167452055	260835.2
Los Angeles (SC)	2022 Oil Drilling - Workover Rig (Mobile)	Aggregate	600	Diesel	0.003910693	0.004731939	0.005631398	0.026447713	0.036350861	12.86212516	0.001171768	0.001078027		0.000118799	0.000104979	417297.4858	40802.88098	29.20641644	16058091
Los Angeles (SC)	2022 Oil Drilling - Workover Rig (Mobile)	Aggregate	750	Diesel	3.61584E-05	4.37517E-05	5.20681E-05	0.000210267	0.000291226	0.103006907	1.49172E-05	1.37238E-05		9.51265E-07	8.40729E-07	3341.945655	188.5141425	0.108372603	128540.5
Los Angeles (SC)	2022 Portable Equipment - Non-Rental Compressor	Aggregate	50	Diesel	1.7119E-05	2.07139E-05	2.46513E-05	0.000366866	0.00036052	0.058646075	1.1059E-05	1.01743E-05		5.41698E-07	4.78661E-07	1902.707308	2628.408003	6.532392755	110573
Los Angeles (SC)	2022 Portable Equipment - Non-Rental Compressor	Aggregate	75	Diesel	0.000209161	0.000253084	0.000301191	0.004142991	0.003479146	0.632599521	0.00010825	9.959E-05		5.84242E-06	5.16319E-06	20523.99477	20151.12802	50.08167779	1325969
Los Angeles (SC)	2022 Portable Equipment - Non-Rental Compressor	Aggregate	100	Diesel	0.000474301	0.000573904	0.000682994	0.013572607	0.00745153	2.031715975	0.000528932	0.000486617		1.877E-05	1.65826E-05	65916.78726	50640.66086	125.8574337	4258605
Los Angeles (SC)	2022 Portable Equipment - Non-Rental Compressor	Aggregate	175	Diesel	0.00065779	0.000795926	0.000947217	0.023579349	0.009338023	4.262055898	0.000343423	0.00031595		3.93851E-05	3.47863E-05	138277.7098	65534.97288	162.874326	8933539
Los Angeles (SC)	2022 Portable Equipment - Non-Rental Compressor	Aggregate	300	Diesel	0.000410497	0.000496702	0.000591116	0.004863171	0.004335135	2.556211401	0.000166295	0.000152991		2.36211E-05	2.08635E-05	82933.46374	19099.76482	47.46872068	5357981
Los Angeles (SC)	2022 Portable Equipment - Non-Rental Compressor	Aggregate	600	Diesel	0.000640343	0.000774815	0.000922093	0.006693631	0.007504997	3.498224244	0.000285608	0.000262759		3.23236E-05	2.8552E-05	113496.033	15244.76642	37.88787798	7332499
Los Angeles (SC)	2022 Portable Equipment - Non-Rental Compressor	Aggregate	750	Diesel	0.000263989	0.000319427	0.000380145	0.002180164	0.004695179	1.145400995	0.000149013	0.000137092		1.05819E-05	9.34861E-06	37161.27384	3504.544004	8.709857006	2400833
Los Angeles (SC)	2022 Portable Equipment - Non-Rental Compressor	Aggregate	9999	Diesel	1.15204E-05	1.39397E-05	1.65894E-05	0.000143713	0.000232283	0.074494809	2.69988E-06	2.48389E-06		6.88396E-07	6.08017E-07	2416.902027	175.2272002	0.43549285	156145.8
Los Angeles (SC)	2022 Portable Equipment - Non-Rental Generator	Aggregate	50	Diesel	9.52313E-05	0.00011523	0.000137133	0.001338408	0.00097566	0.137828393	4.03782E-05	3.71479E-05		1.27143E-06	1.12494E-06	4471.690415	5261.429728	3.919435653	259865.7
Los Angeles (SC)	2022 Portable Equipment - Non-Rental Generator	Aggregate	75	Diesel	0.002662581	0.003221723	0.003834116	0.038903586	0.029395826	5.273832985	0.000782815	0.000720189		4.86793E-05	4.30443E-05	171103.7031	167196.5447	124.5509552	11054288
Los Angeles (SC)	2022 Portable Equipment - Non-Rental Generator	Aggregate	100	Diesel	0.002697826	0.003264369	0.003884869	0.061899504	0.030882702	8.406805937	0.00240133	0.002209224		7.76442E-05	6.86152E-05	272749.5602	182396.2306	135.8737693	17621197
Los Angeles (SC)	2022 Portable Equipment - Non-Rental Generator	Aggregate	175	Diesel	0.005777977	0.006991352	0.008320286	0.115261042	0.052569949	18.22620959	0.002593305	0.002385841		0.000168337	0.00014876	591329.2974	272425.1392	202.9396682	38203288
Los Angeles (SC)	2022 Portable Equipment - Non-Rental Generator	Aggregate	300	Diesel	0.006837216	0.008273031	0.009845591	0.045503114	0.053743777	19.93444712	0.002326252	0.002140152		0.000184099	0.000162702	646751.183	168365.7513	125.4219409	41783862
Los Angeles (SC)	2022 Portable Equipment - Non-Rental Generator	Aggregate	600	Diesel	0.011196376	0.013547615	0.016122781	0.083847561	0.072660681	40.99885681	0.003275955	0.003013879		0.000378719	0.000334627	1330162.757	213964.8089	159.3903832	85936197
Los Angeles (SC)	2022 Portable Equipment - Non-Rental Generator	Aggregate	750	Diesel	0.003581367	0.004333454	0.005157168	0.021839505	0.028623607	10.24798025	0.001390944	0.001279669		9.46402E-05	8.36426E-05	332484.4329	30983.97506	23.08112107	21480415
Los Angeles (SC)	2022 Portable Equipment - Non-Rental Generator	Aggregate	9999	Diesel	0.022317271	0.027003898	0.032136871	0.145139826	0.347272103	67.00417957	0.009887614	0.009096605		0.000618817	0.000546879	2173876.814	111074.6276	82.74364156	1.4E+08
Los Angeles (SC)	2022 Portable Equipment - Non-Rental Other Portable Equipment	Aggregate	50	Diesel	1.51621E-05	1.83461E-05	2.18334E-05	0.000298564	0.000306314	0.050108851	9.72815E-06	8.9499E-06		4.62826E-07	4.08982E-07	1625.726491	2047.430212	6.532392755	94476.7
Los Angeles (SC)	2022 Portable Equipment - Non-Rental Other Portable Equipment	Aggregate	75	Diesel	0.000316234	0.000382643	0.000455377	0.008353344	0.00682921	1.351392385	0.000150019	0.000138017		1.24848E-05	1.10299E-05	43844.43763	39583.65077	126.2929266	2832604
Los Angeles (SC)	2022 Portable Equipment - Non-Rental Other Portable Equipment	Aggregate	100	Diesel	0.000606803	0.000734232	0.000873796	0.019272824	0.012127637	3.041442568	0.000763382	0.000702311		2.81014E-05	2.48238E-05	98676.25456	70977.58068	226.4562822	6375056
Los Angeles (SC)	2022 Portable Equipment - Non-Rental Other Portable Equipment	Aggregate	175	Diesel	0.001700664	0.002057803	0.002448956	0.054208552	0.027242517	9.837405131	0.001041078	0.000957792		9.09007E-05	8.02916E-05	319163.7755	148097.452	472.5097426	20619823
Los Angeles (SC)	2022 Portable Equipment - Non-Rental Other Portable Equipment	Aggregate	300	Diesel	0.000636326	0.000769954	0.000916309	0.006528073	0.007996559	3.301424336	0.00029493	0.000271336		3.05042E-05	2.69458E-05	107111.0767	29073.50901	92.75997712	6919994
Los Angeles (SC)	2022 Portable Equipment - Non-Rental Other Portable Equipment	Aggregate	600	Diesel	0.000803037	0.000971675	0.001156373	0.0081956	0.009952974	4.341756261	0.000347872	0.000320043		4.01176E-05	3.54368E-05	140863.5003	20474.30212	65.32392755	9100596
Los Angeles (SC)	2022 Portable Equipment - Non-Rental Other Portable Equipment	Aggregate	750	Diesel	0.000354384	0.000428805	0.000510313	0.003568171	0.005400522	1.901922167	0.000204182	0.000187848		1.75736E-05	1.55232E-05	61705.7701	5732.804594	18.29069971	3986549
Los Angeles (SC)	2022 Portable Equipment - Non-Rental Other Portable Equipment	Aggregate	9999	Diesel	0.00383496	0.004640302	0.005522343	0.032151567	0.093064271	16.78073343	0.001991417	0.001832103		0.000155031	0.000136962	544432.4155	14468.50683	46.16224213	35173479
Los Angeles (SC)	2022 Portable Equipment - Non-Rental Pump	Aggregate	50	Diesel	3.74022E-06	4.52566E-06	5.38591E-06	6.38568E-05	5.92869E-05	0.010148438	2.1435E-06	1.97202E-06		9.37151E-08	8.28302E-08	329.254887	410.3614391	1.306478551	19134.16
Los Angeles (SC)	2022 Portable Equipment - Non-Rental Pump	Aggregate	75	Diesel	0.000206798	0.000250225	0.000297788	0.004803434	0.00408848	0.76436972	0.000126991	0.000116832		7.06077E-06	6.23868E-06	24799.13377	22569.87915	71.8563203	1602167
Los Angeles (SC)	2022 Portable Equipment - Non-Rental Pump	Aggregate	100	Diesel	0.00031145	0.000376855	0.000448488	0.009263085	0.006291224	1.465582919	0.000377416	0.000347223		1.35407E-05	1.19619E-05	47549.22375	33239.27657	105.8247626	3071954
Los Angeles (SC)	2022 Portable Equipment - Non-Rental Pump	Aggregate	175	Diesel	0.000438516	0.000530605	0.000631464	0.014115326	0.006921256	2.55885341	0.000271031	0.000249349		2.36447E-05	2.0885E-05	83019.18082	38437.18813	122.3734909	5363519
Los Angeles (SC)	2022 Portable Equipment - Non-Rental Pump	Aggregate	300	Diesel	0.00028199	0.000341208	0.000406066	0.003578584	0.003027055	1.887325129	0.000108286	9.96227E-05		1.74408E-05	1.54041E-05	61232.1853	16414.45757	52.25914204	3955953
Los Angeles (SC)	2022 Portable Equipment - Non-Rental Pump	Aggregate	600	Diesel	0.000579443	0.000701126	0.000834398	0.006560378	0.008750489	3.569898709	0.000330547	0.000304103		3.29881E-05	2.9137E-05	115821.4321	18329.47761	58.35604194	7482733
Los Angeles (SC)	2022 Portable Equipment - Non-Rental Pump	Aggregate	750	Diesel	0.000291103	0.000352235	0.000419189	0.0033206	0.005339611	1.81030663	0.00021599	0.00019871		1.67284E-05	1.47755E-05	58733.40492	5471.485855	17.41971401	3794517
Los Angeles (SC)	2022 Portable Equipment - Non-Rental Pump	Aggregate	9999	Diesel	0.000170661	0.0002065	0.000245752	0.00195637	0.003900492	1.032751127	6.56542E-05	6.04019E-05		9.54318E-06	8.42918E-06	33506.47293	1641.445757	5.225914204	2164712
Los Angeles (SC)	2022 Portable Equipment - Rental Compressor	Aggregate	50	Diesel	1.42836E-05	1.72832E-05	2.05684E-05	0.00032933	0.000259193	0.055649044	3.89529E-06	3.58367E-06		5.14075E-07	4.542E-07	1805.47196	2066.528963	3.919435653	104922.3
Los Angeles (SC)	2022 Portable Equipment - Rental Compressor	Aggregate	75	Diesel	5.95618E-05	7.20697E-05	8.57689E-05	0.001070941	0.000861911	0.16129433	1.59057E-05	1.46333E-05		1.48946E-06	1.31646E-06	5233.016905	5281.129571	10.01633556	338083.1
Los Angeles (SC)	2022 Portable Equipment - Rental Compressor	Aggregate	100	Diesel	3.38774E-05	4.09917E-05	4.87835E-05	0.001014445	0.000532682	0.149943568	3.61187E-05	3.32292E-05		1.38529E-06	1.22382E-06	4864.753928	3673.829267	6.967885605	314291.2
Los Angeles (SC)	2022 Portable Equipment - Rental Compressor	Aggregate	175	Diesel	0.000546983	0.00066185	0.000787656	0.019302514	0.008579985	3.507385502	0.000258595	0.000237907		3.24111E-05	2.86268E-05	113793.2599	52581.68138	99.72786272	7351702
Los Angeles (SC)	2022 Portable Equipment - Rental Compressor	Aggregate	300	Diesel	0.000318012	0.000384795	0.000457937	0.004284269	0.002195241	2.240867462	8.94536E-05	8.22973E-05		2.07084E-05	1.82897E-05	72702.47694	16302.61737	30.91999237	4697000
Los Angeles (SC)	2022 Portable Equipment - Rental Compressor	Aggregate	600	Diesel	0.00493789	0.005974847	0.007110562	0.060092708	0.046004644	31.54274643	0.001880109	0.0017297		0.00029148	0.000257448	1023369.67	118940.2225	225.5852965	66115592
Los Angeles (SC)	2022 Portable Equipment - Rental Compressor	Aggregate	750	Diesel	0.000559743	0.000677289	0.00080603	0.006315147	0.004889496	3.234967211	0.000256282	0.000235779		2.98921E-05	2.64034E-05	104954.9485	10562.25914	20.03267111	6780696
Los Angeles (SC)	2022 Portable Equipment - Rental Compressor	Aggregate	9999	Diesel	0.000393262	0.000475847	0.000566297	0.004494076	0.009126995	2.376963101	0.000186614	0.000171685		2.19644E-05	1.94005E-05	77117.95004	4592.286584	8.709857006	4982265
Los Angeles (SC)	2022 Portable Equipment - Rental Generator	Aggregate	50	Diesel	1.22397E-05	1.481E-05	1.76252E-05	0.000176796	0.000108407	0.017205109	6.04425E-06	5.56071E-06		1.58703E-07	1.40426E-07	558.2008152	626.1340044	0.43549285	32439.02

Los Angeles (SC)	2022 Portable Equipment - Rental Generator	Aggregate	75	Diesel	0.002708138	0.003276847	0.003899719	0.042372939	0.031705872	5.863299595	0.000825788	0.000759725	5.41279E-05	4.78555E-05	190228.2981	182831.1293	127.1639123	12289847
Los Angeles (SC)	2022 Portable Equipment - Rental Generator	Aggregate	100	Diesel	0.003964799	0.004797407	0.005709311	0.100071277	0.047630315	13.73045294	0.003687617	0.003392607	0.000126826	0.000112066	445469.4243	297413.6521	206.8591039	28779898
Los Angeles (SC)	2022 Portable Equipment - Rental Generator	Aggregate	175	Diesel	0.006904409	0.008354335	0.009942349	0.165678028	0.059978329	26.54843124	0.002291328	0.002108021	0.000245246	0.000216685	861334.6136	373802.0006	259.9892316	55647191
Los Angeles (SC)	2022 Portable Equipment - Rental Generator	Aggregate	300	Diesel	0.016610054	0.020098165	0.023918477	0.118798755	0.119392605	54.23869387	0.005024817	0.004622831	0.000500965	0.000442689	1759714.689	443929.0091	308.7644309	1.14E+08
Los Angeles (SC)	2022 Portable Equipment - Rental Generator	Aggregate	600	Diesel	0.022354977	0.027049522	0.032191167	0.171261828	0.138603693	83.64464408	0.006698068	0.006162222	0.000772666	0.000682696	2713758.359	413248.4429	287.4252812	1.75E+08
Los Angeles (SC)	2022 Portable Equipment - Rental Generator	Aggregate	750	Diesel	0.005162097	0.006246137	0.007433419	0.02575241	0.058675649	12.11907472	0.00225853	0.002077848	0.000111892	9.89143E-05	393190.0324	36941.90626	25.69407817	25402347
Los Angeles (SC)	2022 Portable Equipment - Rental Generator	Aggregate	9999	Diesel	0.046710127	0.056519254	0.067262583	0.313035837	0.776003835	153.7538349	0.021819167	0.020073634	0.001420129	0.001254918	4988373.843	250453.6018	174.1971401	3.22E+08
Los Angeles (SC)	2022 Portable Equipment - Rental Other Portable Equipment	Aggregate	50	Diesel	3.51106E-05	4.24839E-05	5.05593E-05	0.000578332	0.000460209	0.069936846	1.53087E-05	1.4084E-05	6.45548E-07	5.70815E-07	2269.023958	3249.146532	2.612957102	131861
Los Angeles (SC)	2022 Portable Equipment - Rental Other Portable Equipment	Aggregate	75	Diesel	0.00107666	0.001302759	0.001550391	0.0215655	0.016205103	3.242082693	0.000239049	0.000219925	2.99424E-05	2.64614E-05	105185.8024	91517.62731	73.5982917	6795610
Los Angeles (SC)	2022 Portable Equipment - Rental Other Portable Equipment	Aggregate	100	Diesel	0.00044692	0.000540774	0.000643565	0.012879265	0.004856429	1.720490914	0.000402244	0.000370064	1.58934E-05	1.40424E-05	55819.43294	39531.2828	31.79097807	3606258
Los Angeles (SC)	2022 Portable Equipment - Rental Other Portable Equipment	Aggregate	175	Diesel	0.00211392	0.002557843	0.003044045	0.056266295	0.02017261	9.430442498	0.000744564	0.000684999	8.71257E-05	7.697E-05	305960.3211	144045.4962	115.8410982	19766804
Los Angeles (SC)	2022 Portable Equipment - Rental Other Portable Equipment	Aggregate	300	Diesel	0.002037591	0.002465485	0.002934131	0.014125976	0.014346688	6.267865921	0.000592196	0.00054482	5.78884E-05	5.11575E-05	203354.007	53069.39335	42.67829933	13137843
Los Angeles (SC)	2022 Portable Equipment - Rental Other Portable Equipment	Aggregate	600	Diesel	0.001456796	0.001762723	0.002097786	0.010091458	0.010458287	4.91465578	0.000482917	0.000444284	4.53947E-05	4.01128E-05	159450.5943	24910.12341	20.03267111	10301429
Los Angeles (SC)	2022 Portable Equipment - Rental Other Portable Equipment	Aggregate	750	Diesel	0.00084891	0.001027181	0.00122243	0.007069072	0.006747702	3.528518865	0.000379437	0.000349082	3.25974E-05	2.87993E-05	114478.9086	10830.48844	8.709857006	7395999
Los Angeles (SC)	2022 Portable Equipment - Rental Other Portable Equipment	Aggregate	9999	Diesel	0.001128526	0.001365516	0.001625077	0.00676393	0.016489339	3.29000052	0.000449133	0.000413202	3.03838E-05	2.68525E-05	106740.4436	5415.24422	4.354928503	6896049
Los Angeles (SC)	2022 Portable Equipment - Rental Pump	Aggregate	50	Diesel	1.2729E-05	1.54021E-05	1.83298E-05	0.000125376	0.000105592	0.011608391	7.54763E-06	6.94382E-06	1.06943E-07	9.47461E-08	376.621473	422.4564075	0.43549285	21886.8
Los Angeles (SC)	2022 Portable Equipment - Rental Pump	Aggregate	75	Diesel	0.000445708	0.000539307	0.00064182	0.009757616	0.007856819	1.501539731	0.000265224	0.000244006	1.38691E-05	1.22554E-05	48715.80291	42245.64075	43.54928503	3147322
Los Angeles (SC)	2022 Portable Equipment - Rental Pump	Aggregate	100	Diesel	0.000663496	0.00080283	0.000955434	0.016714737	0.007800939	2.304518905	0.000626196	0.0005761	2.12865E-05	1.88092E-05	74767.5779	55764.24578	57.48505624	4830417
Los Angeles (SC)	2022 Portable Equipment - Rental Pump	Aggregate	175	Diesel	0.001062628	0.00128578	0.001530184	0.024394717	0.010098546	3.900244229	0.000463807	0.000426702	3.60278E-05	3.18333E-05	126539.1287	54919.33297	56.61407054	8175159
Los Angeles (SC)	2022 Portable Equipment - Rental Pump	Aggregate	300	Diesel	0.001355703	0.001640401	0.001952212	0.012272888	0.009809227	5.887330535	0.000388251	0.000357191	5.43906E-05	4.80516E-05	191007.9555	44780.37919	46.16224213	12340217
Los Angeles (SC)	2022 Portable Equipment - Rental Pump	Aggregate	600	Diesel	0.001581523	0.001913643	0.002277393	0.016186196	0.011357496	8.350983414	0.000533823	0.000491117	7.71615E-05	6.81596E-05	270938.4599	44780.37919	46.16224213	17504189
Los Angeles (SC)	2022 Portable Equipment - Rental Pump	Aggregate	750	Diesel	0.000282006	0.000341228	0.000406089	0.001756676	0.002664594	0.848296855	0.000120112	0.000110503	7.83446E-06	6.92368E-06	27522.05722	2534.738445	2.612957102	1778084
Los Angeles (SC)	2022 TRU - Instate Genset TRU	Aggregate	50	Diesel	0.006766677	0.00818768	0.009744016	0.128999742	0.095751108	2.632509878	0.000428697	0.000394402	2.42991E-05	2.16303E-05	1671.021909	1006672.933	1289.414991	31710197
Los Angeles (SC)	2022 TRU - Instate Trailer TRU	Aggregate	50	Diesel	0.132925967	0.160840421	0.191413393	1.980357934	1.294169214	30.49023007	0.020470879	0.018833208	0.0002798	0.000250526	19354.09355	7749377.7	5849.103547	2.63E+08
Los Angeles (SC)	2022 TRU - Instate Truck TRU	Aggregate	25	Diesel	0.017629925	0.021332209	0.025387091	0.172620763	0.207026353	4.14226772	0.008399205	0.007727269	3.80253E-05	3.40354E-05	2629.361496	2085325.724	1532.20112	29403093
Los Angeles (SC)	2022 TRU - Instate Van TRU	Aggregate	25	Diesel	0.000408145	0.000493856	0.000587729	0.003996292	0.004792805	0.095896397	0.000194447	0.000178892	8.80312E-07	7.87943E-07	60.87155928	75633.5755	55.57206135	680702.2
Los Angeles (SC)	2022 TRU - Out-of-State Genset TRU	Aggregate	50	Diesel	0.004243335	0.005134436	0.006110403	0.081089479	0.060294829	1.658816139	0.000269405	0.000247853	1.53121E-05	1.36298E-05	1052.956395	634332.0198	5130.312871	19981459
Los Angeles (SC)	2022 TRU - Out-of-State Trailer TRU	Aggregate	50	Diesel	0.070339153	0.085110375	0.10128838	1.138234409	0.750859741	19.04654266	0.005704703	0.005248327	0.000175166	0.000156498	12090.05533	4840857.303	23071.06568	1.65E+08
Los Angeles (SC)	2022 TRU - Railcar TRU	Aggregate	50	Diesel	0.007281008	0.00881002	0.010484652	0.117821924	0.077723656	1.971562527	0.00059051	0.000543269	1.81319E-05	1.61996E-05	1251.476473	501091.092	1554.108154	17037097

OFFROAD 2022

	Equipment Type	Horsepower	Gas				Diesel				Natural Gas			
		HP	Fuel (Gal/Yr)	Population	Hrs/Yr	Gal/Hr	Fuel (Gal/Yr)	Population	Hrs/Yr	Gal/Hr	Fuel (Gal/Yr)	Population	Hrs/Yr	Gal/Hr
Air Compressors25	Air Compressors	25	424710.35	2885.44	1394854.8	0.304483556	20257.5	45.43	36978.15	0.547823512	0	0	0	0
Air Compressors50	Air Compressors	50	129870.65	119.55	57801.4	2.246842637	228033.75	274.28	223248.6	1.021434177	0	0	0	0
Air Compressors75	Air Compressors	75	0	0	0	0	0	0	0	0	0	0	0	0
Air Compressors100	Air Compressors	100	705782.25	387.67	187401.95	3.766141441	0	0	0	0	0	0	0	0
Air Compressors175	Air Compressors	175	86402.8	26.1	12607.1	6.853503185	0	0	0	0	0	0	0	0
Air Compressors300	Air Compressors	300	0	0	0	0	0	0	0	0	0	0	0	0
Air Compressors600	Air Compressors	600	0	0	0	0	0	0	0	0	0	0	0	0
Air Compressors750	Air Compressors	750	0	0	0	0	0	0	0	0	0	0	0	0
Air Compressors9999	Air Compressors	9999	0	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts25	Aerial Lifts	25	99013.55	302.34	113482.15	0.872503297	83022.9	452.71	180780.85	0.459246098	185503.95	418.24	156975.55	1.181737857
Aerial Lifts50	Aerial Lifts	50	207509.8	361.03	130447.35	1.590755197	291282.9157	1163.829162	356269.9837	0.817590392	0	0	0	0
Aerial Lifts75	Aerial Lifts	75	0	0	0	0	218911.1936	645.3512345	196476.9206	1.114182739	0	0	0	0
Aerial Lifts100	Aerial Lifts	100	372037.2	361.03	130447.35	2.852010409	289343.0414	764.5352497	234159.695	1.235665435	0	0	0	0
Aerial Lifts175	Aerial Lifts	175	0	0	0	0	31062.45523	48.88192329	14940.59778	2.079063749	0	0	0	0
Aerial Lifts300	Aerial Lifts	300	0	0	0	0	1856.223497	1.647705279	506.4394285	3.665242855	0	0	0	0
Aerial Lifts600	Aerial Lifts	600	0	0	0	0	1318.1877	0.549235093	168.8131428	7.808560865	0	0	0	0
Bore/Drill rigs25	Bore/Drill rigs	25	7084.65	43.34	5376.45	1.317718941	6924.05	12.86	10442.65	0.663054876	0	0	0	0
Bore/Drill rigs50	Bore/Drill rigs	50	1354.15	4.92	521.95	2.594405594	7452.070739	18.02533051	6490.692533	1.14811643	0	0	0	0
Bore/Drill rigs75	Bore/Drill rigs	75	0	0	0	0	10940.95079	12.33312088	5978.979094	1.829902835	0	0	0	0
Bore/Drill rigs100	Bore/Drill rigs	100	15435.85	22.53	2412.65	6.397881997	35452.68087	42.69157226	16264.77001	2.179722236	0	0	0	0
Bore/Drill rigs175	Bore/Drill rigs	175	5387.4	5.56	598.6	9	54430.27551	43.45053355	13913.60681	3.912017657	0	0	0	0
Bore/Drill rigs300	Bore/Drill rigs	300	0	0	0	0	79393.94261	44.7787158	14661.88357	5.414989296	0	0	0	0
Bore/Drill rigs600	Bore/Drill rigs	600	0	0	0	0	125908.9277	35.8609207	12116.47096	10.39155115	0	0	0	0
Bore/Drill rigs750	Bore/Drill rigs	750	0	0	0	0	74320.27282	7.589612847	4419.722033	16.81559887	0	0	0	0
Bore/Drill rigs9999	Bore/Drill rigs	9999	0	0	0	0	40543.32865	1.138441927	839.9203883	48.27044231	0	0	0	0
Cement and Mortar Mixers25	Cement and Mortar Mixers	25	233300.7	6532.91	601530.95	0.387844881	17779.15	179.09	53782.75	0.330573465	0	0	0	0
Cement and Mortar Mixers50	Cement and Mortar Mixers	50	0	0	0	0	0	0	0	0	0	0	0	0
Cement and Mortar Mixers75	Cement and Mortar Mixers	75	0	0	0	0	0	0	0	0	0	0	0	0
Cement and Mortar Mixers100	Cement and Mortar Mixers	100	0	0	0	0	0	0	0	0	0	0	0	0
Cement and Mortar Mixers175	Cement and Mortar Mixers	175	0	0	0	0	0	0	0	0	0	0	0	0
Cement and Mortar Mixers300	Cement and Mortar Mixers	300	0	0	0	0	0	0	0	0	0	0	0	0
Cement and Mortar Mixers600	Cement and Mortar Mixers	600	0	0	0	0	0	0	0	0	0	0	0	0
Cement and Mortar Mixers750	Cement and Mortar Mixers	750	0	0	0	0	0	0	0	0	0	0	0	0
Cement and Mortar Mixers9999	Cement and Mortar Mixers	9999	0	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws25	Concrete/Industrial Saws	25	209305.6	919.53	261307.15	0.800994538	573.05	1.27	759.2	0.754807692	0	0	0	0
Concrete/Industrial Saws50	Concrete/Industrial Saws	50	30966.6	18.29	11165.35	2.773455378	9026.45	11.26	6526.2	1.38310962	0	0	0	0
Concrete/Industrial Saws75	Concrete/Industrial Saws	75	0	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws100	Concrete/Industrial Saws	100	30167.25	10.48	6398.45	4.714774672	0	0	0	0	0	0	0	0
Concrete/Industrial Saws175	Concrete/Industrial Saws	175	0	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws300	Concrete/Industrial Saws	300	0	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws600	Concrete/Industrial Saws	600	0	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws750	Concrete/Industrial Saws	750	0	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws9999	Concrete/Industrial Saws	9999	0	0	0	0	0	0	0	0	0	0	0	0
Cranes25	Cranes	25	0	0	0	0	143.3978627	0.71489451	346.3918684	0.413975834	0	0	0	0
Cranes50	Cranes	50	4511.4	5.56	2314.1	1.949526814	2323.280226	7.625541439	3369.473207	0.689508443	0	0	0	0
Cranes75	Cranes	75	0	0	0	0	889.9341635	2.3829817	884.4282046	1.006225445	0	0	0	0
Cranes100	Cranes	100	15344.6	11.16	4631.85	3.31284476	52460.82667	89.36181374	40123.35763	1.30748845	0	0	0	0
Cranes175	Cranes	175	992.8	0.46	178.85	5.551020408	160841.8754	159.6597739	73781.19262	2.179984758	0	0	0	0
Cranes300	Cranes	300	0	0	0	0	275864.6312	176.5789439	84162.76068	3.277751692	0	0	0	0
Cranes600	Cranes	600	0	0	0	0	485985.9435	177.0555403	88829.41361	5.471002495	0	0	0	0
Cranes750	Cranes	750	0	0	0	0	8427.675149	2.14468353	887.7324196	9.493485833	0	0	0	0
Cranes9999	Cranes	9999	0	0	0	0	26700.58065	3.812770719	1911.488355	13.96847675	0	0	0	0
Crawler Tractors25	Crawler Tractors	25	0	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors50	Crawler Tractors	50	0	0	0	0	7524.758943	21.14960858	7300.903165	1.030661382	0	0	0	0
Crawler Tractors75	Crawler Tractors	75	0	0	0	0	1164.561643	3.595433458	750.2518064	1.55222771	0	0	0	0
Crawler Tractors100	Crawler Tractors	100	0	0	0	0	331248.8369	359.7548419	170422.7526	1.943689043	0	0	0	0
Crawler Tractors175	Crawler Tractors	175	0	0	0	0	362749.3074	238.7790808	109504.5054	3.312642765	0	0	0	0
Crawler Tractors300	Crawler Tractors	300	0	0	0	0	379827.5458	184.847579	83503.02605	4.54866804	0	0	0	0
Crawler Tractors600	Crawler Tractors	600	0	0	0	0	1330479.626	324.0120034	155572.4101	8.552156677	0	0	0	0
Crawler Tractors750	Crawler Tractors	750	0	0	0	0	13583.44341	2.326456944	988.0351965	13.74793475	0	0	0	0
Crawler Tractors9999	Crawler Tractors	9999	0	0	0	0	77024.06764	6.344882573	3553.55424	21.67521936	0	0	0	0
Crushing/Proc. Equipment25	Crushing/Proc. Equipment	25	3124.4	10.9	3146.3	0.993039443	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment50	Crushing/Proc. Equipment	50	0	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment75	Crushing/Proc. Equipment	75	0	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment100	Crushing/Proc. Equipment	100	11899	6.46	1562.2	7.61682243	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment175	Crushing/Proc. Equipment	175	0	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment300	Crushing/Proc. Equipment	300	0	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment600	Crushing/Proc. Equipment	600	0	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment750	Crushing/Proc. Equipment	750	0	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment9999	Crushing/Proc. Equipment	9999	0	0	0	0	0	0	0	0	0	0	0	0
Dumpers/Tenders25	Dumpers/Tenders	25	22323.4	435.37	64926.2	0.343827299	1770.25	7.73	5102.7	0.346924177	0	0	0	0
Dumpers/Tenders100	Dumpers/Tenders	100	1266.55	4.03	503.7	2.514492754	0	0	0	0	0	0	0	0
Excavators25	Excavators	25	0	0	0	0	12528.87153	12.535757	16792.28491	0.7461088	0	0	0	0
Excavators50	Excavators	50	0	0	0	0	300859.1253	517.0823576	382719.6521	0.786108379	0	0	0	0
Excavators75	Excavators	75	0	0	0	0	3920.697993	4.23837998	2761.892882	1.419569173	0	0	0	0
Excavators100	Excavators	100	0	0	0	0	386250.3078	368.5271393	241381.2102	1.600167252	0	0	0	0
Excavators175	Excavators	175	0	0	0	0	824360.882	477.4535048	285667.4855	2.885735773	0	0	0	0
Excavators300	Excavators	300	0	0	0	0	1049442.961	410.9109391	242915.0782	4.320205107	0	0	0	0
Excavators600	Excavators	600	0	0	0	0	1870509.682	432.314758	280317.3128	6.672829669	0	0	0	0
Excavators750	Excavators	750	0	0	0	0	19466.53141	2.966865986	1564.231911	12.44478601	0	0	0	0
Excavators9999	Excavators	9999	0	0	0	0	51958.65286	3.178784985	2182.28472	23.80929142	0	0	0	0
Forklifts25	Forklifts	25	4303.35	6.92	6237.85	0.689877121	88.57709615	0.490985382	153.1788012	0.578259494	4920.2	4.01	5022.4	0.979651163
Forklifts50	Forklifts	50	3482187.6	1206.37	2170213.35	1.604536992	204913.6962	568.2424014	407774.7014	0.502516942	6536044.05	2717.52	4895796.1	1.335031916
Forklifts75	Forklifts	75	0	0	0	0	17226.67247	49.82727671	22649.68912	0.76056993	0	0	0	0
Forklifts100	Forklifts	100	16076410.4	4257.34	7625824.55	2.108153721	3021326.751	4734.100103	3077141.17	0.9818616	40904659.4	9537.69	17182718.1	2.380569777
Forklifts175	Forklifts	175	1124440.9	155.54	278688.45	4.034759603	891729.8602	870.2019484	564030.8901	1.580994722	3070025.95	349.03	628807.4	4.882299334
Forklifts300	Forklifts	300	0	0	0	0	173444.5127	107.9151903	76910.69106	2.25514178	0	0	0	0
Forklifts600	Forklifts	600	0	0	0	0	45113.44781	17.12415249	11586.12285	3.893748442	0	0	0	0
Forklifts750	Forklifts	750	0	0	0	0	696.0808542	0.245492691	53.61258043	12.98353574	0	0	0	0
Forklifts9999	Forklifts	9999	0	0	0	0	3250.893754	0.445888558	355.5017627	9.144522179	0	0	0	0
Generator Sets25	Generator Sets	25	6166368.4	75788.93	8707932.75	0.708132295	529655.15	2580.4	871098.05	0.60803161	0	0	0	0
Generator Sets50	Generator Sets	50	1005961.9	3934.19	451880.95	2.226165763	628146.75	1331.24	449395.3	1.397759945	0	0	0	0
Generator Sets75	Generator Sets	75	0	0	0	0	0	0	0	0	0	0	0	0
Generator Sets100	Generator Sets	100	453680.4	759.83	87267.85	5.198711782	0	0	0	0	40650.05	56.56	6497	6.256741573
Generator Sets175	Generator Sets	175	74146.1	71.8	8245.35	8.992474546	0	0	0	0	58761.35	46.87	5391.05	10.89979689
Generator Sets300	Generator Sets	300	0	0	0	0	0	0	0	0	0	0	0	0
Generator Sets600	Generator Sets	600	0	0	0	0	0	0	0	0	0	0	0	0
Generator Sets750	Generator Sets	750	0	0	0	0	0	0	0	0	0	0	0	0
Generator Sets9999	Generator Sets	9999	0	0	0	0	0	0	0	0	0	0	0	0
Graders25	Graders	25	0	0	0	0	57.84374789	0.425916009	98.42837163	0.587673523	0	0	0	0
Graders50	Graders	50	0	0	0	0	1936.34738	6.175782134	2202.088744	0.879323045	0	0	0	0
Graders75	Graders	75	0	0	0	0	719.5241189	1.277748028	468.5190489	1.53574144	0	0	0	0
Graders100	Graders	100	0	0	0	0	46593.53282	64.31331739	24759.41081	1.881851437	0	0	0	0
Graders175	Graders	175	0	0	0	0	501043.2762	333.4922352	158792.0312	3.155342698	0	0	0	0
Graders300	Graders	300	0	0	0	0	1039118.326	298.1412065	228531.2393	4.546942157	0	0	0	0
Graders600	Graders	600	0	0	0	0	67131.11928	11.71269025	9531.803508	7.042855974	0	0	0	0
Graders750	Graders	750	0	0	0	0	0	0	0	0	0	0	0	0
Graders9999	Graders	9999	0	0	0	0	36033.41494	1.277748028	942.4516583	38.23370103	0	0	0	0
Pavers25	Pavers	25	19089.5	42.42	16815.55	1.135228999	3372.6	4.84	3960.25	0.851612903	0	0	0	0
Pavers50	Pavers	50	14501.45	15.84	6212.3	2.334312573	8252.425423	24.81697678	8906.457784	0.926566501	0	0	0	0
Pavers75	Pavers	75	0	0	0	0	10819.94701	20.47400585	7086.740684	1.526787489	0	0	0	0
Pavers100	Pavers	100	13004.95	8.72	3423.7	3.798507463	68784.35336	99.47471527	39705.19957	1.732376467	0	0	0	0
Pavers175	Pavers	175	0	0	0	0	108948.69	82.10283152	32056.89156	3.398604315	0	0	0	0
Pavers300	Pavers	300	0	0	0	0	84560.29379	39.29354657	17874.32953	4.730823255	0	0	0	0
Pavers600	Pavers	600	0	0	0	0	16039.46539	4.549779077	2013.039639	7.967784183	0	0	0	0
Pavers750	Pavers	750	0	0	0	0	3191.97304	0.41361628	198.1018353	16.11278884	0	0	0	0
Pavers9999	Pavers	9999	0	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment25	Paving Equipment	25	404868.95	4644.63	878628	0.460796776	3985.8	8.37	6938.65	0.574434508	0	0	0	0
Paving Equipment50	Paving Equipment	50	16903.15	43.27	7573.75	2.231807229	10284.38009	30.5583829	14562.95535	0.706201444	0	0	0	0
Paving Equipment75	Paving Equipment	75	0	0	0	0	1765.560858	3.303608962	1366.350677	1.292172565	0	0	0	0
Paving Equipment100	Paving Equipment	100	6982.45	11.17	1945.45	3.589118199	42760.85773	55.95487679	26093.07505	1.638781847	0	0	0	0
Paving Equipment175	Paving Equipment	175	0	0	0	0	46102.35032	37.16560082	17292.078	2.666096598	0	0	0	0
Paving Equipment300	Paving Equipment	300	0	0	0	0	31082.44219	15.48566701	7330.625264	4.24008063	0	0	0	0
Paving Equipment600	Paving Equipment	600	0	0	0	0	33534.52262	9.704351326	4591.005076	7.304396764	0	0	0	0
Paving Equipment750	Paving Equipment	750	0	0	0	0	6350.316027	1.032377801	542.0549567	11.71526235	0	0	0	0
Paving Equipment9999	Paving Equipment	9999	0	0	0	0	3015.553298	0.41295112	194.6817098	15.489659	0	0	0	0
Rollers25	Rollers	25	94367.1	502.52	125158.5	0.753980752	73406.09857	276.1127278	191962.511	0.382398095	0	0	0	0
Rollers50	Rollers	50	18848.6	11.16	6927.7	2.720758693	169363.7309	627.3341736	219701.6373	0.770880604	0	0	0	0
Rollers75	Rollers	75	0	0	0	0	1771.630365	5.530921843	1288.017609	1.375470609	0	0	0	0
Rollers100	Rollers	100	58994.95	20.96	13023.2	4.529988789	262939.6076	462.4701572	155220.8702	1.693970709	0	0	0	0
Rollers175	Rollers	175	0	0	0	0	273679.636	270.5897148	98170.78492	2.787791054	0	0	0	0
Rollers300	Rollers	300	0	0	0	0	46273.06527	35.10008092	10972.48436	4.21719127	0	0	0	0
Rollers600	Rollers	600	0	0	0	0	25583.43731	12.1254825	3726.156287	6.865905598	0	0	0	0
Rollers750	Rollers	750	0	0	0	0	0	0	0	0	0	0	0	0
Rollers9999	Rollers	9999	0	0	0	0	0	0	0	0	0	0	0	0
Rough Terrain Forklifts25	Rough Terrain Forklifts	25	0	0	0	0	88.57709615	0.490985382	153.1788012	0.578259494	0	0	0	0
Rough Terrain Forklifts50	Rough Terrain Forklifts	50	3051.4	2.24	912.5	3.344	8528.207742	27.98616677	7724.182884	1.104091898	0	0	0	0
Rough Terrain Forklifts75	Rough Terrain Forklifts	75	0	0	0	0	235.1970949	0.736478073	170.4823325	1.379598059	0	0	0	0
Rough Terrain Forklifts100	Rough Terrain Forklifts	100	66758.5	31.69	13088.9	5.100390407	676975.0887	1183.029278	337658.2722	2.004911902	0	0	0	0
Rough Terrain Forklifts175	Rough Terrain Forklifts	175	3766.8	1.11	463.55	8.125984252	145393.8947	199.5855578	55611.84745	2.614441011	0	0	0	0
Rough Terrain Forklifts300	Rough Terrain Forklifts	300	0	0	0	0	10886.05221	9.81970764	2487.169869	4.376883278	0	0	0	0
Rough Terrain Forklifts600	Rough Terrain Forklifts	600	0	0	0	0	4045.250566	1.963941528	508.8940174	7.949102224	0	0	0	0
Rough Terrain Forklifts750	Rough Terrain Forklifts	750	0	0	0	0	696.0808542	0.245492691	53.61258043	12.98353574	0	0	0	0
Rough Terrain Forklifts9999	Rough Terrain Forklifts	9999	0	0	0	0	0	0	0	0	0	0	0	0
Rubber Tired Dozers25	Rubber Tired Dozers	25	0	0	0	0	0	0	0	0	0	0	0	0
Rubber Tired Dozers50	Rubber Tired Dozers	50	0	0	0	0	7472.610378	8.298005046	7972.52553	0.937295259	0	0	0	0
Rubber Tired Dozers75	Rubber Tired Dozers	75	0	0	0	0	8028.769613	7.488443578	5642.109382	1.423008501	0	0	0	0
Rubber Tired Dozers100	Rubber Tired Dozers	100	0	0	0	0	23500.93351	15.38166789	13504.25293	1.740261651	0	0	0	0
Rubber Tired Dozers175	Rubber Tired Dozers	175	0	0	0	0	32619.73576	14.16732569	11263.17135	2.896141303	0	0	0	0
Rubber Tired Dozers300	Rubber Tired Dozers	300	0	0	0	0	36733.26917	11.53625092	8217.143222	4.470321154	0	0	0	0
Rubber Tired Dozers600	Rubber Tired Dozers	600	0	0	0	0	377734.1983	68.0031633	49915.339	7.567497405	0	0	0	0
Rubber Tired Dozers750	Rubber Tired Dozers	750	0	0	0	0	14008.10828	1.011951835	1028.984551	13.61352633	0	0	0	0
Rubber Tired Dozers9999	Rubber Tired Dozers	9999	0	0	0	0	0	0	0	0	0	0	0	0
Rubber Tired Loaders25	Rubber Tired Loaders	25	0	0	0	0	3321.5	4.5	4314.3	0.769881557	0	0	0	0
Rubber Tired Loaders50	Rubber Tired Loaders	50	7081	5.58	2861.6	2.474489796	23288.33647	31.00995646	26911.31813	0.865373311	0	0	0	0
Rubber Tired Loaders75	Rubber Tired Loaders	75	0	0	0	0	1513.21346	2.109520847	1162.946078	1.301189701	0	0	0	0
Rubber Tired Loaders100	Rubber Tired Loaders	100	70846.5	36.97	18969.05	3.734847027	570335.7072	383.9327942	357894.8883	1.59358439	0	0	0	0
Rubber Tired Loaders175	Rubber Tired Loaders	175	0	0	0	0	1359754.527	510.9259493	486018.3469	2.797743204	0	0	0	0
Rubber Tired Loaders300	Rubber Tired Loaders	300	0	0	0	0	1964853.285	468.5245802	505088.1275	3.89011972	0	0	0	0
Rubber Tired Loaders600	Rubber Tired Loaders	600	0	0	0	0	2550716.766	420.638457	414652.3119	6.151459168	0	0	0	0
Rubber Tired Loaders750	Rubber Tired Loaders	750	0	0	0	0	242131.5164	20.04044805	20156.67575	12.01247266	0	0	0	0
Rubber Tired Loaders9999	Rubber Tired Loaders	9999	0	0	0	0	176076.2272	8.227131305	9813.256372	17.94269105	0	0	0	0
Scrapers25	Scrapers	25	0	0	0	0	60.17811878	0.208577481	86.76333946	0.693589241	0	0	0	0
Scrapers50	Scrapers	50	0	0	0	0	478.9716715	1.251464887	453.3384487	1.056543236	0	0	0	0
Scrapers75	Scrapers	75	0	0	0	0	4156.644702	5.42301451	2465.042878	1.686236268	0	0	0	0
Scrapers100	Scrapers	100	0	0	0	0	20047.9866	15.22615612	8812.504187	2.274947754	0	0	0	0
Scrapers175	Scrapers	175	0	0	0	0	252287.7118	132.0295456	60126.99424	4.195914248	0	0	0	0
Scrapers300	Scrapers	300	0	0	0	0	306820.1418	135.1582078	55343.68314	5.543905364	0	0	0	0
Scrapers600	Scrapers	600	0	0	0	0	3753278.137	732.1069588	355607.5001	10.5545528	0	0	0	0
Scrapers750	Scrapers	750	0	0	0	0	57740.93966	10.01171909	3702.384502	15.59560862	0	0	0	0
Scrapers9999	Scrapers	9999	0	0	0	0	86740.26417	5.42301451	2176.313765	39.85650671	0	0	0	0
Skid Steer Loaders25	Skid Steer Loaders	25	309063.75	877.55	280188.6	1.10305612	323481.25	617.39	515343.5	0.627700262	0	0	0	0
Skid Steer Loaders50	Skid Steer Loaders	50	90275.45	152.11	47190.85	1.91298631	128121.7495	434.359881	138327.4541	0.926220687	0	0	0	0
Skid Steer Loaders75	Skid Steer Loaders	75	0	0	0	0	680753.2663	1401.063652	505485.8653	1.346730568	0	0	0	0
Skid Steer Loaders100	Skid Steer Loaders	100	120552.2	91	28236.4	4.269389866	240.9953877	0.64604841	149.3005466	1.614162796	0	0	0	0
Skid Steer Loaders175	Skid Steer Loaders	175	0	0	0	0	4602.35703	5.81443569	1588.80665	2.896738272	0	0	0	0
Skid Steer Loaders300	Skid Steer Loaders	300	0	0	0	0	4272.847274	3.66094099	1093.128835	3.908823128	0	0	0	0
Skid Steer Loaders600	Skid Steer Loaders	600	0	0	0	0	1234.830914	0.43069894	136.8588344	9.022661336	0	0	0	0
Skid Steer Loaders750	Skid Steer Loaders	750	0	0	0	0	0	0	0	0	0	0	0	0
Skid Steer Loaders9999	Skid Steer Loaders	9999	0	0	0	0	1671.513927	0.43069894	87.58965401	19.08346307	0	0	0	0
Surfacing Equipment25	Surfacing Equipment	25	197680.35	1253.49	536316.4	0.368589046	0	0	0	0	0	0	0	0
Surfacing Equipment50	Surfacing Equipment	50	0	0	0	0	1187.368201	7.619292933	1879.319613	0.631807487	0	0	0	0
Surfacing Equipment75	Surfacing Equipment	75	0	0	0	0	754.6379056	2.930497282	722.8326006	1.044000928	0	0	0	0
Surfacing Equipment100	Surfacing Equipment	100	0	0	0	0	7184.923946	18.16908315	5141.321824	1.397485742	0	0	0	0
Surfacing Equipment175	Surfacing Equipment	175	0	0	0	0	6175.06931	11.52662264	2887.041265	2.138891947	0	0	0	0
Surfacing Equipment300	Surfacing Equipment	300	0	0	0	0	11998.21553	13.67565398	3395.416973	3.533650102	0	0	0	0
Surfacing Equipment600	Surfacing Equipment	600	0	0	0	0	42275.43014	23.24861177	6636.199238	6.370428106	0	0	0	0
Surfacing Equipment750	Surfacing Equipment	750	0	0	0	0	18087.59726	5.860994564	1805.501293	10.01804725	0	0	0	0
Surfacing Equipment9999	Surfacing Equipment	9999	0	0	0	0	6535.809187	1.758298369	478.577487	13.65674183	0	0	0	0
Sweepers/Scrubbers25	Sweepers/Scrubbers	25	97060.8	396.91	107255.25	0.904951506	21326.95	45.65	29692.75	0.718254456	0	0	0	0
Sweepers/Scrubbers50	Sweepers/Scrubbers	50	454936	335.76	173400.55	2.623613362	78103.90478	117.0039304	83669.90285	0.9334767	0	0	0	0
Sweepers/Scrubbers75	Sweepers/Scrubbers	75	0	0	0	0	16344.79299	17.39527462	9584.863264	1.705271379	0	0	0	0
Sweepers/Scrubbers100	Sweepers/Scrubbers	100	648389.65	280.36	144791.85	4.478081121	104367.382	77.86456256	56184.48908	1.857583538	0	0	0	0
Sweepers/Scrubbers175	Sweepers/Scrubbers	175	7592	1.62	839.5	9.043478261	30110.43828	10.97558994	7992.171785	3.767491376	0	0	0	0
Sweepers/Scrubbers300	Sweepers/Scrubbers	300	0	0	0	0	18082.68838	4.970078462	3658.213241	4.943038359	0	0	0	0
Sweepers/Scrubbers600	Sweepers/Scrubbers	600	0	0	0	0	2442.046068	0.414173205	313.9439935	7.778604207	0	0	0	0
Sweepers/Scrubbers750	Sweepers/Scrubbers	750	0	0	0	0	0	0	0	0	0	0	0	0
Sweepers/Scrubbers9999	Sweepers/Scrubbers	9999	0	0	0	0	3137.659191	0.207086603	156.9719967	19.98865566	0	0	0	0
Tractors/Loaders/Backhoes25	Tractors/Loaders/Backhoes	25	0	0	0	0	61706.9	90.69	85501.25	0.721707577	0	0	0	0
Tractors/Loaders/Backhoes50	Tractors/Loaders/Backhoes	50	0	0	0	0	252632.3325	607.9000379	317892.5087	0.794709927	0	0	0	0
Tractors/Loaders/Backhoes75	Tractors/Loaders/Backhoes	75	0	0	0	0	38010.02098	119.6737008	27712.6541	1.371576351	0	0	0	0
Tractors/Loaders/Backhoes100	Tractors/Loaders/Backhoes	100	50041.5	19.65	17089.3	2.928235797	4043902.269	4007.904013	2539302.443	1.592524861	0	0	0	0
Tractors/Loaders/Backhoes175	Tractors/Loaders/Backhoes	175	0	0	0	0	706495.6219	461.7498546	259268.6076	2.724956286	0	0	0	0
Tractors/Loaders/Backhoes300	Tractors/Loaders/Backhoes	300	0	0	0	0	443358.8038	198.4677127	111900.0897	3.962095159	0	0	0	0
Tractors/Loaders/Backhoes600	Tractors/Loaders/Backhoes	600	0	0	0	0	582642.218	162.8833203	90513.88969	6.437047618	0	0	0	0
Tractors/Loaders/Backhoes750	Tractors/Loaders/Backhoes	750	0	0	0	0	9442.630082	1.694494879	758.7143665	12.44556647	0	0	0	0
Tractors/Loaders/Backhoes9999	Tractors/Loaders/Backhoes	9999	0	0	0	0	198095.3044	8.896098115	5613.507326	35.28904353	0	0	0	0
Trenchers25	Trenchers	25	190270.85	450.58	195720.3	0.972156951	29305.85	49.51	30630.8	0.956744519	0	0	0	0
Trenchers50	Trenchers	50	90049.15	101.51	40836.2	2.205130497	89700.33839	199.3361669	77681.23257	1.154723418	0	0	0	0
Trenchers75	Trenchers	75	0	0	0	0	5369.413689	10.87288183	2945.881479	1.8226849	0	0	0	0
Trenchers100	Trenchers	100	56129.7	33.65	13552.45	4.141664422	58525.68972	80.64054023	26874.91946	2.177706609	0	0	0	0
Trenchers175	Trenchers	175	0	0	0	0	14454.77114	13.13806554	4030.792962	3.586086231	0	0	0	0
Trenchers300	Trenchers	300	0	0	0	0	29841.89857	16.30932274	5086.389586	5.867010001	0	0	0	0
Trenchers600	Trenchers	600	0	0	0	0	45357.90553	12.23199206	4557.413445	9.952554466	0	0	0	0
Trenchers750	Trenchers	750	0	0	0	0	14579.89572	1.812146972	866.0970072	16.83402159	0	0	0	0
Trenchers9999	Trenchers	9999	0	0	0	0	1170.392857	0.226518371	52.34796054	22.35794566	0	0	0	0
Welders25	Welders	25	1541807.45	9261.49	1924013.55	0.80134958	239064.05	951.43	611046.5	0.391237083	0	0	0	0
Welders50	Welders	50	313706.55	624.74	129786.7	2.4170932	1046743.35	1370.81	880328.9	1.189036677	0	0	0	0
Welders75	Welders	75	0	0	0	0	0	0	0	0	0	0	0	0
Welders100	Welders	100	440390.75	637.62	132465.8	3.324561887	0	0	0	0	0	0	0	0
Welders175	Welders	175	54958.05	43.97	9125	6.0228	0	0	0	0	0	0	0	0
Welders300	Welders	300	0	0	0	0	0	0	0	0	0	0	0	0
Welders600	Welders	600	0	0	0	0	0	0	0	0	0	0	0	0
Welders750	Welders	750	0	0	0	0	0	0	0	0	0	0	0	0
Welders9999	Welders	9999	0	0	0	0	0	0	0	0	0	0	0	0

Model Output: OFFROAD2017 (v1.0.1) Emissions Inventory
Region Type: Sub-Area
Region: Los Angeles (SC)
Calendar Year: 2023
Scenario: All Adopted Rules - Exhaust
Vehicle Classification: OFFROAD2017 Equipment Types
Units: tons/day for Emissions, gallons/year for Fuel, hours/year for Activity, Horsepower-hours/year for Horsepower-hours

Region	Calendar Year	Vehicle Category	Model Year	Horsepower Bi	Fuel	HC_tpd	ROG_tpd	TOG_tpd	CO_tpd	NOx_tpd	CO2_tpd	PM10_tpd	PM2.5_tpd	SOx_tpd	NH3_tpd	Fuel Consump	Total_Activity_hpy	Total_Population	Horsepower_Hours_hhpy
Los Angeles (SC)	2023	Agricultural - Agricultural Tractors	Aggregate	50	Diesel	0.004012668	0.004855329	0.005778242	0.013076127	0.011796036	0.16894827	0.00107779	0.000991566	1.45211E-06	1.38818E-06	39143.41818	35072.21976	109.3572193	1431023
Los Angeles (SC)	2023	Agricultural - Agricultural Tractors	Aggregate	75	Diesel	0.003860992	0.0046718	0.005559829	0.016181934	0.029013743	0.317032768	0.002252289	0.002072106	2.83496E-06	2.60493E-06	73452.93465	41562.66974	117.9474977	2621597
Los Angeles (SC)	2023	Agricultural - Agricultural Tractors	Aggregate	100	Diesel	0.004332095	0.005241835	0.006238216	0.031482473	0.034743802	0.706367659	0.002843952	0.002616436	6.44456E-06	5.80395E-06	163657.4598	68397.69714	123.5326358	5860303
Los Angeles (SC)	2023	Agricultural - Agricultural Tractors	Aggregate	175	Diesel	0.002748035	0.003325122	0.00395717	0.018587183	0.024742785	0.406059084	0.00144443	0.001328876	3.69696E-06	3.33643E-06	94079.33303	30128.31875	46.30698618	3651245
Los Angeles (SC)	2023	Agricultural - Agricultural Tractors	Aggregate	300	Diesel	0.002176392	0.002633434	0.003134004	0.008276441	0.022072503	0.416277789	0.000941837	0.00086649	3.80922E-06	3.42039E-06	96446.89236	17477.49834	21.13406261	3787283
Los Angeles (SC)	2023	Agricultural - Agricultural Tractors	Aggregate	600	Diesel	0.001172229	0.001418398	0.00168801	0.005413535	0.00966453	0.345249279	0.000444228	0.00040869	3.17824E-06	2.83678E-06	79990.38365	8675.109124	7.76664303	3189027
Los Angeles (SC)	2023	Agricultural - Bale Wagons (Self Propelled)	Aggregate	50	Diesel	1.53614E-06	1.85873E-06	2.21204E-06	1.13925E-05	1.15785E-05	0.000205426	5.60764E-07	5.15903E-07	1.86592E-09	1.68791E-09	47.59489627	46.66166384	0.072973065	1633.158
Los Angeles (SC)	2023	Agricultural - Bale Wagons (Self Propelled)	Aggregate	100	Diesel	1.10703E-05	1.33951E-05	1.59412E-05	0.000121669	9.6516E-05	0.002839537	8.12127E-06	7.47156E-06	2.60969E-08	2.33314E-08	657.8888972	269.305981	0.434531232	22569.33
Los Angeles (SC)	2023	Agricultural - Bale Wagons (Self Propelled)	Aggregate	175	Diesel	2.90628E-05	3.5166E-05	4.18505E-05	0.00033455	0.000263834	0.008049966	1.6485E-05	1.51662E-05	7.40532E-08	6.61434E-08	1865.086761	557.2329697	0.895225584	71703.62
Los Angeles (SC)	2023	Agricultural - Bale Wagons (Self Propelled)	Aggregate	300	Diesel	7.70519E-06	9.32328E-06	1.10955E-05	3.57235E-05	7.84072E-05	0.002445409	3.2346E-06	2.97584E-06	2.25295E-08	2.0093E-08	566.5738506	111.7181782	0.180721082	21613.17
Los Angeles (SC)	2023	Agricultural - Balers (Self Propelled)	Aggregate	50	Diesel	2.71447E-05	3.2845E-05	3.90883E-05	0.000132837	0.000145272	0.002489296	8.8171E-06	8.11173E-06	2.23548E-08	2.04536E-08	576.7419216	428.0849289	1.32202202	19722.78
Los Angeles (SC)	2023	Agricultural - Balers (Self Propelled)	Aggregate	75	Diesel	1.2707E-05	1.53755E-05	1.82981E-05	9.65057E-05	0.000127502	0.002284183	7.64649E-06	7.03477E-06	2.08788E-08	1.87682E-08	529.2196206	280.4873532	0.858584198	18205
Los Angeles (SC)	2023	Agricultural - Balers (Self Propelled)	Aggregate	100	Diesel	2.70433E-06	3.27223E-06	3.89423E-06	2.11522E-05	2.42144E-05	0.000500648	1.8122E-06	1.66723E-06	4.57866E-09	4.11363E-09	115.9945324	50.31147642	0.155100984	3986.723
Los Angeles (SC)	2023	Agricultural - Balers (Self Propelled)	Aggregate	175	Diesel	1.09854E-06	1.32924E-06	1.5819E-06	1.00639E-05	1.18991E-05	0.000248903	6.24635E-07	5.74665E-07	2.28371E-09	2.04514E-09	57.66800061	21.01912578	0.064931575	2212.533
Los Angeles (SC)	2023	Agricultural - Combine Harvesters	Aggregate	75	Diesel	2.43984E-06	2.95221E-06	3.51337E-06	1.63369E-05	2.19287E-05	0.000374572	1.56452E-06	1.43936E-06	3.41313E-09	3.07771E-09	86.78401584	60.30093806	0.165642014	3355.51
Los Angeles (SC)	2023	Agricultural - Combine Harvesters	Aggregate	100	Diesel	1.91359E-05	2.31544E-05	2.75557E-05	0.000129185	0.000165237	0.002958236	1.33442E-05	1.22766E-05	2.69597E-08	2.43067E-08	685.3900326	304.8268597	0.846999425	25886.8
Los Angeles (SC)	2023	Agricultural - Combine Harvesters	Aggregate	175	Diesel	2.85006E-05	3.44858E-05	4.10409E-05	0.000225553	0.000297441	0.005481228	1.63252E-05	1.50192E-05	5.01616E-08	4.50371E-08	1269.939035	399.1509665	1.123400552	55757.73
Los Angeles (SC)	2023	Agricultural - Combine Harvesters	Aggregate	300	Diesel	0.000143564	0.000173713	0.000206732	0.000638695	0.001833781	0.039726277	6.79747E-05	6.25367E-05	3.65446E-07	3.26415E-07	9204.132551	1693.352531	4.537339798	391705.8
Los Angeles (SC)	2023	Agricultural - Combine Harvesters	Aggregate	600	Diesel	3.10112E-05	3.75235E-05	4.46561E-05	0.000235095	0.00035743	0.015161955	1.51023E-05	1.38941E-05	1.4019E-07	1.2458E-07	3512.854911	440.2881	0.976751832	145674.2
Los Angeles (SC)	2023	Agricultural - Construction Equipment	Aggregate	50	Diesel	0.000280305	0.000339169	0.000403639	0.001031636	0.000954656	0.014415055	7.8665E-05	7.23718E-05	1.25759E-07	1.18443E-07	3339.806432	3229.644609	8.366231412	143030.2
Los Angeles (SC)	2023	Agricultural - Construction Equipment	Aggregate	75	Diesel	0.000193676	0.000234348	0.000278893	0.001068565	0.001628108	0.023116699	0.000114814	0.000105629	2.09349E-07	1.89941E-07	5355.879859	3624.679752	10.00463717	228322.2
Los Angeles (SC)	2023	Agricultural - Construction Equipment	Aggregate	100	Diesel	0.000370959	0.000448861	0.000534181	0.002469517	0.002968424	0.054591384	0.000245385	0.000225754	4.96981E-07	4.48556E-07	12648.21108	6421.277912	13.2412834	541535.9
Los Angeles (SC)	2023	Agricultural - Construction Equipment	Aggregate	175	Diesel	0.000742546	0.000898481	0.001069266	0.005511818	0.006600235	0.123091358	0.000396282	0.00036458	1.1234E-06	1.01139E-06	28518.88632	11114.19114	18.09450503	1361308
Los Angeles (SC)	2023	Agricultural - Construction Equipment	Aggregate	300	Diesel	0.000403004	0.000487634	0.000580325	0.00160277	0.004307001	0.081400204	0.000183022	0.000168381	7.45543E-07	6.68834E-07	18859.51381	4554.912761	8.171588581	896431.4
Los Angeles (SC)	2023	Agricultural - Construction Equipment	Aggregate	600	Diesel	5.71384E-05	6.91374E-05	8.22793E-05	0.000250778	0.000545774	0.009831674	2.35584E-05	2.16737E-05	8.97942E-08	8.0783E-08	2277.888424	310.9949404	0.35237034	109848.1
Los Angeles (SC)	2023	Agricultural - Cotton Pickers	Aggregate	100	Diesel	4.80457E-06	5.81353E-06	6.91858E-06	6.77393E-05	5.03897E-05	0.001676127	3.79779E-06	3.49396E-06	1.54564E-08	1.37721E-08	388.3399261	166.835466	0.370677621	15015.19
Los Angeles (SC)	2023	Agricultural - Cotton Pickers	Aggregate	175	Diesel	1.09557E-05	1.32563E-05	1.57761E-05	0.000160723	0.000118633	0.004086888	6.77778E-06	6.23556E-06	3.77101E-08	3.35804E-08	946.8860983	329.1897547	0.721639362	39957.61
Los Angeles (SC)	2023	Agricultural - Cotton Pickers	Aggregate	300	Diesel	1.00802E-05	1.2197E-05	1.45154E-05	5.81685E-05	0.000122417	0.004297887	4.76613E-06	4.38484E-06	3.97002E-08	3.53141E-08	995.7721705	173.1820169	0.375444015	42796.9
Los Angeles (SC)	2023	Agricultural - Cotton Pickers	Aggregate	600	Diesel	2.94079E-05	3.55836E-05	4.23474E-05	0.000170264	0.000347322	0.012853216	1.40601E-05	1.29353E-05	1.18749E-07	1.0561E-07	2977.945849	392.5354093	0.860493558	127551.8
Los Angeles (SC)	2023	Agricultural - Forage & Silage Harvesters	Aggregate	100	Diesel	9.86181E-07	1.19328E-06	1.4201E-06	6.67057E-06	8.53562E-06	0.000152942	6.88972E-07	6.33854E-07	1.39393E-09	1.25667E-09	35.43502918	17.12622521	0.04683137	1370.098
Los Angeles (SC)	2023	Agricultural - Forage & Silage Harvesters	Aggregate	300	Diesel	9.79553E-07	1.18526E-06	1.41056E-06	4.03525E-06	1.26887E-05	0.000242902	4.61864E-07	4.24915E-07	2.23143E-09	1.99583E-09	56.27776396	10.99580606	0.031051756	2419.077
Los Angeles (SC)	2023	Agricultural - Forage & Silage Harvesters	Aggregate	600	Diesel	1.06801E-05	1.29229E-05	1.53793E-05	5.97042E-05	0.000131429	0.003651426	5.13732E-06	4.72634E-06	3.36653E-08	3.00023E-08	845.9944877	89.71722706	0.222584686	37539.47
Los Angeles (SC)	2023	Agricultural - Forage & Silage Harvesters	Aggregate	750	Diesel	1.98683E-05	2.40407E-05	2.86104E-05	0.000146746	0.000230956	0.009432499	9.65546E-06	8.88302E-06	8.7197E-08	7.75032E-08	2185.40407	154.4098878	0.338728024	93378.98
Los Angeles (SC)	2023	Agricultural - Forage & Silage Harvesters	Aggregate	9999	Diesel	1.20948E-05	1.46347E-05	1.74166E-05	8.82586E-05	0.000270768	0.005626805	6.08244E-06	5.59584E-06	5.20087E-08	4.62333E-08	1303.667555	65.1600373	0.141682816	56037.63
Los Angeles (SC)	2023	Agricultural - Forklifts	Aggregate	50	Diesel	2.35124E-05	2.845E-05	3.38578E-05	9.90991E-05	9.15642E-05	0.00146915	6.69295E-06	6.15751E-06	1.29688E-08	1.20714E-08	340.3856463	440.7763029	0.731080019	14599.87
Los Angeles (SC)	2023	Agricultural - Forklifts	Aggregate	75	Diesel	1.943E-06	2.35103E-06	2.79792E-06	1.12982E-05	1.60661E-05	0.000236946	1.10495E-06	1.01655E-06	2.14709E-09	1.9469E-09	54.89782342	36.22594011	0.043057306	2354.686
Los Angeles (SC)	2023	Agricultural - Forklifts	Aggregate	100	Diesel	7.51212E-07	9.08967E-07	1.08175E-06	4.49029E-06	5.58516E-06	9.4171E-05	4.66632E-07	4.29302E-07	8.53961E-10	7.73767E-10	21.81836604	12.07531343	0.014352436	935.8368
Los Angeles (SC)	2023	Agricultural - Hay Squeeze/Stack retriever	Aggregate	75	Diesel	1.40979E-06	1.70584E-06	2.03009E-06	6.48466E-06	1.02788E-05	0.000127041	8.49645E-07	7.81674E-07	1.14014E-09	1.04384E-09	29.43392393	19.13925349	0.03248052	1202.366
Los Angeles (SC)	2023	Agricultural - Hay Squeeze/Stack retriever	Aggregate	100	Diesel	1.55691E-06	1.88386E-06	2.24195E-06	7.21717E-06	1.10174E-05	0.000141391	9.86302E-07	9.07397E-07	1.26929E-09	1.16176E-09	32.75875605	17.26689686	0.0292815	1338.185
Los Angeles (SC)	2023	Agricultural - Hay Squeeze/Stack retriever	Aggregate	175	Diesel	3.38248E-05	4.09281E-05	4.87078E-05	0.000185144	0.000298205	0.003880173	1.77456E-05	1.63259E-05	3.51E-08	3.18819E-08	898.9925726	312.7346969	0.529175596	37697.13
Los Angeles (SC)	2023	Agricultural - Hay Squeeze/Stack retriever	Aggregate	300	Diesel	7.93594E-05	9.60248E-05	0.000114277	0.000273602	0.00082009	0.011043435	3.52408E-05	3.24215E-05	1.00406E-07	9.07396E-08	2558.639973	489.0575111	0.824367446	116132
Los Angeles (SC)	2023	Agricultural - Hay Squeeze/Stack retriever	Aggregate	600	Diesel	2.19316E-05	2.65372E-05	3.15815E-05	0.000109636	0.000224492	0.003302215	9.56812E-06	8.80267E-06	3.00774E-08	2.7133E-08	765.0860822	107.1508387	0.182247665	34078
Los Angeles (SC)	2023	Agricultural - Nut Harvester	Aggregate	50	Diesel	5.4207E-05	6.55905E-05	7.80581E-05	0.000641029	0.00075941	0.015709293	2.32962E-05	2.14325E-05	1.44588E-07	1.29077E-07	3639.667006	3521.741386	8.974001514	141066.7
Los Angeles (SC)	2023	Agricultural - Nut Harvester	Aggregate	75	Diesel	3.28073E-05	3.96969E-05	4.72426E-05	0.000552613	0.00053447	0.014221469	1.84843E-05	1.70056E-05	1.31382E-07	1.16852E-07	3294.954798	1966.693535	4.991926006	128370.5
Los Angeles (SC)	2023	Agricultural - Nut Harvester	Aggregate	100	Diesel	6.96037E-05	8.42205E-05	0.000100229	0.001918409	0.000798424	0.049631768	5.57539E-05	5.12936E-05	4.5986E-07	4.07805E-07	11499.12369	5438.612474	9.716415145	447453.2
Los Angeles (SC)	2023	Agricultural - Nut Harvester	Aggregate	175	Diesel	7.747E-05	9.37387E-05	0.000111557	0.001518197	0.000839629	0.039369368	4.73307E-05	4.35443E-05	3.64107E-07	3.23483E-07	9121.440651	3106.494953	6.29391869	382343.8
Los Angeles (SC)	2023	Agricultural - Nut Harvester	Aggregate	300	Diesel	5.95857E-06	7.20987E-06	8.58034E-06	4.30937E-05	6.7062E-05	0.003196962	2.82682E-06	2.60067E-06	2.9577E-08	2.62682E-08	740.7001987	161.4411378	0.331515516	31985.92
Los Angeles (SC)	2023	Agricultural - Nut Harvester	Aggregate	600	Diesel	4.14836E-05	5.01951E-05	5.97364E-05	0.000351729	0.000494406	0.027592149	2.08027E-05	1.91384E-05	2.5557E-07	2.26714E-07	6392.791315	845.5125927	1.984455866	274791.6
Los Angeles (SC)	2023	Agricultural - Other Harvesters	Aggregate	50	Diesel	2.87067E-05	3.47351E-05	4.13376E-05	0.000186946	0.000170231	0.002931174	9.02251E-06	8.30071E-06	2.64207E-08	2.40843E-08	679.1200162	688.8930492	0.546404869	26258.23
Los Angeles (SC)	2023	Agricultural - Other Harvesters	Aggregate	75	Diesel	3.5158E-05	4.25411E-05	5.06275E-05	0.000335494	0.000332429	0.007495241	1.83416E-05	1.68743E-05	6.87073E-08	6.15855E-08	1736.563344	1005.166085	0.717122298	67793.94
Los Angeles (SC)	2023	Agricultural - Other Harvesters	Aggregate	100	Diesel	0.000120909	0.0001463	0.000174109	0.001147726	0.000898646	0.02541699	8.02928E-05	7.38693E-05	2.32942E-07	2.08842E-07	5888.831334	2657.800108	2.140923518	227730.8
Los Angeles (SC)	2023	Agricultural - Other Harvesters	Aggregate	175	Diesel	8.84552E-05	0.000107031	0.000127375	0.000727058	0.000805026	0.016807242	4.85226E-05	4.46408E-05	1.5378E-07	1.38099E-07	3894.049403	1283.359353	1.893692557	170438.9
Los Angeles (SC)	2023	Agricultural - Other Harvesters	Aggregate	300	Diesel	7.53701E-05	9.11978E-05	0.000108533	0.000302443	0.000797497	0.016819679	3.30606E-05	3.04158E-05	1.54288E-07	1.38201E-07	3896.930957	776.0701151	1.170423264	165615.6
Los Angeles (SC)	2023	Agricultural - Other Harvesters	Aggregate	600	Diesel	2.00172E-05	2.42208E-05	2.88247E-05	0.000104786	0.000211056	0.004193536	8.89265E-06	8.18124E-06	3.84309E-08	3.44567E-08	971.5951971	108.9522262	0.182377839	41935.72
Los Angeles (SC)	2023	Agricultural - Others	Aggregate	50	Diesel	2.00837E-05	2.43013E-05	2.89205E-05	8.74576E-05	8.37668E-05	0.001361464	5.89995E-06	5.42795E-06	1.20693E-08	1.11866E-08	315.4359635	300.6606462	0.572829154	13529.73
Los Angeles (SC)	2023	Agricultural - Others	Aggregate	75	Diesel	3.76693E-06	4.55798E-06	5.42437E-06	2.51403E-05	3.38691E-05	0.000561362	2.25256E-06	2.07235E-06	5.11187E-09	4.61249E-09	130.0612064	85.82470387	0.17383289	5578.606
Los Angeles (SC)	2023	Agricultural - Others	Aggregate	100	Diesel	1.51742E-05	1.83608E-05	2.18508E-05	0.000103555	0.000122938	0.002308763	9.98591E-06	9.18703E-06	2.10336E-08	1.89702E-08	534.9145245	263.5117814	0.528674867	22943.64
Los Angeles (SC)	2023	Agricultural - Others	Aggregate	175	Diesel	4.29817E-05	5.20079E-05	6.18937E-05	0.00033993	0.000418155	0.007929058	2.37955E-05	2.18919E-05	7.25103E-08	6.515E-08	1837.073858	687.0591409	1.391211583	87598.89
Los Angeles (SC)	2023	Agricultural - Others	Aggregate	300	Diesel	4.83818E-05	5.8542E-05	6.96698E-05	0.000203613	0.000535425	0.010384905	2.284E-05	2.10128E-05	9.52061E-08	8.53287E-08	2406.065854	527.0235338	1.057349719	114730.7
Los Angeles (SC)	2023	Agricultural - Others	Aggregate	600	Diesel	0.00022493	0.000272165	0.000323899	0.001354752	0.002509594	0.052542648	0.000105534	9.70908E-05	4.82293E-07	4.31722E-07	12173.54195	1553.674226	3.14687568	580482.2
Los Angeles (SC)	2023	Agricultural - Sprayers/Spray rigs	Aggregate	50	Diesel	5.04349E-05	6.10263E-05	7.26263E-05	0.00021086	0.000201319	0.003262542	1.45619E-05	1.33969E-05	2.88531E-08	2.6807E-08	755.8942784	818.3104646	1.462407481	30739.71
Los Angeles (SC)	2023	Agricultural - Sprayers/Spray rigs	Aggregate	75	Diesel	1.07293E-05	1.29825E-05	1.54502E-05	6.79982E-05	9.47744E-05	0.001502353	6.3727E-06	5.86288E-06	1.36613E-08	1.23443E-08	348.0784407	235.5262407	0.422762516	14216.52
Los Angeles (SC)	2023	Agricultural - Sprayers/Spray rigs	Aggregate	100	Diesel	3.47344E-05	4.20286E-05	5.00175E-05	0.000225139	0.000277072	0.004968776	2.25061E-05	2.07056E-05	4.52049E-08	4.08265E-08	1151.209603	535.3905529	0.954351176	47360.73
Los Angeles (SC)	2023	Agricultural - Sprayers/Spray rigs	Aggregate	175	Diesel	4.53339E-05	5.4854E-05	6.52808E-05	0.000347154	0.000442106	0.008021643	2.49322E-05	2.29376E-05	7.33015E-08	6.59107E-08	1858.524599	692.0625812	1.238826245	82528.22
Los Angeles (SC)	2023	Agricultural - Sprayers/Spray rigs	Aggregate	300	Diesel	1.90183E-05	2.30121E-05	2.73863E-05	8.07573E-05	0.000210633	0.003919728	9.0586E-06	8.33392E-06	3.59124E-08	3.22069E-08	908.156919	186.6847958	0.337017674	40893.57
Los Angeles (SC)	2023	Agricultural - Sprayers/Spray rigs	Aggregate	600	Diesel	1.16265E-06	1.40681E-06	1.67422E-06	7.36822E-06	1.2999E-05	0.000260057	5.48562E-07	5.04677E-07	2.3856E-09	2.13678E-09	60.25220877	8.291664092	0.015204643	2736.249
Los Angeles (SC)	2023	Agricultural - Swathers/Windrowers/Hay Conditioners	Aggregate	50	Diesel	9.04623E-06	1.09459E-05	1.30266E-05	7.10199E-05	7.80233E-05	0.001467605	3.37857E-06	3.10829E-06	1.33884E-08	1.20587E-08	340.0275659	279.7353802	0.641948544	12386.16
Los Angeles (SC)	2023	Agricultural - Swathers/Windrowers/Hay Conditioners	Aggregate	75	Diesel	2.14837E-05	2.59953E-05	3.09365E-05	0.000271768	0.000276154	0.006703137	1.2392E-05	1.14006E-05	6.1745E-08	5.50771E-08	1553.04173	863.4735044	1.871088652	55595.93
Los Angeles (SC)	2023	Agricultural - Swathers/Windrowers/Hay Conditioners	Aggregate	100	Diesel	4.11049E-05	4.9737E-05	5.91911E-05	0.00056877	0.000406399	0.014018177	3.07779E-05	2.83157E-05	1.29241E-07	1.15182E-07	3247.854399	1373.962805	2.98645551	117727.7
Los Angeles (SC)	2023	Agricultural - Swathers/Windrowers/Hay Conditioners	Aggregate	175	Diesel	2.28059E-05	2.75951E-05	3.28405E-05	0.000360873	0.000239305	0.009193782	1.3661E-05	1.25681E-05	8.4887E-08	7.55417E-08	2130.096178	693.3110686	1.447426914	82114.04
Los Angeles (SC)	2023	Agricultural - Swathers/Windrowers/Hay Conditioners	Aggregate	300	Diesel	1.10329E-05	1.33498E-05	1.58873E-05	6.82111E-05	0.000125218	0.004937048	5.10151E-06	4.69339E-06	4.56206E-08	4.05658E-08	1143.858615	220.0746259	0.45598055	45240.77
Los Angeles (SC)	2023	AirGrSupp - A/C Tug Narrow Body	Aggregate	25	Diesel	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Los Angeles (SC)	2023	AirGrSupp - A/C Tug Narrow Body	Aggregate	50	Diesel	0.000289895	0.000350773	0.000417449	0.00122042	0.001026597	0.10131517	0.000110679	0.000101825	9.28012E-07	8.26921E-07	3287.05911	2474.658771	7.779728758	106754.6
Los Angeles (SC)	2023	AirGrSupp - A/C Tug Narrow Body	Aggregate	75	Diesel	1.6772E-05	2.02941E-05	2.41516E-05	0.000160843	0.000212732	0.023524221	1.62218E-05	1.4924E-05	2.1699E-07	1.92002E-07	763.2174398	460.16145	1.555945752	27549.44
Los Angeles (SC)	2023	AirGrSupp - A/C Tug Narrow Body	Aggregate	100	Diesel	0.000471732	0.000570795	0.000679294	0.006255938	0.005840151	0.954359979	0.000318724	0.000293226	8.80938E-06	7.78936E-06	30963.15848	12607.39095	37.86134662	1118086
Los Angeles (SC)	2023	AirGrSupp - A/C Tug Narrow Body	Aggregate	175	Diesel	0.001046982	0.001266848	0.001507654	0.017573172	0.014872623	2.97153893	0.000790514	0.000727273	2.74419E-05	2.42533E-05	96408.30803	26479.36524	80.39053049	3481212
Los Angeles (SC)	2023	AirGrSupp - A/C Tug Narrow Body	Aggregate	300	Diesel	0.000400899	0.000485088	0.000577295	0.002971605	0.006851247	1.551387769	0.000197308	0.000181524	1.43313E-05	1.26622E-05	50333.06763	8117.087324	24.37648344	1817537
Los Angeles (SC)	2023	AirGrSupp - A/C Tug Narrow Body	Aggregate	750	Diesel	0.000125753	0.000152161	0.000181084	0.000621936	0.00170777	0.103189988	7.90998E-05	7.27718E-05	9.5027E-07	8.42223E-07	3347.885532	172.7039856	0.518648584	120892.8
Los Angeles (SC)	2023	AirGrSupp - A/C Tug Wide Body	Aggregate	25	Diesel	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Los Angeles (SC)	2023	AirGrSupp - A/C Tug Wide Body	Aggregate	50	Diesel	6.83265E-06	8.26751E-06	9.83902E-06	0.000141584	0.00011123	0.022006986	4.66149E-07	4.28857E-07	2.03261E-07	1.79618E-07	713.9924215	477.3509059	1.182176218	23151.52
Los Angeles (SC)	2023	AirGrSupp - A/C Tug Wide Body	Aggregate	75	Diesel	1.46416E-05	1.77163E-05	2.10839E-05	0.000175366	0.000183476	0.025917819	1.21065E-06	1.11379E-06	2.39184E-07	2.11538E-07	840.8750954	477.3509059	1.182176218	30311.78
Los Angeles (SC)	2023	AirGrSupp - A/C Tug Wide Body	Aggregate	100	Diesel	9.00708E-05	0.000108986	0.000129702	0.000967561	0.001238376	0.14060927	7.59355E-06	6.98606E-06	1.2973E-06	1.14763E-06	4561.912919	1909.403623	4.728704873	164447.4
Los Angeles (SC)	2023	AirGrSupp - A/C Tug Wide Body	Aggregate	175	Diesel	0.000104434	0.000126365	0.000150385	0.002127398	0.00133891	0.374481874	6.23631E-06	5.7374E-06	3.45914E-06	3.05647E-06	12149.65197	2864.105435	7.093057309	437969.5
Los Angeles (SC)	2023	AirGrSupp - A/C Tug Wide Body	Aggregate	300	Diesel	0.000641877	0.000776671	0.000924303	0.006692874	0.007711774	3.5795083	0.000241158	0.000221866	3.30751E-05	2.92155E-05	116133.2047	17315.41368	43.14943196	4186371
Los Angeles (SC)	2023	AirGrSupp - A/C Tug Wide Body	Aggregate	600	Diesel	0.000583243	0.000705724	0.00083987	0.004568665	0.009488226	1.68220349	0.000328455	0.000302179	1.55353E-05	1.37299E-05	54577.23961	5273.746652	13.59502651	1967438
Los Angeles (SC)	2023	AirGrSupp - A/C Tug Wide Body	Aggregate	750	Diesel	8.06998E-05	9.76467E-05	0.000116208	0.000288832	0.001815708	0.140846015	4.72044E-05	4.34281E-05	1.29977E-06	1.14957E-06	4569.593841	261.5621402	1.182176218	164784.1
Los Angeles (SC)	2023	AirGrSupp - Baggage Tug	Aggregate	25	Diesel	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Los Angeles (SC)	2023	AirGrSupp - Baggage Tug	Aggregate	50	Diesel	0.000203677	0.000246449	0.000293295	0.001848687	0.00153947	0.222337994	9.185E-05	8.4502E-05	2.04951E-06	1.81469E-06	7213.511368	7571.059258	10.4170694	340104.6
Los Angeles (SC)	2023	AirGrSupp - Baggage Tug	Aggregate	75	Diesel	0.000629823	0.000762085	0.000906944	0.010975212	0.008281141	1.591760804	0.000399267	0.000367326	1.46977E-05	1.29917E-05	51642.92629	40722.73673	55.02349476	2706876
Los Angeles (SC)	2023	AirGrSupp - Baggage Tug	Aggregate	100	Diesel	0.000600684	0.000726828	0.000864985	0.011084209	0.008222772	1.599719651	0.000263923	0.000242809	1.47722E-05	1.30567E-05	51901.1423	30422.82211	41.66827759	2723540
Los Angeles (SC)	2023	AirGrSupp - Baggage Tug	Aggregate	175	Diesel	1.45629E-06	1.76211E-06	2.09706E-06	7.82482E-05	7.24031E-06	0.014530789	2.58009E-07	2.37368E-07	1.34301E-07	1.18598E-07	471.4354624	197.683188	0.267104343	24710.4
Los Angeles (SC)	2023	AirGrSupp - Baggage Tug	Aggregate	300	Diesel	5.679E-05	6.87159E-05	8.17776E-05	0.000192052	0.001200643	0.083697347	3.1134E-05	2.86433E-05	7.7212E-07	6.83126E-07	2715.468263	790.7327521	1.068417374	142331.9
Los Angeles (SC)	2023	AirGrSupp - Belt Loader	Aggregate	25	Diesel	8.64568E-07	1.04613E-06	1.24498E-06	2.48854E-05	2.30258E-05	0.004800183	7.94617E-08	7.31048E-08	4.43541E-08	3.91784E-08	155.7366572	323.0032866	0.623876203	8075.082
Los Angeles (SC)	2023	AirGrSupp - Belt Loader	Aggregate	50	Diesel	0.000180325	0.000218193	0.000259667	0.001205313	0.000980061	0.137957265	6.68938E-05	6.15423E-05	1.27007E-06	1.12599E-06	4475.871529	5006.550942	9.670081141	232077.9
Los Angeles (SC)	2023	AirGrSupp - Belt Loader	Aggregate	75	Diesel	0.00060762	0.000735221	0.000874973	0.005843773	0.006552171	0.841455172	0.000468095	0.000430647	7.76144E-06	6.86784E-06	27300.08635	25032.75471	48.35040571	1573672
Los Angeles (SC)	2023	AirGrSupp - Belt Loader	Aggregate	100	Diesel	0.000380058	0.00045987	0.000547283	0.005220348	0.004814107	0.759441722	0.000333432	0.000306757	7.01001E-06	6.19846E-06	24639.25031	16449.70157	32.12962444	1420303
Los Angeles (SC)	2023	AirGrSupp - Belt Loader	Aggregate	175	Diesel	2.24433E-05	2.71563E-05	3.23183E-05	0.000318778	0.000228739	0.051688426	1.55497E-05	1.43057E-05	4.77212E-07	4.21874E-07	1676.974068	715.0243695	1.559690507	96673.23
Los Angeles (SC)	2023	AirGrSupp - Belt Loader	Aggregate	300	Diesel	1.13402E-05	1.37217E-05	1.63299E-05	8.74491E-05	0.000126735	0.045509737	5.83284E-06	5.36621E-06	4.2042E-07	3.71444E-07	1476.513291	323.0032866	0.623876203	85111.37
Los Angeles (SC)	2023	AirGrSupp - Belt Loader	Aggregate	600	Diesel	3.26618E-06	3.95208E-06	4.7033E-06	6.97293E-05	1.92947E-05	0.039292088	6.56278E-07	6.03776E-07	3.63177E-07	3.20697E-07	1274.788515	161.5016433	0.311938101	73483.25
Los Angeles (SC)	2023	AirGrSupp - Belt Loader	Aggregate	750	Diesel	4.01192E-05	4.85443E-05	5.77717E-05	0.000619008	0.000535578	0.023043596	2.72489E-05	2.5069E-05	2.11846E-07	1.88079E-07	747.6240984	69.01779628	0.311938101	43136.12
Los Angeles (SC)	2023	AirGrSupp - Bobtail	Aggregate	25	Diesel	1.81219E-06	2.19275E-06	2.60956E-06	3.42726E-05	4.18869E-05	0.004888603	1.56573E-06	1.44047E-06	4.51432E-08	3.99001E-08	158.6053419	299.1109495	0.642225503	7477.774
Los Angeles (SC)	2023	AirGrSupp - Bobtail	Aggregate	50	Diesel	2.44647E-05	2.96023E-05	3.52292E-05	0.000218462	0.000178414	0.030844282	6.90845E-06	6.35578E-06	2.84437E-07	2.51747E-07	1000.708756	1039.428311	2.568902011	47185.64
Los Angeles (SC)	2023	AirGrSupp - Bobtail	Aggregate	75	Diesel	9.63496E-06	1.16583E-05	1.38743E-05	0.000236379	0.000192972	0.037817179	7.78276E-06	7.16014E-06	3.4935E-07	3.08659E-07	1226.936716	897.3328484	1.926676508	64308.85
Los Angeles (SC)	2023	AirGrSupp - Bobtail	Aggregate	100	Diesel	7.36987E-06	8.91755E-06	1.06126E-05	9.8017E-05	0.000140051	0.014071508	7.80412E-06	7.17979E-06	1.29877E-07	1.1485E-07	456.5345919	299.1109495	0.642225503	23928.88
Los Angeles (SC)	2023	AirGrSupp - Bobtail	Aggregate	175	Diesel	5.95733E-05	7.20837E-05	8.57855E-05	0.000759904	0.000653062	0.116883301	3.98015E-05	3.66174E-05	1.07886E-06	9.53986E-07	3792.149988	1637.65021	3.853353016	198776.6
Los Angeles (SC)	2023	AirGrSupp - Bobtail	Aggregate	300	Diesel	0.000146863	0.000177705	0.000211483	0.001244131	0.001707326	0.523730648	7.21413E-05	6.637E-05	4.83774E-06	4.27462E-06	16991.86409	4329.648755	9.633382541	890636.6
Los Angeles (SC)	2023	AirGrSupp - Cargo Loader	Aggregate	25	Diesel	2.81857E-06	3.41046E-06	4.05873E-06	6.94741E-05	6.0099E-05	0.012278908	2.24812E-07	2.06827E-07	1.1344E-07	1.00219E-07	398.3756483	827.5233774	1.715659557	20688.08
Los Angeles (SC)	2023	AirGrSupp - Cargo Loader	Aggregate	50	Diesel	3.59504E-05	4.35E-05	5.17686E-05	0.000383371	0.000357742	0.053855244	1.28418E-05	1.18144E-05	4.9684E-07	4.39559E-07	1747.274079	2609.102759	5.718865191	90734.02
Los Angeles (SC)	2023	AirGrSupp - Cargo Loader	Aggregate	100	Diesel	0.000596508	0.000721775	0.000858971	0.013132614	0.009317861	2.031132645	0.000348879	0.000320969	1.87609E-05	1.65778E-05	65897.86178	44020.70076	94.36127565	3803500
Los Angeles (SC)	2023	AirGrSupp - Cargo Loader	Aggregate	175	Diesel	0.000535947	0.000648496	0.000771764	0.017879386	0.006451797	3.115246788	0.000206219	0.000189722	2.87859E-05	2.54262E-05	101070.7512	44812.79501	93.21750261	5835075
Los Angeles (SC)	2023	AirGrSupp - Cargo Loader	Aggregate	300	Diesel	5.6243E-05	6.8054E-05	8.09899E-05	0.000574361	0.00057366	0.297202773	2.15344E-05	1.98208E-05	2.7461E-06	2.42573E-06	9642.416646	2609.102759	5.718865191	556667.6
Los Angeles (SC)	2023	AirGrSupp - Cargo Loader	Aggregate	600	Diesel	2.88534E-05	3.49127E-05	4.15489E-05	0.000507703	0.000139494	0.279217553	4.87768E-06	4.48747E-06	2.58064E-06	2.27894E-06	9058.906017	1655.046755	3.431319115	522994.8
Los Angeles (SC)	2023	AirGrSupp - Cargo Loader	Aggregate	750	Diesel	3.44009E-05	4.16251E-05	4.95373E-05	0.000563849	0.000154459	0.306903682	5.46322E-06	5.02617E-06	2.83644E-06	2.50491E-06	9957.151973	827.5233774	1.715659557	574852.9
Los Angeles (SC)	2023	AirGrSupp - Cargo Tractor	Aggregate	25	Diesel	7.80427E-06	9.44317E-06	1.12382E-05	0.000144856	0.000105393	0.020260482	4.82897E-07	4.44265E-07	1.87084E-07	1.65363E-07	657.3290229	1264.413581	1.814203224	31610.34
Los Angeles (SC)	2023	AirGrSupp - Cargo Tractor	Aggregate	50	Diesel	0.000143055	0.000173096	0.000205999	0.000965396	0.00076749	0.104747976	5.31859E-05	4.8931E-05	9.64155E-07	8.54939E-07	3398.432735	4826.848671	8.163914506	163415.4
Los Angeles (SC)	2023	AirGrSupp - Cargo Tractor	Aggregate	75	Diesel	0.001554475	0.001880915	0.002238444	0.013496154	0.014897567	1.852886603	0.001198412	0.001102539	1.70842E-05	1.5123E-05	60114.86525	52959.86249	78.46428942	3220818
Los Angeles (SC)	2023	AirGrSupp - Cargo Tractor	Aggregate	100	Diesel	0.000167249	0.000202372	0.000240839	0.004809445	0.002559428	0.774278681	8.1952E-05	7.53958E-05	7.15357E-06	6.31956E-06	25120.6191	15373.66354	22.6775403	1342973
Los Angeles (SC)	2023	AirGrSupp - Cargo Tractor	Aggregate	175	Diesel	0.000219639	0.000265763	0.00031628	0.003366359	0.002297586	0.558815726	0.000132883	0.000122252	5.15994E-06	4.56098E-06	18130.1608	6738.521585	9.97811773	969253.3
Los Angeles (SC)	2023	AirGrSupp - Cargo Tractor	Aggregate	300	Diesel	0.000224365	0.000271482	0.000323086	0.00173868	0.002658042	0.816321119	8.83325E-05	8.12659E-05	7.54056E-06	6.6627E-06	26484.63967	6522.768474	9.97811773	1415877
Los Angeles (SC)	2023	AirGrSupp - Cargo Tractor	Aggregate	600	Diesel	0.000305507	0.000369663	0.000439929	0.001724347	0.003458887	0.846528123	0.000116309	0.000107004	7.81741E-06	6.90925E-06	27464.67268	3793.240743	5.442609671	1468300
Los Angeles (SC)	2023	AirGrSupp - Forklift	Aggregate	25	Diesel	4.73733E-07	5.73217E-07	6.82175E-07	1.03816E-05	8.43774E-06	0.001689235	3.398E-08	3.12616E-08	1.56036E-08	1.37873E-08	54.80538027	189.4438643	0.479677844	4736.097
Los Angeles (SC)	2023	AirGrSupp - Forklift	Aggregate	50	Diesel	0.000144917	0.00017535	0.000208681	0.000754107	0.00065652	0.075738709	5.89786E-05	5.42603E-05	6.95894E-07	6.18169E-07	2457.258996	5516.690233	14.39033533	212353.8
Los Angeles (SC)	2023	AirGrSupp - Forklift	Aggregate	75	Diesel	5.78817E-05	7.00368E-05	8.33496E-05	0.00034739	0.00061294	0.040171368	4.56643E-05	4.20112E-05	3.69668E-07	3.27873E-07	1303.315804	1833.943964	5.276456289	125397.5
Los Angeles (SC)	2023	AirGrSupp - Forklift	Aggregate	100	Diesel	0.000551556	0.000667383	0.000794241	0.005947482	0.006320096	0.872951112	0.000436788	0.000401845	8.05432E-06	7.12491E-06	28321.93744	30955.76421	81.54523356	2716684
Los Angeles (SC)	2023	AirGrSupp - Forklift	Aggregate	175	Diesel	0.00032626	0.000394775	0.000469815	0.003152155	0.003901021	0.506773082	0.00023472	0.000215942	4.67558E-06	4.13621E-06	16441.69452	12192.86182	32.13841558	1578605
Los Angeles (SC)	2023	AirGrSupp - Forklift	Aggregate	300	Diesel	0.000101523	0.000122843	0.000146193	0.000892106	0.001259241	0.404078056	4.4767E-05	4.11856E-05	3.73286E-06	3.29803E-06	13109.8675	5327.246369	13.91065749	1259515
Los Angeles (SC)	2023	AirGrSupp - Forklift	Aggregate	600	Diesel	3.91123E-05	4.73259E-05	5.63217E-05	0.000139014	0.00087245	0.066978844	2.3029E-05	2.11866E-05	6.18079E-07	5.46672E-07	2173.05482	568.3315929	1.439033533	208767.1
Los Angeles (SC)	2023	AirGrSupp - Lift	Aggregate	25	Diesel	2.45922E-06	2.97566E-06	3.54128E-06	4.57169E-05	5.51586E-05	0.006404916	2.01671E-06	1.85538E-06	5.91428E-08	5.22761E-08	207.8004458	430.9062413	1.025029866	10772.66
Los Angeles (SC)	2023	AirGrSupp - Lift	Aggregate	50	Diesel	6.5071E-05	7.8736E-05	9.37023E-05	0.000942263	0.000930206	0.152273075	2.56325E-05	2.35819E-05	1.40589E-06	1.24283E-06	4940.332217	5715.177516	13.8379032	256117.1
Los Angeles (SC)	2023	AirGrSupp - Lift	Aggregate	75	Diesel	3.85838E-05	4.66863E-05	5.55606E-05	0.000851471	0.000612543	0.132644611	1.70166E-05	1.56552E-05	1.22521E-06	1.08263E-06	4303.508327	3560.64631	8.712753865	248031.9
Los Angeles (SC)	2023	AirGrSupp - Lift	Aggregate	100	Diesel	0.000222257	0.000268931	0.00032005	0.005858459	0.003596526	0.934661581	0.000132792	0.000122168	8.63474E-06	7.62858E-06	30324.06566	20365.98972	48.68891866	1747676
Los Angeles (SC)	2023	AirGrSupp - Lift	Aggregate	175	Diesel	7.27399E-05	8.80153E-05	0.000104745	0.001271301	0.000649254	0.215241598	5.08711E-05	4.68014E-05	1.98783E-06	1.75677E-06	6983.276588	3231.79681	7.687723998	402466.4
Los Angeles (SC)	2023	AirGrSupp - Lift	Aggregate	300	Diesel	7.6488E-05	9.25505E-05	0.000110143	0.001268509	0.000735752	0.451652187	3.3623E-05	3.09332E-05	4.17345E-06	3.68632E-06	14653.35781	3776.09943	9.225268798	844553.6
Los Angeles (SC)	2023	AirGrSupp - Other GSE	Aggregate	25	Diesel	5.65696E-06	6.84492E-06	8.14602E-06	0.000108258	8.05803E-05	0.015628397	3.59605E-07	3.30837E-07	1.44323E-07	1.27557E-07	507.0461382	1051.597345	2.145769592	26289.93
Los Angeles (SC)	2023	AirGrSupp - Other GSE	Aggregate	50	Diesel	0.001676124	0.00202811	0.002413619	0.014419091	0.012907886	1.870233222	0.000681442	0.000626926	1.72409E-05	1.52646E-05	60677.65718	91284.82146	190.9734937	3144063
Los Angeles (SC)	2023	AirGrSupp - Other GSE	Aggregate	75	Diesel	0.00037373	0.000452214	0.000538172	0.006351647	0.005209568	0.966558511	0.000264121	0.000242992	8.9251E-06	7.88892E-06	31358.92643	27765.25586	59.00866379	1807641
Los Angeles (SC)	2023	AirGrSupp - Other GSE	Aggregate	100	Diesel	0.00043347	0.000524498	0.000624196	0.008965368	0.006150316	1.389224487	0.000272317	0.000250532	1.28311E-05	1.13387E-05	45071.85851	29682.10656	61.15443338	2598033
Los Angeles (SC)	2023	AirGrSupp - Other GSE	Aggregate	175	Diesel	0.000829036	0.001003134	0.001193812	0.018750113	0.009563067	3.261372342	0.000405226	0.000372808	3.01281E-05	2.66189E-05	105811.6339	38043.84843	79.39347491	6099262
Los Angeles (SC)	2023	AirGrSupp - Other GSE	Aggregate	300	Diesel	0.000843791	0.001020987	0.001215059	0.008474475	0.009387856	3.781626759	0.000364145	0.000335013	3.49377E-05	3.08651E-05	122690.7155	31734.26435	66.51885736	7072233
Los Angeles (SC)	2023	AirGrSupp - Other GSE	Aggregate	600	Diesel	0.000519327	0.000628386	0.000747831	0.005337597	0.005738223	2.266793619	0.000233159	0.000214507	2.09421E-05	1.85013E-05	73543.62255	11804.95169	24.67635031	4239251
Los Angeles (SC)	2023	AirGrSupp - Passenger Stand	Aggregate	25	Diesel	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Los Angeles (SC)	2023	AirGrSupp - Passenger Stand	Aggregate	50	Diesel	1.13795E-05	1.37692E-05	1.63865E-05	0.000104402	0.000129237	0.018984061	6.58774E-06	6.06072E-06	1.75176E-07	1.54945E-07	615.916957	629.9435399	11.06251072	27234.43
Los Angeles (SC)	2023	AirGrSupp - Passenger Stand	Aggregate	75	Diesel	2.19363E-06	2.6543E-06	3.15883E-06	0.000117829	6.17457E-05	0.020285251	4.08748E-07	3.76048E-07	1.87481E-07	1.65565E-07	658.1326187	591.296697	15.72040997	32499.42
Los Angeles (SC)	2023	AirGrSupp - Passenger Stand	Aggregate	100	Diesel	2.84703E-06	3.4449E-06	4.09972E-06	1.28578E-05	3.22497E-05	0.001366931	1.71522E-06	1.578E-06	1.25525E-08	1.11567E-08	44.34855921	21.89987767	0.582237406	2189.988
Los Angeles (SC)	2023	AirGrSupp - Passenger Stand	Aggregate	175	Diesel	5.87602E-06	7.10998E-06	8.46146E-06	5.56158E-05	9.15628E-05	0.008932574	5.53781E-06	5.09479E-06	8.24098E-08	7.29065E-08	289.807517	128.8228098	0.582237406	14170.51
Los Angeles (SC)	2023	AirGrSupp - Passenger Stand	Aggregate	300	Diesel	1.91819E-06	2.32101E-06	2.76219E-06	1.30959E-05	4.38178E-05	0.007449772	9.37032E-07	8.62069E-07	6.88193E-08	6.0804E-08	241.6996477	43.79975533	1.164474813	11935.43
Los Angeles (SC)	2023	AirGrSupp - Passenger Stand	Aggregate	600	Diesel	6.11588E-07	7.40022E-07	8.80687E-07	1.47303E-05	4.09134E-06	0.008406623	1.37104E-07	1.26136E-07	7.77051E-08	6.86137E-08	272.7436392	43.79975533	1.164474813	13468.42
Los Angeles (SC)	2023	CHC - AE Barge and Dredge	Aggregate		Diesel	0.003425126	0.004144402	0.004932181	0.045824349	0.107610539	3.368749467	0.00273122	0.002512722	3.1043E-05	0.000195041	775301.1635	0	0	0
Los Angeles (SC)	2023	CHC - AE Charter Fishing	Aggregate		Diesel	0.002923948	0.003537977	0.004210485	0.012226442	0.015851088	0.223645319	0.000840294	0.000773071	1.97999E-06	1.29485E-05	51470.87291	0	0	0
Los Angeles (SC)	2023	CHC - AE Commercial Fishing	Aggregate		Diesel	0.002090926	0.00253002	0.003010933	0.00974922	0.018343192	0.166909042	0.001019014	0.000937492	1.48043E-06	9.66358E-06	38413.29722	0	0	0
Los Angeles (SC)	2023	CHC - AE Crew and Supply	Aggregate		Diesel	0.000711733	0.000861197	0.001024896	0.002643886	0.00331845	0.055169409	0.000125234	0.000115215	4.88717E-07	3.19416E-06	12696.96885	0	0	0
Los Angeles (SC)	2023	CHC - AE Ferry and Excursion	Aggregate		Diesel	0.009568371	0.011577729	0.013778454	0.054350056	0.064621174	1.109034292	0.002287414	0.002104421	9.96652E-06	6.42101E-05	255238.8017	0	0	0
Los Angeles (SC)	2023	CHC - AE Others	Aggregate		Diesel	0.000326763	0.000395384	0.000470539	0.001371979	0.001891068	0.023891121	0.000106472	9.79543E-05	2.11082E-07	1.38323E-06	5498.424214	0	0	0
Los Angeles (SC)	2023	CHC - AE Pilot Vessels	Aggregate		Diesel	6.2086E-05	7.51241E-05	8.94039E-05	0.000203269	0.000216402	0.003065196	1.38987E-05	1.27868E-05	2.64767E-08	1.77466E-07	705.4398136	0	0	0
Los Angeles (SC)	2023	CHC - AE Tow Boats	Aggregate		Diesel	8.97432E-05	0.000108589	0.00012923	0.000519827	0.000669453	0.0109018	2.59079E-05	2.38352E-05	9.81003E-08	6.31185E-07	2508.995897	0	0	0
Los Angeles (SC)	2023	CHC - AE Tug Boats	Aggregate		Diesel	0.002780728	0.003364681	0.004004249	0.016558332	0.0205278	0.346715187	0.000737255	0.000678274	3.12213E-06	2.00739E-05	79794.7994	0	0	0
Los Angeles (SC)	2023	CHC - AE Work Boats	Aggregate		Diesel	0.000264606	0.000320173	0.000381032	0.001679402	0.002070946	0.034714069	6.71423E-05	6.17709E-05	3.13011E-07	2.00985E-06	7989.272619	0	0	0
Los Angeles (SC)	2023	CHC - ME Barge and Dredge	Aggregate		Diesel	0.000566865	0.000685907	0.000816286	0.005324384	0.02064836	0.402727469	0.000578512	0.000532231	3.70641E-06	2.33168E-05	92685.75121	0	0	0
Los Angeles (SC)	2023	CHC - ME Charter Fishing	Aggregate		Diesel	0.024189676	0.029269507	0.034833133	0.165265041	0.308217646	3.741631565	0.012206107	0.011229618	3.38675E-05	0.00021663	861118.149	0	0	0
Los Angeles (SC)	2023	CHC - ME Commercial Fishing	Aggregate		Diesel	0.005860081	0.007090697	0.008438516	0.027980914	0.103529557	0.667779216	0.004542329	0.004178943	5.99815E-06	3.86626E-05	153686.1105	0	0	0
Los Angeles (SC)	2023	CHC - ME Crew and Supply	Aggregate		Diesel	0.013534668	0.016376949	0.019489923	0.099531301	0.10895288	2.070520163	0.002588581	0.002381495	1.87369E-05	0.000119877	476520.0581	0	0	0
Los Angeles (SC)	2023	CHC - ME Ferry and Excursion	Aggregate		Diesel	0.152390404	0.184392389	0.219442181	1.392465083	1.47029239	28.07901744	0.038228466	0.035170189	0.000255033	0.001625699	6462248.114	0	0	0
Los Angeles (SC)	2023	CHC - ME Others	Aggregate		Diesel	0.005852474	0.007081493	0.008427562	0.033647437	0.085638425	0.810585991	0.003903659	0.003591366	7.3187E-06	4.69307E-05	186552.3894	0	0	0
Los Angeles (SC)	2023	CHC - ME Pilot Vessels	Aggregate		Diesel	0.004383894	0.005304511	0.006312807	0.028746785	0.054370976	0.708991801	0.002298654	0.002114762	6.42346E-06	4.10487E-05	163170.985	0	0	0
Los Angeles (SC)	2023	CHC - ME Tow Boats	Aggregate		Diesel	0.00077748	0.000940751	0.001119572	0.007111005	0.007462222	0.147035729	0.000171322	0.000157616	1.33609E-06	8.51297E-06	33839.5517	0	0	0
Los Angeles (SC)	2023	CHC - ME Tug Boats	Aggregate		Diesel	0.047406194	0.057361495	0.068264919	0.42450735	0.503186077	8.613105368	0.015040389	0.013837158	7.82102E-05	0.000498675	1982263.946	0	0	0
Los Angeles (SC)	2023	CHC - ME Work Boats	Aggregate		Diesel	0.002087372	0.00252572	0.003005816	0.01437996	0.024753821	0.321878061	0.001007983	0.000927344	2.9133E-06	1.86359E-05	74078.65662	0	0	0
Los Angeles (SC)	2023	CHE - Port Construction Equipment	Aggregate	50	Diesel	0.00036687	0.000443913	0.000528293	0.00358831	0.002475549	0.34989628	3.87041E-05	3.56078E-05	3.22396E-06	2.85581E-06	11351.99947	7974.54074	2.429141875	358854.3
Los Angeles (SC)	2023	CHE - Port Construction Equipment	Aggregate	75	Diesel	0.001046737	0.001266551	0.001507301	0.010822522	0.011242005	1.581928007	0.000201825	0.000185679	1.45943E-05	1.29115E-05	51323.912	24180.50923	7.537381429	1621421
Los Angeles (SC)	2023	CHE - Port Construction Equipment	Aggregate	100	Diesel	0.000777505	0.000940781	0.001119608	0.013097526	0.004430639	1.960604624	0.00011091	0.000102037	1.81034E-05	1.60022E-05	63609.65779	23853.15004	8.13206329	2000914
Los Angeles (SC)	2023	CHE - Port Construction Equipment	Aggregate	175	Diesel	0.002449262	0.002963607	0.003526937	0.036025819	0.021812145	5.427101658	0.000363087	0.00033404	5.01028E-05	4.42953E-05	176076.3364	44896.88296	14.81037475	6216955
Los Angeles (SC)	2023	CHE - Port Construction Equipment	Aggregate	300	Diesel	0.004304071	0.005207926	0.006197863	0.028021427	0.038169419	10.9014109	0.000522842	0.000481014	0.00010066	8.89759E-05	353684.2708	50957.34989	17.3088065	12502197
Los Angeles (SC)	2023	CHE - Port Construction Equipment	Aggregate	600	Diesel	0.015637896	0.018921854	0.02251857	0.104761151	0.133189128	44.89890515	0.001638894	0.001507782	0.000414644	0.000366459	1456695.53	134598.3154	45.54586463	50790890
Los Angeles (SC)	2023	CHE - Port Container Handling Equipment	Aggregate	175	Diesel	0.005752013	0.006959936	0.008282899	0.109740456	0.042082557	17.49383136	0.000652424	0.00060023	0.000161567	0.000142782	567568.0925	121944.4226	49.5792847	18553195
Los Angeles (SC)	2023	CHE - Port Container Handling Equipment	Aggregate	300	Diesel	0.032915853	0.039828182	0.047398829	0.275969004	0.236692861	126.9491283	0.00327835	0.003016082	0.00117272	0.001036142	4118724.658	534473.0803	216.4218465	1.35E+08
Los Angeles (SC)	2023	CHE - Port Container Handling Equipment	Aggregate	600	Diesel	0.033180575	0.040148496	0.047780028	0.277708024	0.195190601	136.3422203	0.003211761	0.002954821	0.001259556	0.001112807	4423473.184	434271.2955	172.9926918	1.45E+08
Los Angeles (SC)	2023	CHE - Port Forklift	Aggregate	50	Diesel	0.000291855	0.000353144	0.000420271	0.003873366	0.003074985	0.467211235	6.73861E-05	6.19952E-05	4.31084E-06	3.81332E-06	15158.15399	20639.92922	22.11624277	872462.4
Los Angeles (SC)	2023	CHE - Port Forklift	Aggregate	75	Diesel	0.000334709	0.000404998	0.000481981	0.005402021	0.004973048	0.872205321	9.46861E-05	8.71112E-05	8.05393E-06	7.11882E-06	28297.74108	23948.25058	25.51118304	1631310
Los Angeles (SC)	2023	CHE - Port Forklift	Aggregate	100	Diesel	0.000956744	0.00115766	0.001377711	0.028128642	0.003674701	4.692011462	0.000167014	0.000153653	4.33513E-05	3.82956E-05	152227.1445	102229.9226	112.0840296	8811182
Los Angeles (SC)	2023	CHE - Port Forklift	Aggregate	175	Diesel	0.002775532	0.003358393	0.003996766	0.067423171	0.022609642	11.28746053	0.000468768	0.000431267	0.000104275	9.21267E-05	366209.2259	160540.4549	170.3480724	23584147
Los Angeles (SC)	2023	CHE - Port Forklift	Aggregate	300	Diesel	0.001357167	0.001642173	0.001954321	0.012663378	0.00977753	6.203957479	0.000166022	0.000152741	5.73179E-05	5.06359E-05	201280.568	61164.55196	67.51211351	12993363
Los Angeles (SC)	2023	CHE - Port Forklift	Aggregate	600	Diesel	0.000328229	0.000397157	0.00047265	0.003654249	0.001806558	1.896477087	3.85548E-05	3.54704E-05	1.7524E-05	1.54788E-05	61529.1105	12334.56757	13.51879686	3976216
Los Angeles (SC)	2023	CHE - Port Other General Industrial Equipment	Aggregate	50	Diesel	0.001394465	0.001687303	0.00200803	0.013036095	0.009371289	1.312117879	0.000170278	0.000156656	1.20893E-05	1.07093E-05	42570.21953	31741.13548	14.8523305	1448447
Los Angeles (SC)	2023	CHE - Port Other General Industrial Equipment	Aggregate	75	Diesel	0.000653578	0.000790829	0.000941152	0.00726366	0.007442289	1.096197532	0.000143915	0.000132402	1.01153E-05	8.94702E-06	35564.92169	19008.50024	9.882141224	1201182
Los Angeles (SC)	2023	CHE - Port Other General Industrial Equipment	Aggregate	100	Diesel	0.001229201	0.001487333	0.001770049	0.018498924	0.007047684	2.811848018	0.000187162	0.000172189	2.59601E-05	2.29499E-05	91227.31225	37429.64927	18.48031389	3123233
Los Angeles (SC)	2023	CHE - Port Other General Industrial Equipment	Aggregate	175	Diesel	0.002564969	0.003103612	0.003693555	0.036618415	0.024063011	5.708447432	0.000465458	0.000428222	5.27005E-05	4.65916E-05	185204.2902	52079.43927	27.55401099	6900752
Los Angeles (SC)	2023	CHE - Port Other General Industrial Equipment	Aggregate	300	Diesel	0.001759565	0.002129074	0.002533774	0.011678406	0.016026859	4.777875626	0.000220884	0.000203213	4.4121E-05	3.89964E-05	155012.9128	26555.17292	13.26408708	6042646
Los Angeles (SC)	2023	CHE - Port Other General Industrial Equipment	Aggregate	600	Diesel	0.003284362	0.003974078	0.004729482	0.031230043	0.031659475	7.026532388	0.000522437	0.000480642	6.48652E-05	5.73496E-05	227968.105	18441.04566	8.31430999	8571850
Los Angeles (SC)	2023	CHE - Port RTG Crane	Aggregate	300	Diesel	0.000752419	0.000910427	0.001083483	0.006128177	0.005637923	2.445780814	9.11472E-05	8.38554E-05	2.25899E-05	1.99621E-05	79350.66498	33459.44915	17.92470654	7667189
Los Angeles (SC)	2023	CHE - Port RTG Crane	Aggregate	600	Diesel	0.008553603	0.01034986	0.012317188	0.071699343	0.057196686	35.12991314	0.00086388	0.000794769	0.000324537	0.000286726	1139751.343	221691.1198	114.5169554	1.1E+08
Los Angeles (SC)	2023	CHE - Port RTG Crane	Aggregate	750	Diesel	0.009280801	0.01122977	0.013364354	0.077561104	0.05946235	38.57364857	0.000907331	0.000834744	0.000356354	0.000314833	1251479.547	184010.8288	94.7535237	1.21E+08
Los Angeles (SC)	2023	CHE - Port RTG Crane	Aggregate	9999	Diesel	0.005473026	0.006622361	0.007881157	0.040232301	0.106260816	19.98092632	0.001228496	0.001130216	0.000184569	0.000163082	648259.1495	65294.45501	34.81370238	62650030
Los Angeles (SC)	2023	CHE - Port Yard Tractor	Aggregate	175	Diesel	0.02175437	0.026322788	0.031326293	1.908768832	0.124451134	305.5595498	0.004781122	0.004398632	0.002824397	0.002493936	9913543.078	2836409.261	1167.093412	4.91E+08
Los Angeles (SC)	2023	CHE - Port Yard Tractor	Aggregate	300	Diesel	0.019856606	0.024026494	0.028593513	0.606673051	0.10604642	283.9677547	0.004054648	0.003730276	0.002624827	0.002317707	9213021.066	2073549.285	801.2495609	4.56E+08
Los Angeles (SC)	2023	CHE - Port Yard Tractor	Aggregate	600	Diesel	0.000156039	0.000188807	0.000224696	0.004626328	0.000926396	2.288179649	3.23526E-05	2.97644E-05	2.11507E-05	1.86758E-05	74237.46872	11497.70577	5.152730295	3679266
Los Angeles (SC)	2023	CHE - Rail Container Handling Equipment	Aggregate	175	Diesel	0.001720751	0.002082109	0.002477882	0.023782297	0.015919147	3.650089631	0.000255665	0.000235212	3.36953E-05	2.97915E-05	118423.1382	26442.23326	8.828710778	3897083
Los Angeles (SC)	2023	CHE - Rail Container Handling Equipment	Aggregate	300	Diesel	0.003995812	0.004834932	0.005753969	0.025257943	0.03448682	10.51748528	0.000426155	0.000392062	9.71195E-05	8.58423E-05	341228.227	51688.14861	12.69214685	11183789
Los Angeles (SC)	2023	CHE - Rail Container Handling Equipment	Aggregate	600	Diesel	0.001030468	0.001246866	0.001483874	0.006729745	0.009256544	2.518883142	0.000144716	0.000133139	2.32574E-05	2.05588E-05	81722.38948	7671.420206	3.5430903	2657129
Los Angeles (SC)	2023	CHE - Rail Forklift	Aggregate	75	Diesel	4.73825E-05	5.73328E-05	6.82307E-05	0.000593518	0.000612536	0.092295897	2.30831E-05	2.12365E-05	8.519E-07	7.53307E-07	2994.438737	2784.084086	2.181373989	173541.2
Los Angeles (SC)	2023	CHE - Rail Forklift	Aggregate	100	Diesel	0.000125778	0.000152191	0.00018112	0.002978595	0.000418485	0.461011812	1.94227E-05	1.78689E-05	4.25851E-06	3.76272E-06	14957.02052	10382.09473	4.299412324	854362.7
Los Angeles (SC)	2023	CHE - Rail Forklift	Aggregate	175	Diesel	0.000144954	0.000175394	0.000208733	0.003511611	0.000656401	0.540632284	1.40473E-05	1.29236E-05	4.99406E-06	4.41257E-06	17540.21906	7169.003659	2.493093532	1113583
Los Angeles (SC)	2023	CHE - Rail Forklift	Aggregate	300	Diesel	3.73721E-05	4.52202E-05	5.38158E-05	0.000273507	0.000341984	0.124157615	6.73861E-06	6.19952E-06	1.14678E-06	1.01336E-06	4028.157093	1081.375495	0.847274832	259530.1
Los Angeles (SC)	2023	CHE - Rail Other General Industrial Equipment	Aggregate	50	Diesel	0.000598861	0.000724622	0.00086236	0.004894522	0.003496902	0.452414288	9.40709E-05	8.65453E-05	4.16483E-06	3.69254E-06	14678.08334	10722.61998	2.969145111	500388.9
Los Angeles (SC)	2023	CHE - Rail Other General Industrial Equipment	Aggregate	175	Diesel	1.26224E-05	1.52732E-05	1.81763E-05	0.000222074	0.000162695	0.039508719	2.39961E-06	2.20764E-06	3.64899E-07	3.22465E-07	1281.816892	422.4356821	0.919186847	48580.1
Los Angeles (SC)	2023	CHE - Rail Other General Industrial Equipment	Aggregate	300	Diesel	0.000278066	0.00033646	0.000400416	0.001838102	0.002783871	0.737749999	3.83595E-05	3.52907E-05	6.81252E-06	6.02142E-06	23935.48624	4358.854232	3.180729682	1002154
Los Angeles (SC)	2023	CHE - Rail RTG Crane	Aggregate	300	Diesel	0.007759092	0.009388502	0.011173093	0.053912872	0.063183047	22.89245147	0.000748818	0.000688913	0.000211419	0.000186845	742720.3763	268491.9448	55.83307378	71789855
Los Angeles (SC)	2023	CHE - Rail RTG Crane	Aggregate	600	Diesel	0.001117994	0.001352773	0.001609911	0.007884881	0.007601674	3.757593142	9.5708E-05	8.80514E-05	3.47073E-05	3.0669E-05	121910.9713	32390.76184	6.434843413	11828109
Los Angeles (SC)	2023	CHE - Rail Yard Tractor	Aggregate	175	Diesel	0.013711668	0.016591119	0.019744803	0.930460658	0.05995844	150.1161952	0.002457363	0.002260774	0.001387487	0.001225228	4870354.63	1523833.118	350.3856601	2.41E+08
Los Angeles (SC)	2023	CHE - Rail Yard Tractor	Aggregate	300	Diesel	0.005902505	0.007142031	0.008499607	0.144912884	0.027322528	70.0132373	0.001050359	0.00096633	0.00064713	0.000571439	2271502.378	562886.9942	146.8528134	1.13E+08
Los Angeles (SC)	2023	ConstMin - Bore/Drill Rigs	Aggregate	25	Diesel	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Los Angeles (SC)	2023	ConstMin - Bore/Drill Rigs	Aggregate	50	Diesel	0.000193294	0.000233886	0.000278344	0.001663941	0.001624392	0.229690975	8.71801E-05	8.02057E-05	2.11781E-06	1.87471E-06	7452.070739	6490.692533	18.02533051	252104
Los Angeles (SC)	2023	ConstMin - Bore/Drill Rigs	Aggregate	75	Diesel	0.000116595	0.00014108	0.000167896	0.002142156	0.002162981	0.337226759	0.00010275	9.45301E-05	3.11433E-06	2.7524E-06	10940.95079	5978.979094	12.33312088	428941.5
Los Angeles (SC)	2023	ConstMin - Bore/Drill Rigs	Aggregate	100	Diesel	0.000306862	0.000371303	0.000441881	0.006882012	0.004319089	1.092737997	0.000174196	0.00016026	1.00937E-05	8.91878E-06	35452.68087	16264.77001	42.69157226	1375944
Los Angeles (SC)	2023	ConstMin - Bore/Drill Rigs	Aggregate	175	Diesel	0.000329595	0.00039881	0.000474617	0.009293041	0.003429773	1.677673698	0.000154248	0.000141908	1.5501E-05	1.36929E-05	54430.27551	13913.60681	43.45053355	2080346
Los Angeles (SC)	2023	ConstMin - Bore/Drill Rigs	Aggregate	300	Diesel	0.000454728	0.000550221	0.000654808	0.004927658	0.005557563	2.447114736	0.000177916	0.000163682	2.26111E-05	1.9973E-05	79393.94261	14661.88357	44.7787158	3079775
Los Angeles (SC)	2023	ConstMin - Bore/Drill Rigs	Aggregate	600	Diesel	0.00060247	0.000728989	0.000867557	0.00726107	0.006004214	3.880819901	0.000207336	0.000190749	3.5862E-05	3.16747E-05	125908.9277	12116.47096	35.8609207	4909241
Los Angeles (SC)	2023	ConstMin - Bore/Drill Rigs	Aggregate	750	Diesel	0.000283989	0.000343627	0.000408944	0.004158356	0.002545453	2.290731873	9.87607E-05	9.08598E-05	2.11704E-05	1.86966E-05	74320.27282	4419.722033	7.589612847	2830757
Los Angeles (SC)	2023	ConstMin - Bore/Drill Rigs	Aggregate	9999	Diesel	0.000326979	0.000395645	0.00047085	0.00234205	0.009123931	1.249644163	0.000210104	0.000193295	1.15438E-05	1.01994E-05	40543.32865	839.9203883	1.138441927	1562711
Los Angeles (SC)	2023	ConstMin - Cranes	Aggregate	25	Diesel	7.48575E-06	9.05776E-06	1.07795E-05	4.20772E-05	3.6384E-05	0.004419871	2.82641E-06	2.6003E-06	4.06393E-08	3.60744E-08	143.3978627	346.3918684	0.71489451	8659.797
Los Angeles (SC)	2023	ConstMin - Cranes	Aggregate	50	Diesel	0.000214504	0.00025955	0.000308886	0.000936061	0.000740938	0.071609157	7.69231E-05	7.07693E-05	6.55627E-07	5.84464E-07	2323.280226	3369.473207	7.625541439	138931.9
Los Angeles (SC)	2023	ConstMin - Cranes	Aggregate	75	Diesel	5.65924E-05	6.84768E-05	8.1493E-05	0.000236058	0.000513768	0.027429939	4.8229E-05	4.43707E-05	2.51906E-07	2.23879E-07	889.9341635	884.4282046	2.3829817	59366.28
Los Angeles (SC)	2023	ConstMin - Cranes	Aggregate	100	Diesel	0.001385648	0.001676634	0.001995333	0.012147367	0.01491033	1.616970487	0.000974261	0.00089632	1.49081E-05	1.31975E-05	52460.82667	40123.35763	89.36181374	3532661
Los Angeles (SC)	2023	ConstMin - Cranes	Aggregate	175	Diesel	0.003286213	0.003976318	0.004732147	0.032282153	0.039478088	4.957538453	0.002108502	0.001939822	4.57363E-05	4.04628E-05	160841.8754	73781.19262	159.6597739	10779864
Los Angeles (SC)	2023	ConstMin - Cranes	Aggregate	300	Diesel	0.004188344	0.005067896	0.006031215	0.029078603	0.055808398	8.502820015	0.002339268	0.002152127	7.84871E-05	6.93989E-05	275864.6312	84162.76068	176.5789439	18527938
Los Angeles (SC)	2023	ConstMin - Cranes	Aggregate	600	Diesel	0.004994693	0.006043578	0.007192358	0.048344878	0.06337868	14.97927077	0.002530856	0.002328388	0.000138341	0.000122259	485985.9435	88829.41361	177.0555403	32636296
Los Angeles (SC)	2023	ConstMin - Cranes	Aggregate	750	Diesel	0.000154906	0.000187436	0.000223065	0.001415967	0.001924179	0.25976148	9.49403E-05	8.73451E-05	2.39698E-06	2.12014E-06	8427.675149	887.7324196	2.14468353	566280.5
Los Angeles (SC)	2023	ConstMin - Cranes	Aggregate	9999	Diesel	0.000757281	0.00091631	0.001090484	0.007588761	0.011068158	0.822976945	0.000485438	0.000446603	7.58611E-06	6.71703E-06	26700.58065	1911.488355	3.812770719	1793466
Los Angeles (SC)	2023	ConstMin - Crawler Tractors	Aggregate	25	Diesel	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Los Angeles (SC)	2023	ConstMin - Crawler Tractors	Aggregate	50	Diesel	0.00062173	0.000752293	0.000895291	0.002822784	0.002139174	0.231931403	0.000211383	0.000194473	2.12567E-06	1.89299E-06	7524.758943	7300.903165	21.14960858	307546.3
Los Angeles (SC)	2023	ConstMin - Crawler Tractors	Aggregate	75	Diesel	0.000109598	0.000132613	0.000157821	0.000429901	0.001050223	0.035894627	7.70004E-05	7.08404E-05	3.28576E-07	2.92967E-07	1164.561643	750.2518064	3.595433458	52417.53

Los Angeles (SC)	2023	ConstMin - Crawler Tractors	Aggregate	100	Diesel	0.008741442	0.010577144	0.012587676	0.074349305	0.09038398	10.20989617	0.007082371	0.006515782		9.41333E-05	8.33318E-05	331248.8369	170422.7526	359.7548419	14906491
Los Angeles (SC)	2023	ConstMin - Crawler Tractors	Aggregate	175	Diesel	0.006099319	0.007380175	0.008783019	0.068595748	0.070749694	11.18081741	0.003939238	0.003624099		0.000103189	9.12563E-05	362749.3074	109504.5054	238.7790808	16356699
Los Angeles (SC)	2023	ConstMin - Crawler Tractors	Aggregate	300	Diesel	0.005966256	0.00721917	0.008591408	0.04247168	0.081599326	11.70721033	0.003380673	0.003110219		0.00010806	9.55527E-05	379827.5458	83503.02605	184.847579	17145249
Los Angeles (SC)	2023	ConstMin - Crawler Tractors	Aggregate	600	Diesel	0.013272564	0.016059882	0.019112492	0.116071547	0.16407598	41.00862347	0.006414101	0.005900973		0.000378747	0.000334707	1330479.626	155572.4101	324.0120034	60006223
Los Angeles (SC)	2023	ConstMin - Crawler Tractors	Aggregate	750	Diesel	0.000287182	0.000347491	0.000413542	0.002134191	0.004338096	0.418674819	0.000155967	0.00014349		3.86224E-06	3.41717E-06	13583.44341	988.0351965	2.326456944	616125.4
Los Angeles (SC)	2023	ConstMin - Crawler Tractors	Aggregate	9999	Diesel	0.00106848	0.00129286	0.001538611	0.0067554	0.023113706	2.374069416	0.000579916	0.000533523		2.19174E-05	1.93768E-05	77024.06764	3553.55424	6.344882573	3457342
Los Angeles (SC)	2023	ConstMin - Excavators	Aggregate	25	Diesel	1.60879E-05	1.94663E-05	2.31666E-05	5.46651E-05	3.71309E-05	0.002876397	5.17494E-06	4.76094E-06		2.61111E-08	2.34768E-08	93.32153397	170.1849058	0.635756997	4254.623
Los Angeles (SC)	2023	ConstMin - Excavators	Aggregate	50	Diesel	0.005855686	0.00708538	0.008432188	0.066769514	0.056680136	9.273211216	0.002195284	0.002019661		8.55598E-05	7.56867E-05	300859.1253	382719.6521	517.0823576	13699941
Los Angeles (SC)	2023	ConstMin - Excavators	Aggregate	75	Diesel	7.27892E-05	8.80749E-05	0.000104816	0.000881726	0.001237129	0.120845464	7.38746E-05	6.79646E-05		1.11509E-06	9.86324E-07	3920.697993	2761.892882	4.23837998	200099.1
Los Angeles (SC)	2023	ConstMin - Excavators	Aggregate	100	Diesel	0.004235491	0.005124945	0.006099108	0.078466394	0.052927461	11.9051755	0.002552673	0.002348459		0.000109942	9.71684E-05	386250.3078	241381.2102	368.5271393	19644997
Los Angeles (SC)	2023	ConstMin - Excavators	Aggregate	175	Diesel	0.007152784	0.008654868	0.010300008	0.148128215	0.071016082	25.40881075	0.00349395	0.003214434		0.000234702	0.000207383	824360.882	285667.4855	477.4535048	41715600
Los Angeles (SC)	2023	ConstMin - Excavators	Aggregate	300	Diesel	0.007298104	0.008830706	0.01050927	0.067947767	0.075632798	32.3463888	0.002451273	0.002255172		0.000298839	0.000264007	1049442.961	242915.0782	410.9109391	53073132
Los Angeles (SC)	2023	ConstMin - Excavators	Aggregate	600	Diesel	0.011025917	0.013341359	0.01587732	0.114131087	0.097139519	57.65366546	0.003281301	0.003018797		0.000532706	0.000470561	1870509.682	280317.3128	432.314758	94892976
Los Angeles (SC)	2023	ConstMin - Excavators	Aggregate	750	Diesel	0.000202469	0.000244988	0.000291556	0.001897261	0.002708136	0.600005924	0.000107583	9.89765E-05		5.54128E-06	4.89717E-06	19466.53141	1564.231911	2.966865986	976899.8
Los Angeles (SC)	2023	ConstMin - Excavators	Aggregate	9999	Diesel	0.000219963	0.000266155	0.000316747	0.002983222	0.007087041	1.601492267	7.12451E-05	6.55455E-05		1.48E-05	1.30712E-05	51958.65286	2182.28472	3.178784985	2627386
Los Angeles (SC)	2023	ConstMin - Graders	Aggregate	25	Diesel	4.99028E-06	6.03823E-06	7.186E-06	2.35081E-05	1.84931E-05	0.001782885	2.22859E-06	2.0503E-06		1.63339E-08	1.45517E-08	57.84374789	98.42837163	0.425916009	2460.709
Los Angeles (SC)	2023	ConstMin - Graders	Aggregate	50	Diesel	0.000173974	0.000210508	0.000250522	0.000776352	0.000554126	0.059682944	5.88504E-05	5.41424E-05		5.46579E-07	4.87124E-07	1936.34738	2202.088744	6.175782134	82293.91
Los Angeles (SC)	2023	ConstMin - Graders	Aggregate	75	Diesel	5.12E-05	6.1952E-05	7.3728E-05	0.000209012	0.000483067	0.022177486	4.0946E-05	3.76703E-05		2.03506E-07	1.8101E-07	719.5241189	468.5190489	1.277748028	32772.3
Los Angeles (SC)	2023	ConstMin - Graders	Aggregate	100	Diesel	0.001726914	0.002089566	0.002486756	0.011745504	0.016490737	1.436126196	0.001275842	0.001173775		1.32259E-05	1.17215E-05	46593.53282	24759.41081	64.31331739	2233155
Los Angeles (SC)	2023	ConstMin - Graders	Aggregate	175	Diesel	0.009270682	0.011217525	0.013349782	0.099652924	0.102170834	15.44337445	0.005618904	0.005169392		0.000142504	0.000126047	501043.2762	158792.0312	333.4922352	23607776
Los Angeles (SC)	2023	ConstMin - Graders	Aggregate	300	Diesel	0.014289966	0.017290859	0.020577551	0.078091327	0.196223312	32.02815839	0.006556112	0.006031623		0.000295688	0.00026141	1039118.326	228531.2393	298.1412065	49114054
Los Angeles (SC)	2023	ConstMin - Graders	Aggregate	600	Diesel	0.001102635	0.001334188	0.001587795	0.004446741	0.014802901	2.069144646	0.000532105	0.000489537		1.90972E-05	1.68881E-05	67131.11928	9531.803508	11.71269025	3184605
Los Angeles (SC)	2023	ConstMin - Graders	Aggregate	9999	Diesel	0.000829558	0.001003765	0.001194563	0.004211919	0.013746232	1.110637636	0.000423177	0.000389323		1.02435E-05	9.06488E-06	36033.41494	942.4516583	1.277748028	1705292
Los Angeles (SC)	2023	ConstMin - Off-Highway Tractors	Aggregate	25	Diesel	5.32654E-06	6.44511E-06	7.67021E-06	1.77107E-05	1.21952E-05	0.000931909	1.6766E-06	1.54247E-06		8.45617E-09	7.60612E-09	30.23476858	48.32222968	0.209098361	1208.056
Los Angeles (SC)	2023	ConstMin - Off-Highway Tractors	Aggregate	50	Diesel	0.003555473	0.004302122	0.005119881	0.031745531	0.026162365	3.839643354	0.001331049	0.001224565		3.53927E-05	3.13387E-05	124573	132242.9627	198.2252466	4984459
Los Angeles (SC)	2023	ConstMin - Off-Highway Tractors	Aggregate	75	Diesel	0.001080291	0.001307152	0.001555618	0.014868905	0.012278655	2.11652817	0.000672639	0.000618828		1.95359E-05	1.72748E-05	68668.42555	43210.46261	71.30254123	3048646
Los Angeles (SC)	2023	ConstMin - Off-Highway Tractors	Aggregate	100	Diesel	0.001327675	0.001606486	0.001911852	0.019090372	0.016234043	2.789014461	0.001051042	0.000966959		2.5746E-05	2.27636E-05	90486.50263	50841.26751	72.97532812	4011010
Los Angeles (SC)	2023	ConstMin - Off-Highway Tractors	Aggregate	175	Diesel	0.001311882	0.001587377	0.00188911	0.024824556	0.014095369	4.178453924	0.00067426	0.00062032		3.85925E-05	3.4104E-05	135565.3358	38018.96387	54.78377068	6022114
Los Angeles (SC)	2023	ConstMin - Off-Highway Tractors	Aggregate	300	Diesel	0.001018351	0.001232205	0.001466426	0.00790681	0.010734908	3.645473151	0.000393754	0.000362254		3.36737E-05	2.97539E-05	118273.3616	24383.63871	37.01040996	5257741
Los Angeles (SC)	2023	ConstMin - Off-Highway Tractors	Aggregate	600	Diesel	0.002407952	0.002913621	0.00346745	0.023457342	0.020921713	11.69264795	0.000715254	0.000658034		0.000108032	9.54338E-05	379355.0855	47062.22754	67.53877073	16878949
Los Angeles (SC)	2023	ConstMin - Off-Highway Tractors	Aggregate	750	Diesel	0.000187028	0.000226304	0.00026932	0.001019265	0.001614395	0.496414798	8.22254E-05	7.56473E-05		4.58399E-06	4.05167E-06	16105.63142	1131.465008	1.672786891	719949.5
Los Angeles (SC)	2023	ConstMin - Off-Highway Tractors	Aggregate	9999	Diesel	0.000269986	0.000326683	0.00038878	0.00159083	0.004463103	0.651062239	0.000120142	0.000110531		6.01129E-06	5.31388E-06	21122.99734	572.8600328	1.045491807	938302.9
Los Angeles (SC)	2023	ConstMin - Off-Highway Trucks	Aggregate	25	Diesel	0	0	0	0	0	0	0	0		0	0	0	0	0	0
Los Angeles (SC)	2023	ConstMin - Off-Highway Trucks	Aggregate	50	Diesel	0.000403341	0.000488043	0.000580812	0.003485344	0.002677998	0.371065443	0.000152766	0.000140544		3.41858E-06	3.02859E-06	12038.80965	19217.82188	11.80908192	551634.1
Los Angeles (SC)	2023	ConstMin - Off-Highway Trucks	Aggregate	75	Diesel	4.43649E-05	5.36815E-05	6.38854E-05	0.000920156	0.000382116	0.12436922	5.92189E-06	5.44814E-06		1.14852E-06	1.01508E-06	4035.022375	2821.700422	1.864591881	203451.8
Los Angeles (SC)	2023	ConstMin - Off-Highway Trucks	Aggregate	100	Diesel	0.000117947	0.000142716	0.000169844	0.001666035	0.001246622	0.225027097	7.79802E-05	7.17418E-05		2.07695E-06	1.83664E-06	7300.756332	4237.458146	3.107653136	368617.5
Los Angeles (SC)	2023	ConstMin - Off-Highway Trucks	Aggregate	175	Diesel	0.003349227	0.004052564	0.004822886	0.05563804	0.029073692	8.82302391	0.001418159	0.001304706		8.14728E-05	7.20123E-05	286253.2939	92109.23585	65.05353897	14518526
Los Angeles (SC)	2023	ConstMin - Off-Highway Trucks	Aggregate	300	Diesel	0.005873626	0.007107087	0.008458021	0.044082188	0.050254502	17.92345287	0.002043052	0.001879608		0.000165535	0.000146289	581506.6892	140292.8767	109.1822135	29554625
Los Angeles (SC)	2023	ConstMin - Off-Highway Trucks	Aggregate	600	Diesel	0.022365511	0.027062269	0.032206337	0.176042536	0.192663133	76.85019446	0.006938188	0.006383133		0.000709847	0.000627241	2493319.924	335428.2911	243.2256521	1.26E+08
Los Angeles (SC)	2023	ConstMin - Off-Highway Trucks	Aggregate	750	Diesel	0.010756068	0.013014842	0.015488737	0.085412198	0.107280138	26.07188704	0.004179775	0.003845393		0.000240725	0.000212795	845873.662	64660.67638	52.41574956	42892367
Los Angeles (SC)	2023	ConstMin - Off-Highway Trucks	Aggregate	9999	Diesel	0.013770322	0.016662089	0.019829263	0.104983062	0.287185323	46.17863508	0.005529127	0.005086797		0.000426531	0.000376904	1498214.959	59587.74403	41.64255202	75644331
Los Angeles (SC)	2023	ConstMin - Other Construction Equipment	Aggregate	25	Diesel	0	0	0	0	0	0	0	0		0	0	0	0	0	0
Los Angeles (SC)	2023	ConstMin - Other Construction Equipment	Aggregate	50	Diesel	0.002513913	0.003041835	0.003620035	0.017821614	0.016138298	2.079783936	0.001129312	0.001038967		1.91532E-05	1.69749E-05	67476.29932	73713.4052	153.1949422	2811615
Los Angeles (SC)	2023	ConstMin - Other Construction Equipment	Aggregate	75	Diesel	0.000511149	0.00061849	0.000736054	0.003552233	0.005996704	0.440944185	0.000430778	0.000396316		4.06141E-06	3.59893E-06	14305.94847	9155.001799	25.56685443	676619.1
Los Angeles (SC)	2023	ConstMin - Other Construction Equipment	Aggregate	100	Diesel	0.003613458	0.004372285	0.00520338	0.041199797	0.040644485	6.067163437	0.002754054	0.00253373		5.59855E-05	4.95194E-05	196842.4359	111391.454	244.5345915	9155187
Los Angeles (SC)	2023	ConstMin - Other Construction Equipment	Aggregate	175	Diesel	0.001533374	0.001855382	0.002208058	0.021203244	0.018279994	3.541330375	0.000953887	0.000877576		3.26954E-05	2.89039E-05	114894.5639	35269.16377	84.32938274	5368570
Los Angeles (SC)	2023	ConstMin - Other Construction Equipment	Aggregate	300	Diesel	0.001592675	0.001927137	0.002293452	0.011943172	0.021354983	4.651841902	0.000822698	0.000756882		4.29608E-05	3.79677E-05	150923.8874	31990.92647	77.73148483	7012237
Los Angeles (SC)	2023	ConstMin - Other Construction Equipment	Aggregate	600	Diesel	0.004917206	0.005949819	0.007080776	0.045265154	0.060024745	18.1532987	0.002231084	0.002052597		0.000167689	0.000148165	588963.7841	71660.21849	159.3804715	27417100
Los Angeles (SC)	2023	ConstMin - Other Construction Equipment	Aggregate	750	Diesel	0.000838124	0.00101413	0.001206898	0.006846336	0.011373493	3.322482141	0.000354763	0.000326382		3.06929E-05	2.71177E-05	107794.274	8145.562014	15.25763893	5022135
Los Angeles (SC)	2023	ConstMin - Other Construction Equipment	Aggregate	9999	Diesel	0.000237957	0.000287928	0.000342658	0.002162889	0.006282925	1.14728517	0.000114882	0.000105691		1.06001E-05	9.36399E-06	37222.40385	1887.130644	3.917501888	1733346
Los Angeles (SC)	2023	ConstMin - Pavers	Aggregate	25	Diesel	0	0	0	0	0	0	0	0		0	0	0	0	0	0
Los Angeles (SC)	2023	ConstMin - Pavers	Aggregate	50	Diesel	0.000359172	0.000434598	0.000517208	0.002160938	0.001849386	0.254359857	0.000128844	0.000118536		2.34091E-06	2.07605E-06	8252.425423	8906.457784	24.81697678	345485.6
Los Angeles (SC)	2023	ConstMin - Pavers	Aggregate	75	Diesel	0.000552889	0.000668995	0.00079616	0.002642428	0.004890886	0.333497127	0.000486926	0.000447972		3.06676E-06	2.72196E-06	10819.94701	7086.740684	20.47400585	507473
Los Angeles (SC)	2023	ConstMin - Pavers	Aggregate	100	Diesel	0.000775096	0.000937866	0.001116138	0.013692978	0.01093067	2.120101348	0.00055413	0.0005098		1.95781E-05	1.7304E-05	68784.35336	39705.19957	99.47471527	3214194
Los Angeles (SC)	2023	ConstMin - Pavers	Aggregate	175	Diesel	0.00106737	0.001291518	0.001537013	0.019055268	0.012614339	3.358064053	0.000601067	0.000552981		3.10149E-05	2.74081E-05	108948.69	32056.89156	82.10283152	5060753
Los Angeles (SC)	2023	ConstMin - Pavers	Aggregate	300	Diesel	0.000573247	0.000693629	0.000825476	0.004993753	0.008582239	2.606354266	0.000266687	0.000245352		2.40798E-05	2.12727E-05	84560.29379	17874.32953	39.29354657	3934081
Los Angeles (SC)	2023	ConstMin - Pavers	Aggregate	600	Diesel	8.74063E-05	0.000105762	0.000125865	0.000915906	0.001162526	0.4943754	3.39831E-05	3.12645E-05		4.56812E-06	4.03503E-06	16039.46539	2013.039639	4.549779077	746745.2
Los Angeles (SC)	2023	ConstMin - Pavers	Aggregate	750	Diesel	8.36604E-06	1.01229E-05	1.20471E-05	0.000175003	4.83918E-05	0.098384386	1.65039E-06	1.51836E-06		9.09361E-07	8.03E-07	3191.97304	198.1018353	0.41361628	148576.4
Los Angeles (SC)	2023	ConstMin - Paving Equipment	Aggregate	25	Diesel	0	0	0	0	0	0	0	0		0	0	0	0	0	0
Los Angeles (SC)	2023	ConstMin - Paving Equipment	Aggregate	50	Diesel	0.000243234	0.000294313	0.000350257	0.002306369	0.00205261	0.31698965	9.41172E-05	8.65878E-05		2.92343E-06	2.58723E-06	10284.38009	14562.95535	30.5583829	506128.8
Los Angeles (SC)	2023	ConstMin - Paving Equipment	Aggregate	75	Diesel	3.89119E-05	4.70833E-05	5.60331E-05	0.000388768	0.000495781	0.054418887	3.54671E-05	3.26298E-05		5.01962E-07	4.4416E-07	1765.560858	1366.350677	3.303608962	95233.83
Los Angeles (SC)	2023	ConstMin - Paving Equipment	Aggregate	100	Diesel	0.000509478	0.000616468	0.000733648	0.008604076	0.006440855	1.317993812	0.00032132	0.000295615		1.21702E-05	1.07573E-05	42760.85773	26093.07505	55.95487679	2324439
Los Angeles (SC)	2023	ConstMin - Paving Equipment	Aggregate	175	Diesel	0.000509793	0.00061685	0.000734102	0.008374327	0.005691933	1.420986755	0.000296737	0.000272998		1.31224E-05	1.15979E-05	46102.35032	17292.078	37.16560082	2515905
Los Angeles (SC)	2023	ConstMin - Paving Equipment	Aggregate	300	Diesel	0.000275776	0.000333688	0.000397117	0.002053921	0.00361795	0.958036593	0.000139034	0.000127911		8.84925E-06	7.81937E-06	31082.44219	7330.625264	15.48566701	1691975
Los Angeles (SC)	2023	ConstMin - Paving Equipment	Aggregate	600	Diesel	0.00022055	0.000266865	0.000317592	0.001993493	0.002649386	1.033615686	8.76894E-05	8.06742E-05		9.54967E-06	8.43623E-06	33534.52262	4591.005076	9.704351326	1828372
Los Angeles (SC)	2023	ConstMin - Paving Equipment	Aggregate	750	Diesel	3.80449E-05	4.60344E-05	5.47847E-05	0.000364248	0.000410176	0.195732211	1.12264E-05	1.03283E-05		1.8085E-06	1.59754E-06	6350.316027	542.0549567	1.032377801	345373.1
Los Angeles (SC)	2023	ConstMin - Paving Equipment	Aggregate	9999	Diesel	1.54766E-05	1.87267E-05	2.22863E-05	0.000175003	0.000414228	0.092946699	6.89484E-06	6.34326E-06		8.58874E-07	7.58618E-07	3015.553298	194.6817098	0.41295112	164119.5
Los Angeles (SC)	2023	ConstMin - Rollers	Aggregate	25	Diesel	4.62058E-06	5.59091E-06	6.65364E-06	1.53774E-05	1.06607E-05	0.000816751	1.45745E-06	1.34086E-06		7.41265E-09	6.66621E-09	26.49857074	49.16097746	0.212727763	1229.024
Los Angeles (SC)	2023	ConstMin - Rollers	Aggregate	50	Diesel	0.004841562	0.00585829	0.006971849	0.037729066	0.034793459	5.220202803	0.001876077	0.001725991		4.81181E-05	4.26066E-05	169363.7309	219701.6373	627.3341736	7850554
Los Angeles (SC)	2023	ConstMin - Rollers	Aggregate	75	Diesel	0.000158849	0.000192207	0.000228742	0.00063313	0.001551682	0.054605964	0.00010991	0.000101117		5.00094E-07	4.45687E-07	1771.630365	1288.017609	5.530921843	91306.68
Los Angeles (SC)	2023	ConstMin - Rollers	Aggregate	100	Diesel	0.003487781	0.004220215	0.005022405	0.052535765	0.044666906	8.104439298	0.002432987	0.002238348		7.48249E-05	6.61473E-05	262939.6076	155220.8702	462.4701572	13545395
Los Angeles (SC)	2023	ConstMin - Rollers	Aggregate	175	Diesel	0.001979694	0.00239543	0.00285076	0.046492525	0.023702608	8.435473139	0.001081147	0.000994656		7.79307E-05	6.88492E-05	273679.636	98170.78492	270.5897148	14116184
Los Angeles (SC)	2023	ConstMin - Rollers	Aggregate	300	Diesel	0.000496183	0.000600381	0.000714503	0.004161158	0.006856863	1.426248605	0.000261269	0.000240368		1.31715E-05	1.16408E-05	46273.06527	10972.48436	35.10008092	2384377
Los Angeles (SC)	2023	ConstMin - Rollers	Aggregate	600	Diesel	0.000175779	0.000212693	0.000253122	0.002096975	0.002265446	0.788543866	7.70525E-05	7.08883E-05		7.28521E-06	6.43599E-06	25583.43731	3726.156287	12.1254825	1312250
Los Angeles (SC)	2023	ConstMin - Rough Terrain Forklifts	Aggregate	25	Diesel	1.52958E-06	1.85079E-06	2.20259E-06	1.88474E-05	2.32659E-05	0.002730162	1.31164E-06	1.2067E-06		2.51958E-08	2.22832E-08	88.57709615	153.1788012	0.490985382	3829.47
Los Angeles (SC)	2023	ConstMin - Rough Terrain Forklifts	Aggregate	50	Diesel	0.000256603	0.00031049	0.000369509	0.001847531	0.001720137	0.26286014	9.08008E-05	8.35367E-05		2.42257E-06	2.14543E-06	8528.207742	7724.182884	27.98616677	368839.4
Los Angeles (SC)	2023	ConstMin - Rough Terrain Forklifts	Aggregate	75	Diesel	2.01699E-05	2.44055E-05	2.90446E-05	8.16201E-05	0.000200635	0.007249347	1.37487E-05	1.26488E-05		6.64187E-08	5.91682E-08	235.1970949	170.4823325	0.736478073	11309.84
Los Angeles (SC)	2023	ConstMin - Rough Terrain Forklifts	Aggregate	100	Diesel	0.004077687	0.004934001	0.005871869	0.127021078	0.072485396	20.86602153	0.001775849	0.001633782		0.000192794	0.000170306	676975.0887	337658.2722	1183.029278	32524531
Los Angeles (SC)	2023	ConstMin - Rough Terrain Forklifts	Aggregate	175	Diesel	0.001602444	0.001938957	0.002307519	0.025317405	0.016677695	4.481394504	0.001113135	0.001024084		4.13846E-05	3.65765E-05	145393.8947	55611.84745	199.5855578	6994199
Los Angeles (SC)	2023	ConstMin - Rough Terrain Forklifts	Aggregate	300	Diesel	5.92779E-05	7.17262E-05	8.53601E-05	0.000626601	0.000907264	0.33553465	2.12446E-05	1.95451E-05		3.10041E-06	2.73859E-06	10886.05221	2487.169869	9.81970764	523207
Los Angeles (SC)	2023	ConstMin - Rough Terrain Forklifts	Aggregate	600	Diesel	1.40738E-05	1.70293E-05	2.02662E-05	0.000224624	0.000140513	0.124684478	2.14142E-06	1.97011E-06		1.15235E-06	1.01766E-06	4045.250566	508.8940174	1.963941528	196032
Los Angeles (SC)	2023	ConstMin - Rough Terrain Forklifts	Aggregate	750	Diesel	3.78101E-06	4.57503E-06	5.44466E-06	3.97759E-05	5.45689E-05	0.021454908	3.88215E-07	3.57158E-07		1.98248E-07	1.75112E-07	696.0808542	53.61258043	0.245492691	33507.86
Los Angeles (SC)	2023	ConstMin - Rubber Tired Dozers	Aggregate	25	Diesel	0	0	0	0	0	0	0	0		0	0	0	0	0	0
Los Angeles (SC)	2023	ConstMin - Rubber Tired Dozers	Aggregate	50	Diesel	0.000172923	0.000209237	0.00024901	0.001904221	0.001438445	0.230324057	5.61598E-05	5.1667E-05		2.12427E-06	1.87987E-06	7472.610378	7972.52553	8.298005046	328715.4
Los Angeles (SC)	2023	ConstMin - Rubber Tired Dozers	Aggregate	75	Diesel	0.000329728	0.000398971	0.000474809	0.002094188	0.00320132	0.24746624	0.000237926	0.000218892		2.27806E-06	2.01979E-06	8028.769613	5642.109382	7.488443578	391561.6
Los Angeles (SC)	2023	ConstMin - Rubber Tired Dozers	Aggregate	100	Diesel	0.000729875	0.000883149	0.001051021	0.005684621	0.007448836	0.724356025	0.000557527	0.000512924		6.67513E-06	5.9121E-06	23500.93351	13504.25293	15.38166789	1140979
Los Angeles (SC)	2023	ConstMin - Rubber Tired Dozers	Aggregate	175	Diesel	0.000997636	0.00120714	0.001436596	0.007299896	0.010924476	1.005419727	0.000694624	0.000639054		9.26567E-06	8.2061E-06	32619.73576	11263.17135	14.16732569	1594570
Los Angeles (SC)	2023	ConstMin - Rubber Tired Dozers	Aggregate	300	Diesel	0.000800791	0.000968958	0.00115314	0.00562036	0.010558446	1.132208848	0.000471928	0.000434174		1.04438E-05	9.24094E-06	36733.26917	8217.143222	11.53625092	1793399
Los Angeles (SC)	2023	ConstMin - Rubber Tired Dozers	Aggregate	600	Diesel	0.008040424	0.009728913	0.011578211	0.078364525	0.097620115	11.64268826	0.004400397	0.004048365		0.000107401	9.50261E-05	377734.1983	49915.339	68.0031633	18324377
Los Angeles (SC)	2023	ConstMin - Rubber Tired Dozers	Aggregate	750	Diesel	0.000148567	0.000179766	0.000213936	0.000882428	0.002344454	0.431764025	6.62781E-05	6.09759E-05		3.98742E-06	3.524E-06	14008.10828	1028.984551	1.011951835	685135.3
Los Angeles (SC)	2023	ConstMin - Rubber Tired Loaders	Aggregate	25	Diesel	0	0	0	0	0	0	0	0		0	0	0	0	0	0
Los Angeles (SC)	2023	ConstMin - Rubber Tired Loaders	Aggregate	50	Diesel	0.001039259	0.001257504	0.001496533	0.007270369	0.005509821	0.717803267	0.000363775	0.000334673		6.60527E-06	5.85861E-06	23288.33647	26911.31813	31.00995646	1117545
Los Angeles (SC)	2023	ConstMin - Rubber Tired Loaders	Aggregate	75	Diesel	0.0001155	0.000139755	0.00016632	0.000456352	0.000854078	0.046640925	8.08468E-05	7.43791E-05		4.27753E-07	3.80677E-07	1513.21346	1162.946078	2.109520847	79751.41
Los Angeles (SC)	2023	ConstMin - Rubber Tired Loaders	Aggregate	100	Diesel	0.011288628	0.01365924	0.016255624	0.128611582	0.11663244	17.57913599	0.00789517	0.007263557		0.000162189	0.000143479	570335.7072	357894.8883	383.9327942	30762650
Los Angeles (SC)	2023	ConstMin - Rubber Tired Loaders	Aggregate	175	Diesel	0.017848056	0.021596147	0.0257012	0.262362145	0.176092681	41.91094726	0.009457182	0.008700608		0.000386952	0.000342072	1359754.527	486018.3469	510.9259493	72877624
Los Angeles (SC)	2023	ConstMin - Rubber Tired Loaders	Aggregate	300	Diesel	0.019776837	0.023929973	0.028478645	0.137818331	0.233038586	60.56156516	0.007809243	0.007184504		0.000559328	0.000494295	1964853.285	505088.1275	468.5245802	1.05E+08
Los Angeles (SC)	2023	ConstMin - Rubber Tired Loaders	Aggregate	600	Diesel	0.02778382	0.033618422	0.0400087	0.203090817	0.293915381	78.61930497	0.011049135	0.010165204		0.000726041	0.00064168	2550716.766	414652.3119	420.638457	1.37E+08
Los Angeles (SC)	2023	ConstMin - Rubber Tired Loaders	Aggregate	750	Diesel	0.002182543	0.002640876	0.003142861	0.021302518	0.017970319	7.463083235	0.000645885	0.000594214		6.89344E-05	6.09127E-05	242131.5164	20156.67575	20.04044805	13021847
Los Angeles (SC)	2023	ConstMin - Rubber Tired Loaders	Aggregate	9999	Diesel	0.001746149	0.002112841	0.002514455	0.011839046	0.038152678	5.427098293	0.000789769	0.000726588		5.01238E-05	4.42952E-05	176076.2272	9813.256372	8.227131305	9396232
Los Angeles (SC)	2023	ConstMin - Scrapers	Aggregate	25	Diesel	4.01692E-07	4.86047E-07	5.78436E-07	1.02639E-05	9.03092E-06	0.001854836	3.31051E-08	3.04567E-08		1.71368E-08	1.51389E-08	60.17811878	86.76333946	0.208577481	2169.083
Los Angeles (SC)	2023	ConstMin - Scrapers	Aggregate	50	Diesel	7.16311E-05	8.66737E-05	0.000103149	0.000244068	0.000172232	0.014763074	2.4109E-05	2.21803E-05		1.34343E-07	1.20494E-07	478.9716715	453.3384487	1.251464887	17557.77
Los Angeles (SC)	2023	ConstMin - Scrapers	Aggregate	75	Diesel	0.000177106	0.000214298	0.000255033	0.001026676	0.001654568	0.128117916	0.000140692	0.000129436		1.1792E-06	1.04568E-06	4156.644702	2465.042878	5.42301451	166568.9
Los Angeles (SC)	2023	ConstMin - Scrapers	Aggregate	100	Diesel	0.000533334	0.000645334	0.000768001	0.004676624	0.006597509	0.617927789	0.000487931	0.000448897		5.69705E-06	5.04344E-06	20047.9866	8812.504187	15.22615612	798079.5
Los Angeles (SC)	2023	ConstMin - Scrapers	Aggregate	175	Diesel	0.00419784	0.005079386	0.00604489	0.049272788	0.048678764	7.77612192	0.002557395	0.002352803		7.17682E-05	6.34677E-05	252287.7118	60126.99424	132.0295456	10044863
Los Angeles (SC)	2023	ConstMin - Scrapers	Aggregate	300	Diesel	0.004888584	0.005915186	0.00703956	0.03104564	0.061153081	9.456949268	0.002732729	0.002514111		8.72875E-05	7.71863E-05	306820.1418	55343.68314	135.1582078	12310254
Los Angeles (SC)	2023	ConstMin - Scrapers	Aggregate	600	Diesel	0.0427538	0.051732098	0.061565472	0.385055276	0.541031611	115.6851762	0.020723297	0.019065433		0.001068284	0.000944207	3753278.137	355607.5001	732.1069588	1.5E+08
Los Angeles (SC)	2023	ConstMin - Scrapers	Aggregate	750	Diesel	0.00192135	0.002324833	0.002766743	0.021614486	0.031854848	1.779716433	0.001293857	0.001190348		1.63967E-05	1.45258E-05	57740.93966	3702.384502	10.01171909	2304157
Los Angeles (SC)	2023	ConstMin - Scrapers	Aggregate	9999	Diesel	0.001909792	0.002310848	0.0027501	0.022881403	0.032383763	2.673546265	0.001160089	0.001067282		2.4661E-05	2.18211E-05	86740.26417	2176.313765	5.42301451	3475547
Los Angeles (SC)	2023	ConstMin - Skid Steer Loaders	Aggregate	25	Diesel	0	0	0	0	0	0	0	0		0	0	0	0	0	0
Los Angeles (SC)	2023	ConstMin - Skid Steer Loaders	Aggregate	50	Diesel	0.001954783	0.002365288	0.002814888	0.024456181	0.022561757	3.94902446	0.000624403	0.000574451		3.6452E-05	3.22314E-05	128121.7495	138327.4541	434.359881	6026034
Los Angeles (SC)	2023	ConstMin - Skid Steer Loaders	Aggregate	75	Diesel	0.005014718	0.006067809	0.007221194	0.129587657	0.08073109	20.98247417	0.002724511	0.00250655		0.000193843	0.000171256	680753.2663	505485.8653	1401.063652	35720657
Los Angeles (SC)	2023	ConstMin - Skid Steer Loaders	Aggregate	100	Diesel	1.99691E-05	2.41626E-05	2.87554E-05	8.17835E-05	0.000201507	0.007428065	1.34472E-05	1.23714E-05		6.80771E-08	6.06269E-08	240.9953877	149.3005466	0.64604841	12640.78
Los Angeles (SC)	2023	ConstMin - Skid Steer Loaders	Aggregate	175	Diesel	2.84129E-05	3.43796E-05	4.09146E-05	0.000770346	0.000334311	0.141855856	1.40478E-05	1.2924E-05		1.31068E-06	1.15781E-06	4602.35703	1588.80665	5.81443569	242200.6
Los Angeles (SC)	2023	ConstMin - Skid Steer Loaders	Aggregate	300	Diesel	2.09701E-05	2.53738E-05	3.01969E-05	0.00024515	0.000292686	0.131699563	8.96814E-06	8.25069E-06		1.217E-06	1.07491E-06	4272.847274	1093.128835	3.66094099	224266.1
Los Angeles (SC)	2023	ConstMin - Skid Steer Loaders	Aggregate	600	Diesel	9.68719E-06	1.17215E-05	1.39496E-05	7.16747E-05	0.000149896	0.038060497	6.51858E-06	5.99709E-06		3.51598E-07	3.10645E-07	1234.830914	136.8588344	0.43069894	64706.86
Los Angeles (SC)	2023	ConstMin - Skid Steer Loaders	Aggregate	9999	Diesel	5.68943E-06	6.88421E-06	8.19277E-06	9.2322E-05	0.000222289	0.051520132	3.01506E-06	2.77386E-06		4.76158E-07	4.205E-07	1671.513927	87.58965401	0.43069894	87589.65
Los Angeles (SC)	2023	ConstMin - Surfacing Equipment	Aggregate	25	Diesel	0	0	0	0	0	0	0	0		0	0	0	0	0	0
Los Angeles (SC)	2023	ConstMin - Surfacing Equipment	Aggregate	50	Diesel	2.20402E-05	2.66687E-05	3.17379E-05	0.000233933	0.000239579	0.036597581	9.49207E-06	8.7327E-06		3.37702E-07	2.98705E-07	1187.368201	1879.319613	7.619292933	67998.4
Los Angeles (SC)	2023	ConstMin - Surfacing Equipment	Aggregate	75	Diesel	2.21456E-05	2.67961E-05	3.18896E-05	0.000168392	0.000297588	0.023259779	1.88018E-05	1.72977E-05		2.14384E-07	1.89843E-07	754.6379056	722.8326006	2.930497282	48154.29
Los Angeles (SC)	2023	ConstMin - Surfacing Equipment	Aggregate	100	Diesel	5.16457E-05	6.24913E-05	7.43698E-05	0.00135755	0.000872185	0.22145686	3.11675E-05	2.86741E-05		2.04593E-06	1.8075E-06	7184.923946	5141.321824	18.16908315	458710
Los Angeles (SC)	2023	ConstMin - Surfacing Equipment	Aggregate	175	Diesel	9.91128E-05	0.000119927	0.000142722	0.001131148	0.001175771	0.19033068	6.82892E-05	6.28261E-05		1.75673E-06	1.55345E-06	6175.06931	2887.041265	11.52662264	395707.1
Los Angeles (SC)	2023	ConstMin - Surfacing Equipment	Aggregate	300	Diesel	0.000118751	0.000143688	0.000171001	0.000942826	0.001924443	0.369814234	6.51342E-05	5.99235E-05		3.41555E-06	3.01837E-06	11998.21553	3395.416973	13.67565398	768239.6
Los Angeles (SC)	2023	ConstMin - Surfacing Equipment	Aggregate	600	Diesel	0.000232056	0.000280787	0.00033416	0.00263283	0.002997618	1.303031751	0.000114394	0.000105242		1.20402E-05	1.06352E-05	42275.43014	6636.199238	23.24861177	2711117
Los Angeles (SC)	2023	ConstMin - Surfacing Equipment	Aggregate	750	Diesel	9.26058E-05	0.000112053	0.000133352	0.001060233	0.001225786	0.557503814	4.40341E-05	4.05113E-05		5.15162E-06	4.55027E-06	18087.59726	1805.501293	5.860994564	1161471
Los Angeles (SC)	2023	ConstMin - Surfacing Equipment	Aggregate	9999	Diesel	4.17297E-05	5.04929E-05	6.00908E-05	0.000430181	0.001155439	0.201449562	2.15827E-05	1.98561E-05		1.86125E-06	1.6442E-06	6535.809187	478.577487	1.758298369	419058.2
Los Angeles (SC)	2023	ConstMin - Sweepers/Scrubbers	Aggregate	25	Diesel	0	0	0	0	0	0	0	0		0	0	0	0	0	0
Los Angeles (SC)	2023	ConstMin - Sweepers/Scrubbers	Aggregate	50	Diesel	0.00257041	0.003110196	0.00370139	0.020365147	0.016909041	2.407352628	0.001017863	0.000936434		2.21801E-05	1.96485E-05	78103.90478	83669.90285	117.0039304	2979719
Los Angeles (SC)	2023	ConstMin - Sweepers/Scrubbers	Aggregate	75	Diesel	0.000621612	0.00075215	0.000895121	0.004036528	0.005802223	0.50378634	0.000503611	0.000463322		4.63911E-06	4.11184E-06	16344.79299	9584.863264	17.39527462	695972.4
Los Angeles (SC)	2023	ConstMin - Sweepers/Scrubbers	Aggregate	100	Diesel	0.001411217	0.001707573	0.002032153	0.021886503	0.017246977	3.216856981	0.000966487	0.000889168		2.96991E-05	2.62556E-05	104367.382	56184.48908	77.86456256	4427088
Los Angeles (SC)	2023	ConstMin - Sweepers/Scrubbers	Aggregate	175	Diesel	0.000423498	0.000512433	0.000609837	0.005652065	0.004574521	0.928077065	0.000220734	0.000203075		8.56783E-06	7.57484E-06	30110.43828	7992.171785	10.97558994	1277407
Los Angeles (SC)	2023	ConstMin - Sweepers/Scrubbers	Aggregate	300	Diesel	0.000158885	0.000192251	0.000228795	0.001182274	0.002098582	0.55735251	6.7191E-05	6.18158E-05		5.14823E-06	4.54904E-06	18082.68838	3658.213241	4.970078462	767141.3
Los Angeles (SC)	2023	ConstMin - Sweepers/Scrubbers	Aggregate	600	Diesel	7.91286E-06	9.57456E-06	1.13945E-05	0.000137155	3.76608E-05	0.075269809	1.32001E-06	1.21441E-06		6.95669E-07	6.14342E-07	2442.046068	313.9439935	0.414173205	103601.5
Los Angeles (SC)	2023	ConstMin - Sweepers/Scrubbers	Aggregate	9999	Diesel	7.60575E-06	9.20296E-06	1.09523E-05	0.00017069	0.000413187	0.0967103	3.22334E-06	2.96547E-06		8.93907E-07	7.89336E-07	3137.659191	156.9719967	0.207086603	133112.3
Los Angeles (SC)	2023	ConstMin - Tractors/Loaders/Backhoes	Aggregate	25	Diesel	0	0	0	0	0	0	0	0		0	0	0	0	0	0
Los Angeles (SC)	2023	ConstMin - Tractors/Loaders/Backhoes	Aggregate	50	Diesel	0.006949779	0.008409233	0.010007682	0.062722617	0.052257828	7.78674397	0.002500224	0.002300206		7.17838E-05	6.35544E-05	252632.3325	317892.5087	607.9000379	12020833
Los Angeles (SC)	2023	ConstMin - Tractors/Loaders/Backhoes	Aggregate	75	Diesel	0.002898178	0.003506795	0.004173376	0.011708487	0.027489311	1.171561449	0.002236177	0.002057283		1.07447E-05	9.56213E-06	38010.02098	27712.6541	119.6737008	1991374
Los Angeles (SC)	2023	ConstMin - Tractors/Loaders/Backhoes	Aggregate	100	Diesel	0.043757	0.05294597	0.06301008	0.820503748	0.545271469	124.64292	0.026039622	0.023956453		0.001151073	0.001017319	4043902.269	2539302.443	4007.904013	2.11E+08
Los Angeles (SC)	2023	ConstMin - Tractors/Loaders/Backhoes	Aggregate	175	Diesel	0.006320905	0.007648295	0.009102104	0.12780127	0.063157253	21.77591628	0.00317753	0.002923328		0.00020114	0.000177732	706495.6219	259268.6076	461.7498546	37203223
Los Angeles (SC)	2023	ConstMin - Tractors/Loaders/Backhoes	Aggregate	300	Diesel	0.003852127	0.004661073	0.005547062	0.031761996	0.045871131	13.66539847	0.001668344	0.001534877		0.000126228	0.000111535	443358.8038	111900.0897	198.4677127	23312134
Los Angeles (SC)	2023	ConstMin - Tractors/Loaders/Backhoes	Aggregate	600	Diesel	0.004311084	0.005216411	0.00620796	0.041717816	0.042184759	17.95845263	0.001614335	0.001485188		0.000165905	0.000146574	582642.218	90513.88969	162.8833203	30710277
Los Angeles (SC)	2023	ConstMin - Tractors/Loaders/Backhoes	Aggregate	750	Diesel	0.00012268	0.000148443	0.00017666	0.00151068	0.00132254	0.291044864	5.49147E-05	5.05215E-05		2.68717E-06	2.37547E-06	9442.630082	758.7143665	1.694494879	503302.1
Los Angeles (SC)	2023	ConstMin - Tractors/Loaders/Backhoes	Aggregate	9999	Diesel	0.001590568	0.001924587	0.002290418	0.011877054	0.036374495	6.105779895	0.000682883	0.000628252		5.64032E-05	4.98346E-05	198095.3044	5613.507326	8.896098115	10389441
Los Angeles (SC)	2023	ConstMin - Trenchers	Aggregate	25	Diesel	0	0	0	0	0	0	0	0		0	0	0	0	0	0
Los Angeles (SC)	2023	ConstMin - Trenchers	Aggregate	50	Diesel	0.002486678	0.00300888	0.003580816	0.020171803	0.018563781	2.764782964	0.001031435	0.000948921		2.54872E-05	2.25658E-05	89700.33839	77681.23257	199.3361669	3097967
Los Angeles (SC)	2023	ConstMin - Trenchers	Aggregate	75	Diesel	0.000231268	0.000279834	0.000333026	0.001385574	0.002321042	0.165498411	0.00016075	0.00014789		1.52318E-06	1.35078E-06	5369.413689	2945.881479	10.87288183	206768.7
Los Angeles (SC)	2023	ConstMin - Trenchers	Aggregate	100	Diesel	0.001335126	0.001615503	0.001922582	0.012607503	0.015306306	1.803904342	0.001067901	0.000982469		1.66379E-05	1.47232E-05	58525.68972	26874.91946	80.64054023	2246861
Los Angeles (SC)	2023	ConstMin - Trenchers	Aggregate	175	Diesel	0.000235977	0.000285532	0.000339807	0.002785879	0.002951798	0.445531262	0.000145637	0.000133986		4.11208E-06	3.63637E-06	14454.77114	4030.792962	13.13806554	558371.9
Los Angeles (SC)	2023	ConstMin - Trenchers	Aggregate	300	Diesel	0.000450103	0.000544624	0.000648148	0.002757551	0.006152473	0.919800017	0.000257319	0.000236734		8.4905E-06	7.50728E-06	29841.89857	5086.389586	16.30932274	1144033
Los Angeles (SC)	2023	ConstMin - Trenchers	Aggregate	600	Diesel	0.000400188	0.000484228	0.000576271	0.004439656	0.004781528	1.398041153	0.000197402	0.000181609		1.29136E-05	1.14106E-05	45357.90553	4557.413445	12.23199206	1737429
Los Angeles (SC)	2023	ConstMin - Trenchers	Aggregate	750	Diesel	3.86814E-05	4.68045E-05	5.57012E-05	0.000800366	0.000221236	0.449387907	7.55621E-06	6.95171E-06		4.15365E-06	3.66784E-06	14579.89572	866.0970072	1.812146972	560612.5
Los Angeles (SC)	2023	ConstMin - Trenchers	Aggregate	9999	Diesel	6.62414E-05	8.01521E-05	9.53876E-05	0.000968084	0.000914722	0.036074359	4.26343E-05	3.92236E-05		3.31538E-07	2.94434E-07	1170.392857	52.34796054	0.226518371	45019.25
Los Angeles (SC)	2023	Industrial - Aerial Lifts	Aggregate	25	Diesel	0	0	0	0	0	0	0	0		0	0	0	0	0	0
Los Angeles (SC)	2023	Industrial - Aerial Lifts	Aggregate	50	Diesel	0.002053661	0.00248493	0.002957272	0.047722988	0.044287593	8.978049108	0.000353165	0.000324912		8.29449E-05	7.32776E-05	291282.9157	356269.9837	1163.829162	16434554
Los Angeles (SC)	2023	Industrial - Aerial Lifts	Aggregate	75	Diesel	0.001149641	0.001391065	0.001655483	0.040284322	0.021635552	6.747376315	0.000480873	0.000442403		6.23484E-05	5.50712E-05	218911.1936	196476.9206	645.3512345	13733440
Los Angeles (SC)	2023	Industrial - Aerial Lifts	Aggregate	100	Diesel	0.001314049	0.00159	0.001892231	0.053761435	0.024288251	8.918257455	0.000312414	0.000287421		8.24143E-05	7.27896E-05	289343.0414	234159.695	764.5352497	18147514
Los Angeles (SC)	2023	Industrial - Aerial Lifts	Aggregate	175	Diesel	0.000127535	0.000154317	0.00018365	0.005168187	0.001036499	0.957420547	4.3849E-05	4.0341E-05		8.848E-06	7.81434E-06	31062.45523	14940.59778	48.88192329	1949200
Los Angeles (SC)	2023	Industrial - Aerial Lifts	Aggregate	300	Diesel	6.96083E-06	8.42261E-06	1.00236E-05	0.000104296	7.39476E-05	0.05721333	9.93733E-07	9.14234E-07		5.28757E-07	4.66968E-07	1856.223497	506.4394285	1.647705279	116481.1
Los Angeles (SC)	2023	Industrial - Aerial Lifts	Aggregate	600	Diesel	3.97633E-06	4.81136E-06	5.72592E-06	7.33972E-05	2.02044E-05	0.040629756	7.01337E-07	6.4523E-07		3.75523E-07	3.31615E-07	1318.1877	168.8131428	0.549235093	82718.44
Los Angeles (SC)	2023	Industrial - Forklifts	Aggregate	25	Diesel	0	0	0	0	0	0	0	0		0	0	0	0	0	0
Los Angeles (SC)	2023	Industrial - Forklifts	Aggregate	50	Diesel	0.006509148	0.007876069	0.009373173	0.053107397	0.042685484	6.042587687	0.002382836	0.002192209		5.56714E-05	4.93188E-05	196045.1028	399609.7423	539.5251546	16949318
Los Angeles (SC)	2023	Industrial - Forklifts	Aggregate	75	Diesel	0.001348325	0.001631473	0.001941588	0.005410457	0.012807952	0.522026582	0.001021267	0.000939566		4.78594E-06	4.26071E-06	16936.57755	22442.98084	49.04774133	1646312
Los Angeles (SC)	2023	Industrial - Forklifts	Aggregate	100	Diesel	0.035855678	0.04338537	0.051632176	0.49768368	0.408600482	72.25795722	0.025013275	0.023012213		0.000666985	0.00058976	2344329.844	2739470.822	3551.056472	2.26E+08
Los Angeles (SC)	2023	Industrial - Forklifts	Aggregate	175	Diesel	0.00881694	0.010668497	0.012696393	0.138624383	0.092446919	23.00389273	0.004848257	0.004460396		0.000212418	0.000187755	746335.9655	508419.0426	670.6163906	71833414
Los Angeles (SC)	2023	Industrial - Forklifts	Aggregate	300	Diesel	0.001559737	0.001887281	0.002246021	0.01160811	0.016653223	5.010447789	0.000633212	0.000582555		4.62773E-05	4.08946E-05	162558.4605	74423.52119	98.09548266	15625540
Los Angeles (SC)	2023	Industrial - Forklifts	Aggregate	600	Diesel	0.000472	0.00057112	0.00067968	0.002980404	0.004714765	1.265821892	0.000181528	0.000167006		1.1689E-05	1.03315E-05	41068.19725	11077.22884	15.16021096	3926354
Los Angeles (SC)	2023	Industrial - Forklifts	Aggregate	9999	Diesel	1.56509E-05	1.89376E-05	2.25373E-05	0.000193638	0.000454333	0.100200466	4.12559E-06	3.79554E-06		9.25933E-07	8.17823E-07	3250.893754	355.5017627	0.445888558	312841.6
Los Angeles (SC)	2023	Industrial - Other General Industrial Equipment	Aggregate	25	Diesel	0	0	0	0	0	0	0	0		0	0	0	0	0	0
Los Angeles (SC)	2023	Industrial - Other General Industrial Equipment	Aggregate	50	Diesel	0.010975612	0.013280491	0.015804881	0.107712491	0.08809203	12.98954688	0.004273605	0.003931717		0.000119766	0.000106019	421431.5429	609164.9987	718.8325939	21400446
Los Angeles (SC)	2023	Industrial - Other General Industrial Equipment	Aggregate	75	Diesel	0.003470081	0.004198798	0.004996917	0.059513996	0.04212416	8.715371345	0.002161387	0.001988476		8.04738E-05	7.11337E-05	282760.625	223398.3468	261.4295171	15994858
Los Angeles (SC)	2023	Industrial - Other General Industrial Equipment	Aggregate	100	Diesel	0.001498213	0.001812837	0.002157426	0.012930939	0.015010447	1.75259086	0.001114762	0.001025581		1.61586E-05	1.43044E-05	56860.88031	40577.95192	52.83794162	3204167
Los Angeles (SC)	2023	Industrial - Other General Industrial Equipment	Aggregate	175	Diesel	0.001665919	0.002015762	0.002398924	0.029709896	0.016163971	4.892424591	0.000838076	0.00077103		4.51829E-05	3.99313E-05	158729.3278	60424.97175	71.76496549	8972885
Los Angeles (SC)	2023	Industrial - Other General Industrial Equipment	Aggregate	300	Diesel	0.001509457	0.001826443	0.002173618	0.010739878	0.017933359	4.833318038	0.000578716	0.000532419		4.46411E-05	3.94489E-05	156811.6808	41411.74546	50.86637664	8855277
Los Angeles (SC)	2023	Industrial - Other General Industrial Equipment	Aggregate	600	Diesel	0.00368374	0.004457325	0.005304586	0.031885616	0.030760962	15.27505988	0.001068046	0.000982603		0.000141115	0.000124673	495582.4954	74627.71055	86.35454639	28024518
Los Angeles (SC)	2023	Industrial - Other General Industrial Equipment	Aggregate	750	Diesel	0.000405643	0.000490828	0.000584126	0.006141878	0.002365406	2.91507385	0.000102482	9.42833E-05		2.69391E-05	2.37924E-05	94576.36069	8467.332793	9.85782493	5348167
Los Angeles (SC)	2023	Industrial - Other General Industrial Equipment	Aggregate	9999	Diesel	0.000201477	0.000243787	0.000290127	0.001716071	0.005475024	0.885527294	9.09211E-05	8.36474E-05		8.18109E-06	7.22755E-06	28729.95783	1396.034636	1.577251989	1624635
Los Angeles (SC)	2023	Industrial - Other Material Handling Equipment	Aggregate	25	Diesel	1.58129E-05	1.91336E-05	2.27706E-05	0.000133164	9.1962E-05	0.014732515	3.60832E-06	3.31965E-06		1.35735E-07	1.20245E-07	477.9802163	841.2198682	1.349851268	21030.5
Los Angeles (SC)	2023	Industrial - Other Material Handling Equipment	Aggregate	50	Diesel	0.000850889	0.001029575	0.00122528	0.005839487	0.004767629	0.592984536	0.000349243	0.000321303		5.45691E-06	4.83986E-06	19238.73022	23478.24895	30.59662874	841263.5
Los Angeles (SC)	2023	Industrial - Other Material Handling Equipment	Aggregate	75	Diesel	0.00010604	0.000128308	0.000152697	0.001008049	0.001119643	0.12933283	8.8899E-05	8.17871E-05		1.19256E-06	1.0556E-06	4196.061244	2892.2782	4.499504226	206107.8
Los Angeles (SC)	2023	Industrial - Other Material Handling Equipment	Aggregate	100	Diesel	0.001862587	0.00225373	0.002682125	0.041422981	0.024579648	6.348517232	0.000961461	0.000884544		5.86393E-05	5.18157E-05	205970.65	108402.4621	138.1347797	10059193
Los Angeles (SC)	2023	Industrial - Other Material Handling Equipment	Aggregate	175	Diesel	0.001983466	0.002399994	0.002856191	0.030650968	0.019729009	4.923745169	0.001123068	0.001033223		4.5463E-05	4.01869E-05	159745.4895	57845.04408	77.39147269	7815470
Los Angeles (SC)	2023	Industrial - Other Material Handling Equipment	Aggregate	300	Diesel	0.002735706	0.003310204	0.003939417	0.015788992	0.029610259	7.029237239	0.001213537	0.001116454		6.49067E-05	5.73717E-05	228055.8609	47901.70046	62.99305916	11151341
Los Angeles (SC)	2023	Industrial - Other Material Handling Equipment	Aggregate	600	Diesel	0.003017568	0.003651258	0.004345298	0.027130339	0.03202556	10.59921061	0.001217565	0.00112016		9.79044E-05	8.65093E-05	343879.7152	46379.91396	59.84340621	16796648
Los Angeles (SC)	2023	Industrial - Other Material Handling Equipment	Aggregate	750	Diesel	0.000149426	0.000180806	0.000215174	0.000631827	0.001499785	0.299624919	7.67159E-05	7.05786E-05		2.7657E-06	2.4455E-06	9721.000526	737.2371898	0.899900845	475518
Los Angeles (SC)	2023	Industrial - Other Material Handling Equipment	Aggregate	9999	Diesel	7.79592E-05	9.43306E-05	0.000112261	0.001288384	0.003076625	0.702144287	2.57022E-05	2.3646E-05		6.48933E-06	5.73081E-06	22780.29813	1105.855785	1.349851268	1114334
Los Angeles (SC)	2023	Locomotive - Line haul	Aggregate	9999	Diesel	0.148963	0.18	0.215	0.968	4.118	0	0.098	0.09		0.004	0.003	0	0	0	2.5E+08
Los Angeles (SC)	2023	Locomotive - Passenger	Aggregate	9999	Diesel	0.018611866	1.3903E-05	1.65457E-05	0.258443187	0.412596853	0	0.007566543	0.00696122		0.000719966	0.000815928	0	0	0	0
Los Angeles (SC)	2023	Locomotive - Short line	Aggregate	9999	Diesel	0.008791429	9.66115E-07	1.14976E-06	0.064449169	0.297339217	0	0.004875219	0.004485202		0.00023747	0.00021183	0	0	0	0
Los Angeles (SC)	2023	Locomotive - Switcher	Aggregate	9999	Diesel	0.143668725	0.000420432	0.000500349	0.385954959	2.228399571	0	0.047069172	0.043303638		0.001285064	0.001155811	0	0	0	0
Los Angeles (SC)	2023	Ocean Going Vessels	Aggregate		Diesel	0.719682611	0.918473319	1.097455028	1.578597888	14.44678033	1511.631911	0.416396516	0.383084795		1.621798442	0.00981682	47700089.14	0	0	8.65E+08
Los Angeles (SC)	2023	OFF - Agricultural - 2-Wheel Tractors	Aggregate	25	Gasoline	0.00095525	0.000878639	0.001051194	0.03460061	0.000701506	0.061880802	0.000393172	0.000297063		1.81722E-06	1.59579E-06	4555.2	10997.45	43.28	77000.4
Los Angeles (SC)	2023	OFF - Agricultural - Agricultural Mowers	Aggregate	25	Gasoline	0.000760842	0.000699822	0.00083726	0.032117694	0.000568038	0.052234583	0.000394095	0.00029776		1.38213E-06	1.40399E-06	4007.7	6708.7	37.23	83891.6
Los Angeles (SC)	2023	OFF - Agricultural - Agricultural Tractors	Aggregate	25	Diesel	0.004332593	0.005156143	0.006238933	0.024608267	0.039322298	5.226124595	0.001488659	0.001369567		7.07732E-05	4.37479E-05	173900.6	240677.35	451.72	4350070
Los Angeles (SC)	2023	OFF - Agricultural - Agricultural Tractors	Aggregate	100	Gasoline	0.000602119	0.000553829	0.000662595	0.025533478	0.001488162	0.462343239	3.22357E-05	2.43558E-05		4.46688E-06	6.69262E-06	19104.1	3879.95	7.11	318155.9
Los Angeles (SC)	2023	OFF - Agricultural - Agricultural Tractors	Aggregate	175	Gasoline	8.61791E-05	7.92675E-05	9.48348E-05	0.003529229	0.000339213	0.093938035	6.73436E-06	5.08818E-06		9.33176E-07	1.32343E-06	3777.75	532.9	0.99	66612.5
Los Angeles (SC)	2023	OFF - Agricultural - Balers	Aggregate	50	Gasoline	0.000109526	0.000100742	0.000120527	0.006047818	0.000169238	0.079919015	5.50955E-06	4.16277E-06		9.71676E-07	1.18789E-06	3390.85	1752	25.76	61320
Los Angeles (SC)	2023	OFF - Agricultural - Balers	Aggregate	100	Gasoline	4.8559E-05	4.46646E-05	5.34362E-05	0.001573681	0.000167009	0.073900514	5.15252E-06	3.89302E-06		7.13982E-07	1.01144E-06	2887.15	890.6	13.18	56998.4
Los Angeles (SC)	2023	OFF - Agricultural - Combines	Aggregate	100	Gasoline	1.58914E-05	1.46169E-05	1.74875E-05	0.000736418	3.99027E-05	0.039467916	2.7518E-06	2.07914E-06		3.81315E-07	5.39603E-07	1540.3	222.65	1.77	22932.95
Los Angeles (SC)	2023	OFF - Agricultural - Combines	Aggregate	175	Gasoline	1.01493E-05	9.33536E-06	1.11687E-05	0.001089405	3.78815E-05	0.033954399	2.43417E-06	1.83915E-06		3.37301E-07	4.69276E-07	1339.55	120.45	0.98	19753.8
Los Angeles (SC)	2023	OFF - Agricultural - Combines	Aggregate	300	Gasoline	1.83987E-06	1.69232E-06	2.02467E-06	0.000237911	2.16026E-05	0.007205992	5.3159E-07	4.01645E-07		7.36621E-08	1.02294E-07	292	29.2	0.18	5664.8
Los Angeles (SC)	2023	OFF - Agricultural - Hydro Power Units	Aggregate	25	Gasoline	0.000746877	0.000686978	0.000821893	0.028941377	0.000554179	0.048663162	0.000345537	0.000261073		1.34069E-06	1.29019E-06	3682.85	6821.85	17.6	67024.95
Los Angeles (SC)	2023	OFF - Agricultural - Hydro Power Units	Aggregate	25	Diesel	2.93587E-05	3.49392E-05	4.22765E-05	0.000155455	0.000266807	0.035227611	1.00346E-05	9.2318E-06		4.62003E-07	2.9475E-07	1171.65	2547.7	3.15	42690.4
Los Angeles (SC)	2023	OFF - Agricultural - Hydro Power Units	Aggregate	50	Gasoline	6.68327E-06	6.14727E-06	7.35453E-06	0.000531919	1.03316E-05	0.005486435	3.7823E-07	2.85774E-07		6.6705E-08	8.4393E-08	240.9	109.5	0.25	4161
Los Angeles (SC)	2023	OFF - Agricultural - Hydro Power Units	Aggregate	100	Gasoline	5.05555E-07	4.65009E-07	5.56332E-07	2.48697E-05	1.26957E-06	0.001177752	8.21157E-08	6.2043E-08		1.13787E-08	1.53442E-08	43.8	10.95	0.03	722.7
Los Angeles (SC)	2023	OFF - Agricultural - Other Agricultural Equipment	Aggregate	25	Gasoline	9.80912E-05	9.02243E-05	0.000107943	0.003467521	6.76314E-05	0.006193946	3.69219E-05	2.78965E-05		1.7878E-07	1.59835E-07	456.25	992.8	6.82	8668.75
Los Angeles (SC)	2023	OFF - Agricultural - Other Agricultural Equipment	Aggregate	25	Diesel	6.7956E-05	8.08733E-05	9.78567E-05	0.000362259	0.000618001	0.0815277	2.37113E-05	2.18144E-05		1.07281E-06	6.82241E-07	2711.95	4810.7	10.77	93096.9
Los Angeles (SC)	2023	OFF - Agricultural - Other Agricultural Equipment	Aggregate	50	Gasoline	4.72327E-06	4.34446E-06	5.19767E-06	0.000313937	7.91185E-06	0.003753568	2.58768E-07	1.95513E-07		4.56365E-08	5.37046E-08	153.3	98.55	0.81	2857.95
Los Angeles (SC)	2023	OFF - Agricultural - Other Agricultural Equipment	Aggregate	100	Gasoline	2.69393E-05	2.47787E-05	2.9645E-05	0.001109508	7.82935E-05	0.049668034	3.46297E-06	2.61647E-06		4.79862E-07	6.80258E-07	1941.8	573.05	4.65	38394.35
Los Angeles (SC)	2023	OFF - Agricultural - Other Agricultural Equipment	Aggregate	175	Gasoline	4.32611E-06	3.97915E-06	4.76062E-06	0.000362851	1.96192E-05	0.011178626	8.01388E-07	6.05493E-07		1.11048E-07	1.5472E-07	441.65	47.45	0.5	6453.2
Los Angeles (SC)	2023	OFF - Agricultural - Other Agricultural Equipment	Aggregate	300	Gasoline	2.29883E-06	2.11446E-06	2.52972E-06	0.000243781	2.43372E-05	0.007298471	5.38412E-07	4.068E-07		7.46074E-08	1.03573E-07	295.65	3.65	0.13	897.9
Los Angeles (SC)	2023	OFF - Agricultural - Sprayers	Aggregate	25	Gasoline	0.001626051	0.001495642	0.00178937	0.057200485	0.001028757	0.098238908	0.000597395	0.000451365		2.70571E-06	2.58166E-06	7369.35	16133	164.44	151449.4
Los Angeles (SC)	2023	OFF - Agricultural - Sprayers	Aggregate	25	Diesel	6.71432E-06	7.9906E-06	9.66863E-06	3.18228E-05	5.86533E-05	0.007479534	2.4886E-06	2.28951E-06		9.49011E-08	6.24393E-08	248.2	456.25	4.16	8668.75
Los Angeles (SC)	2023	OFF - Agricultural - Sprayers	Aggregate	50	Gasoline	2.12365E-05	1.95333E-05	2.33694E-05	0.001188659	3.81643E-05	0.015172776	1.046E-06	7.90309E-07		1.84473E-07	2.25048E-07	642.4	375.95	4.85	12406.35
Los Angeles (SC)	2023	OFF - Agricultural - Sprayers	Aggregate	100	Gasoline	3.50681E-05	3.22556E-05	3.85903E-05	0.001153278	0.000118982	0.052100939	3.6326E-06	2.74463E-06		5.03368E-07	7.18619E-07	2051.3	649.7	8.13	44179.6
Los Angeles (SC)	2023	OFF - Agricultural - Sprayers	Aggregate	175	Gasoline	1.03214E-05	9.49362E-06	1.13581E-05	0.000755447	6.04769E-05	0.02352583	1.68655E-06	1.27428E-06		2.33704E-07	3.28621E-07	938.05	153.3	1.84	21462
Los Angeles (SC)	2023	OFF - Agricultural - Swathers	Aggregate	100	Gasoline	0.00018647	0.000171515	0.000205199	0.006238305	0.000622414	0.269048399	1.87587E-05	1.41732E-05		2.59938E-06	3.70306E-06	10570.4	2511.2	26.42	220985.6
Los Angeles (SC)	2023	OFF - Agricultural - Swathers	Aggregate	175	Gasoline	0.00013348	0.000122775	0.000146887	0.009492518	0.000765618	0.294048213	2.10801E-05	1.59272E-05		2.92106E-06	4.09817E-06	11698.25	1927.2	20.26	248608.8
Los Angeles (SC)	2023	OFF - Agricultural - Tillers	Aggregate	25	Gasoline	0.01248433	0.011483087	0.013738244	0.722767573	0.009366367	1.212156453	0.000557538	0.000421251		3.45619E-05	3.18034E-05	90782.8	188062.6	2644.79	1316438
Los Angeles (SC)	2023	OFF - AirGrSupp - A/C Tug Narrow Body	Aggregate	175	Gasoline	0.003220716	0.002962415	0.003544202	0.194481548	0.020930314	4.939509758	0.00035411	0.00026755		4.90689E-05	6.96741E-05	198884.85	20870.7	28.66	2713191
Los Angeles (SC)	2023	OFF - AirGrSupp - A/C Tug Wide Body	Aggregate	600	Gasoline	0.002217403	0.002039568	0.002440117	0.236073702	0.02110263	6.74044103	0.000497246	0.000375697		6.89031E-05	9.43475E-05	269315.25	7621.2	14.78	3810600
Los Angeles (SC)	2023	OFF - AirGrSupp - Air Conditioner	Aggregate	175	Gasoline	5.31388E-08	4.88771E-08	5.8476E-08	5.58471E-06	6.11606E-07	0.00017785	1.275E-08	9.6333E-09		1.76675E-09	0	0	0	0	0
Los Angeles (SC)	2023	OFF - AirGrSupp - Air Conditioner	Aggregate	175	Nat Gas	0	0	2.55818E-08	2.3578E-05	2.7537E-06	0.000955765	0	0		0	0	62.05	0	0.2	0
Los Angeles (SC)	2023	OFF - AirGrSupp - Air Start Unit	Aggregate	175	Gasoline	5.4745E-06	5.03544E-06	6.02435E-06	0.000538161	5.88344E-05	0.016823327	1.20605E-06	9.1124E-07		1.67122E-07	2.35277E-07	671.6	62.05	0.84	8066.5
Los Angeles (SC)	2023	OFF - AirGrSupp - Baggage Tug	Aggregate	100	Gasoline	0.029996895	0.027591144	0.033009753	2.21929401	0.177549599	54.6399393	0.003809628	0.002878385		0.000527898	0.000771846	2203238.55	424732.25	483.95	42473225
Los Angeles (SC)	2023	OFF - AirGrSupp - Baggage Tug	Aggregate	100	Nat Gas	0	0	0.001039262	0.397480789	0.044881109	8.975161069	0	0		0	0	499075.45	80102.9	96.39	8010290
Los Angeles (SC)	2023	OFF - AirGrSupp - Belt Loader	Aggregate	100	Gasoline	0.007250864	0.006669345	0.007979134	0.545069404	0.042553847	12.95036333	0.00090293	0.000682214		0.000125119	0.000183342	523351.6	184551.3	227.43	11073078
Los Angeles (SC)	2023	OFF - AirGrSupp - Belt Loader	Aggregate	100	Nat Gas	0	0	7.45457E-05	0.033740981	0.003682907	0.85997789	0	0		0	0	47424.45	14067.1	25.5	844026
Los Angeles (SC)	2023	OFF - AirGrSupp - Bobtail	Aggregate	100	Gasoline	0.003644836	0.00335252	0.00401092	0.269660495	0.021573521	6.6391269	0.000462896	0.000349744		6.41432E-05	9.37849E-05	267709.25	51607.35	58.81	5160735
Los Angeles (SC)	2023	OFF - AirGrSupp - Bobtail	Aggregate	100	Nat Gas	0	0	8.57581E-06	0.005870579	0.000532491	0.163677841	0	0		0	0	8971.7	1460	1.65	146000
Los Angeles (SC)	2023	OFF - AirGrSupp - Cargo Loader	Aggregate	100	Gasoline	0.002656303	0.002443268	0.0029231	0.199538377	0.015600752	4.752427851	0.000331351	0.000250354		4.59151E-05	6.72727E-05	192030.15	58049.6	80.58	4063472
Los Angeles (SC)	2023	OFF - AirGrSupp - Cargo Loader	Aggregate	100	Nat Gas	0	0	0.00013816	0.04837982	0.005571022	1.008719097	0	0		0	0	56436.3	14140.1	13.69	989807
Los Angeles (SC)	2023	OFF - AirGrSupp - Cargo Tractor	Aggregate	100	Gasoline	0.074279388	0.068322181	0.081739935	6.90821351	0.358536136	80.74561925	0.005629779	0.004253611		0.000666644	0.001217831	3476303.8	672932.25	497.98	63928564
Los Angeles (SC)	2023	OFF - AirGrSupp - Cargo Tractor	Aggregate	175	Nat Gas	0	0	4.82993E-05	0.037786833	0.004340899	1.440613892	0	0		0	0	77759.6	8413.25	54	1309102
Los Angeles (SC)	2023	OFF - AirGrSupp - Cart	Aggregate	25	Gasoline	5.18796E-05	4.77188E-05	5.70903E-05	0.00326012	4.08512E-05	0.005513109	2.50342E-06	1.89147E-06		1.57194E-07	1.41934E-07	405.15	708.1	4.71	8497.2
Los Angeles (SC)	2023	OFF - AirGrSupp - Catering Truck	Aggregate	300	Gasoline	0.01016005	0.009345214	0.011180515	0.544411389	0.057976637	12.36907275	0.000912473	0.000689424		0.000108049	0.000175791	501794.7	52757.1	51.9	10757173
Los Angeles (SC)	2023	OFF - AirGrSupp - Catering Truck	Aggregate	300	Nat Gas	0	0	4.59481E-05	0.028121031	0.003131493	0.947253983	0	0		0	0	51424.85	4358.1	9.64	893410.5
Los Angeles (SC)	2023	OFF - AirGrSupp - Deicer	Aggregate	100	Gasoline	2.45046E-05	2.25393E-05	2.69658E-05	0.000866817	0.000162263	0.052040003	3.62835E-06	2.74142E-06		5.02779E-07	7.07111E-07	2018.45	251.85	11.45	23422.05
Los Angeles (SC)	2023	OFF - AirGrSupp - Forklift	Aggregate	50	Gasoline	0.002769027	0.002546951	0.003047146	0.257670033	0.006150162	1.958283679	0.000135002	0.000102002		2.38092E-05	3.14658E-05	89819.2	55188	75.88	2759400
Los Angeles (SC)	2023	OFF - AirGrSupp - Forklift	Aggregate	50	Nat Gas	0	0	0.000180285	0.04876347	0.013189873	3.946829129	0	0		0	0	208674.15	129140.65	177.55	6457033
Los Angeles (SC)	2023	OFF - AirGrSupp - Fuel Truck	Aggregate	175	Gasoline	2.3916E-05	2.19979E-05	2.63181E-05	0.002490603	0.000275418	0.079340651	5.68788E-06	4.29751E-06		7.88166E-07	1.10222E-06	3146.3	1080.4	48.67	140452

Los Angeles (SC)	2023 OFF - AirGrSupp - Fuel Truck	Aggregate	175	Nat Gas	0	0	1.35127E-05	0.007728046	0.000851813	0.249266012	0	0	0	0	13563.4	3500.35	6.19	490049
Los Angeles (SC)	2023 OFF - AirGrSupp - Generator	Aggregate	100	Gasoline	0.00084724	0.000779292	0.000932336	0.052828117	0.003219802	0.660430745	4.60468E-05	3.47909E-05	5.45258E-06	9.89827E-06	28254.65	3387.2	3.78	362430.4
Los Angeles (SC)	2023 OFF - AirGrSupp - Ground Power Unit	Aggregate	175	Gasoline	0.004468338	0.004109977	0.004917133	0.456968489	0.040643105	13.20180146	0.000946428	0.000715079	0.000131146	0.000184685	527184.1	51585.45	64.68	7737818
Los Angeles (SC)	2023 OFF - AirGrSupp - Hydrant truck	Aggregate	175	Gasoline	0.009576483	0.008808449	0.010538336	0.441680659	0.046295002	9.024812114	0.000646983	0.000488831	7.66118E-05	0.000129309	369113.55	46643.35	30.47	5667167
Los Angeles (SC)	2023 OFF - AirGrSupp - Lav Cart	Aggregate	25	Gasoline	5.72046E-05	5.26168E-05	6.29502E-05	0.003594755	4.50442E-05	0.006079003	2.76037E-06	2.08562E-06	1.73329E-07	1.58556E-07	452.6	781.1	5.22	9373.2
Los Angeles (SC)	2023 OFF - AirGrSupp - Lav Truck	Aggregate	175	Gasoline	0.002437556	0.002242064	0.002682382	0.183860267	0.015843567	4.632045957	0.000332068	0.000250896	4.60145E-05	6.53406E-05	186515	62648.6	51.6	8144318
Los Angeles (SC)	2023 OFF - AirGrSupp - Lav Truck	Aggregate	175	Nat Gas	0	0	4.37356E-06	0.002798592	0.000313616	0.096756055	0	0	0	0	5245.05	1470.95	3.79	191223.5
Los Angeles (SC)	2023 OFF - AirGrSupp - Lift	Aggregate	100	Gasoline	0.003859187	0.00354968	0.0042468	0.203149219	0.018518652	4.839148264	0.000337397	0.000254922	4.67529E-05	6.85642E-05	195716.65	41365.45	109.82	4136545
Los Angeles (SC)	2023 OFF - AirGrSupp - Lift	Aggregate	100	Nat Gas	0	0	9.26479E-06	0.005072722	0.000535669	0.143234633	0	0	0	0	7851.15	1412.55	4.11	141255
Los Angeles (SC)	2023 OFF - AirGrSupp - Maint. Truck	Aggregate	175	Gasoline	0.002069112	0.001903169	0.002276932	0.176655232	0.016834695	4.994051424	0.00035802	0.000270504	4.96107E-05	6.99605E-05	199702.45	33766.15	75.08	4389600
Los Angeles (SC)	2023 OFF - AirGrSupp - Other	Aggregate	50	Nat Gas	0	0	0.000176635	0.02244852	0.006990512	1.324288183	0	0	0	0	70740.65	25995.3	25.53	1299765
Los Angeles (SC)	2023 OFF - AirGrSupp - Other GSE	Aggregate	50	Gasoline	0.002091968	0.001924192	0.002302083	0.148755816	0.00437909	1.464558292	0.000100965	7.62849E-05	1.78064E-05	2.26237E-05	64579.45	24768.9	135.08	1238445
Los Angeles (SC)	2023 OFF - AirGrSupp - Passenger Stand	Aggregate	175	Gasoline	0.000752435	0.00069209	0.000828009	0.065275264	0.007160119	1.964458082	0.000140831	0.000106405	1.73859E-05	2.74303E-05	78299.8	11698.25	62.26	1463451
Los Angeles (SC)	2023 OFF - AirGrSupp - Passenger Stand	Aggregate	175	Nat Gas	0	0	1.4097E-07	0.000131805	1.54138E-05	0.00536832	0	0	0	0	292	7.3	2.23	1204.5
Los Angeles (SC)	2023 OFF - AirGrSupp - Service Truck	Aggregate	300	Gasoline	0.012589048	0.011579406	0.013853479	0.722450419	0.077410222	17.23664625	0.001271556	0.000960731	0.000176199	0.000244126	696858	216572.75	257.29	38983095
Los Angeles (SC)	2023 OFF - AirGrSupp - Service Truck	Aggregate	300	Nat Gas	0	0	0.000151037	0.084431566	0.007476858	2.406592461	0	0	0	0	131768.65	32820.8	25.22	5907744
Los Angeles (SC)	2023 OFF - AirGrSupp - Sweeper	Aggregate	50	Nat Gas	0	0	1.36342E-06	0.000351102	0.000105641	0.029318965	0	0	0	0	1543.95	620.5	2.25	27922.5
Los Angeles (SC)	2023 OFF - AirGrSupp - Sweeper	Aggregate	100	Gasoline	0.000108366	9.96751E-05	0.00011925	0.00566237	0.000525172	0.138315949	9.64372E-06	7.28637E-06	1.14195E-06	1.95382E-06	5577.2	2168.1	5.98	115559.7
Los Angeles (SC)	2023 OFF - AirGrSupp - Water Truck	Aggregate	175	Gasoline	0.000149086	0.000137129	0.00016406	0.011620735	0.001269031	0.335989554	2.40869E-05	1.8199E-05	3.3377E-06	4.70299E-06	13424.7	4927.5	15.85	739125
Los Angeles (SC)	2023 OFF - ConstMin - Asphalt Pavers	Aggregate	25	Gasoline	0.003666072	0.003372053	0.004034289	0.153884505	0.002678267	0.247610799	0.001868151	0.001411492	6.42703E-06	6.6875E-06	19089.5	16815.55	42.42	289277.1
Los Angeles (SC)	2023 OFF - ConstMin - Asphalt Pavers	Aggregate	50	Gasoline	0.000596076	0.000548271	0.000655945	0.04488779	0.000847546	0.310399535	2.13987E-05	1.61679E-05	3.77389E-06	5.0802E-06	14501.45	6212.3	15.84	198793.6
Los Angeles (SC)	2023 OFF - ConstMin - Asphalt Pavers	Aggregate	100	Gasoline	0.00029252	0.00026906	0.0003219	0.013436707	0.000770817	0.321366397	2.24064E-05	1.69293E-05	3.10485E-06	4.55594E-06	13004.95	3423.7	8.72	208845.7
Los Angeles (SC)	2023 OFF - ConstMin - Bore/Drill Rigs	Aggregate	25	Gasoline	0.001305522	0.001200819	0.001436647	0.057282271	0.00094247	0.091796972	0.000692581	0.000523284	2.35581E-06	2.48192E-06	7084.65	5376.45	43.34	89592.9
Los Angeles (SC)	2023 OFF - ConstMin - Bore/Drill Rigs	Aggregate	25	Diesel	0.000173425	0.00020639	0.000249732	0.000931195	0.001575664	0.208306128	5.93359E-05	5.4589E-05	2.74918E-06	1.74187E-06	6924.05	10442.65	12.86	161844.7
Los Angeles (SC)	2023 OFF - ConstMin - Bore/Drill Rigs	Aggregate	50	Gasoline	4.60456E-05	4.23527E-05	5.06703E-05	0.00265042	8.06195E-05	0.031424345	2.16637E-06	1.63681E-06	3.82063E-07	4.74391E-07	1354.15	521.95	4.92	16702.4
Los Angeles (SC)	2023 OFF - ConstMin - Bore/Drill Rigs	Aggregate	100	Gasoline	0.000278149	0.000255841	0.000306086	0.009425365	0.00091681	0.392275252	2.73504E-05	2.06647E-05	3.78993E-06	5.40754E-06	15435.85	2412.65	22.53	212313.2
Los Angeles (SC)	2023 OFF - ConstMin - Bore/Drill Rigs	Aggregate	175	Gasoline	6.30237E-05	5.79692E-05	6.93537E-05	0.004383413	0.000355629	0.135211976	9.69326E-06	7.32379E-06	1.34319E-06	1.88733E-06	5387.4	598.6	5.56	75423.6
Los Angeles (SC)	2023 OFF - ConstMin - Cement and Mortar Mixers	Aggregate	25	Gasoline	0.050923744	0.046839659	0.056038474	1.75809377	0.034764705	3.191852729	0.017903973	0.013527446	9.60402E-05	8.17307E-05	233300.7	601530.95	6532.91	4171038
Los Angeles (SC)	2023 OFF - ConstMin - Cement and Mortar Mixers	Aggregate	25	Diesel	0.00043601	0.000518889	0.000627855	0.003048477	0.003934022	0.533494305	0.000153994	0.000141674	7.99507E-06	4.47268E-06	17779.15	53782.75	179.09	555059.2
Los Angeles (SC)	2023 OFF - ConstMin - Concrete/Industrial Saws	Aggregate	25	Gasoline	0.040030344	0.03681991	0.044050952	1.657249369	0.030592771	2.761963126	0.020329776	0.015360275	7.60053E-05	7.33247E-05	209305.6	261307.15	919.53	2730269
Los Angeles (SC)	2023 OFF - ConstMin - Concrete/Industrial Saws	Aggregate	25	Diesel	1.43988E-05	1.71358E-05	2.07343E-05	7.07691E-05	0.000131024	0.017187205	4.89577E-06	4.50411E-06	2.18073E-07	1.44161E-07	573.05	759.2	1.27	13665.6
Los Angeles (SC)	2023 OFF - ConstMin - Concrete/Industrial Saws	Aggregate	50	Gasoline	0.000807144	0.000742411	0.000888212	0.059979491	0.001300899	0.72108937	4.97112E-05	3.75596E-05	8.76713E-06	1.08483E-05	30966.6	11165.35	18.29	390787.3
Los Angeles (SC)	2023 OFF - ConstMin - Concrete/Industrial Saws	Aggregate	50	Diesel	0.000199536	0.000237464	0.000287332	0.002077435	0.001813851	0.270122693	6.40069E-05	5.88863E-05	3.49201E-06	2.27077E-06	9026.45	6526.2	11.26	215364.6
Los Angeles (SC)	2023 OFF - ConstMin - Concrete/Industrial Saws	Aggregate	100	Gasoline	0.000331705	0.000305103	0.000365022	0.0163479	0.000832708	0.77062344	5.37297E-05	4.05958E-05	7.4453E-06	1.05683E-05	30167.25	6398.45	10.48	422297.7
Los Angeles (SC)	2023 OFF - ConstMin - Cranes	Aggregate	50	Gasoline	0.000211197	0.000194259	0.00023241	0.014580901	0.000299195	0.095273121	6.56804E-06	4.96252E-06	1.15835E-06	1.58045E-06	4511.4	2314.1	5.56	85621.7
Los Angeles (SC)	2023 OFF - ConstMin - Cranes	Aggregate	100	Gasoline	0.000422374	0.0003885	0.000464797	0.0172134	0.001111334	0.376811088	2.62722E-05	1.98501E-05	3.64052E-06	5.37558E-06	15344.6	4631.85	11.16	342756.9
Los Angeles (SC)	2023 OFF - ConstMin - Cranes	Aggregate	175	Gasoline	1.93E-05	1.77521E-05	2.12385E-05	0.00089099	8.19921E-05	0.024761656	1.77515E-06	1.34122E-06	2.45981E-07	3.47801E-07	992.8	178.85	0.46	22356.25
Los Angeles (SC)	2023 OFF - ConstMin - Crushing/Proc. Equipment	Aggregate	25	Gasoline	0.000587734	0.000540598	0.000646765	0.024969116	0.00044528	0.04087376	0.000308381	0.000232999	1.09575E-06	1.09455E-06	3124.4	3146.3	10.9	37029.25
Los Angeles (SC)	2023 OFF - ConstMin - Crushing/Proc. Equipment	Aggregate	100	Gasoline	0.000264318	0.00024312	0.000290866	0.009950637	0.000774967	0.297770205	2.07613E-05	1.56863E-05	2.87688E-06	4.1685E-06	11899	1562.2	6.46	149971.2
Los Angeles (SC)	2023 OFF - ConstMin - Dumpers/Tenders	Aggregate	25	Gasoline	0.004672839	0.004298077	0.005142174	0.17196622	0.003367037	0.300463641	0.001983038	0.001498295	8.56985E-06	7.82041E-06	22323.4	64926.2	435.37	565045.5
Los Angeles (SC)	2023 OFF - ConstMin - Dumpers/Tenders	Aggregate	25	Diesel	4.47016E-05	5.31986E-05	6.43703E-05	0.000219705	0.000406769	0.05335818	1.52298E-05	1.40114E-05	6.77014E-07	4.45339E-07	1770.25	5102.7	7.73	81643.2
Los Angeles (SC)	2023 OFF - ConstMin - Dumpers/Tenders	Aggregate	100	Gasoline	2.37625E-05	2.18568E-05	2.61492E-05	0.00082131	7.67658E-05	0.032298327	2.25192E-06	1.70145E-06	3.12047E-07	4.43702E-07	1266.55	503.7	4.03	33244.2
Los Angeles (SC)	2023 OFF - ConstMin - Excavators	Aggregate	25	Diesel	0.000313358	0.000372922	0.000451235	0.001540126	0.002851445	0.374039978	0.000106545	9.80215E-05	4.74586E-06	3.12839E-06	12435.55	16622.1	11.9	382308.3
Los Angeles (SC)	2023 OFF - ConstMin - Other Construction Equipment	Aggregate	25	Diesel	0.001010424	0.001202488	0.00145501	0.007134862	0.009127246	1.241771572	0.000353718	0.000325421	1.86768E-05	1.04108E-05	41383.7	85942.9	124.45	1167000
Los Angeles (SC)	2023 OFF - ConstMin - Other Construction Equipment	Aggregate	175	Gasoline	0.000309326	0.000284518	0.000340394	0.026347861	0.001020479	0.797585822	5.71784E-05	4.32015E-05	7.92318E-06	1.11348E-05	31784.2	5803.5	15.61	731241
Los Angeles (SC)	2023 OFF - ConstMin - Pavers	Aggregate	25	Diesel	8.48053E-05	0.000100925	0.00012212	0.000416777	0.000771772	0.10121982	2.91001E-05	2.67721E-05	1.28429E-06	8.4844E-07	3372.6	3960.25	4.84	95046
Los Angeles (SC)	2023 OFF - ConstMin - Paving Equipment	Aggregate	25	Gasoline	0.084536067	0.077756274	0.093026785	3.079403365	0.062158771	5.511342308	0.035154961	0.026561526	0.000161795	0.000141835	404868.95	878628	4644.63	7202581
Los Angeles (SC)	2023 OFF - ConstMin - Paving Equipment	Aggregate	25	Diesel	0.00010044	0.000119532	0.000144634	0.000493655	0.000913971	0.119890707	3.41508E-05	3.14187E-05	1.52119E-06	1.0027E-06	3985.8	6938.65	8.37	131834.4
Los Angeles (SC)	2023 OFF - ConstMin - Paving Equipment	Aggregate	50	Gasoline	0.000455191	0.000418685	0.00050091	0.034167884	0.000735251	0.391359765	2.698E-05	2.03849E-05	4.75822E-06	5.92157E-06	16903.15	7573.75	43.27	280228.8
Los Angeles (SC)	2023 OFF - ConstMin - Paving Equipment	Aggregate	100	Gasoline	8.10535E-05	7.4553E-05	8.91944E-05	0.004014166	0.000210801	0.177901657	1.24037E-05	9.37171E-06	1.71878E-06	2.44612E-06	6982.45	1945.45	11.17	128399.7
Los Angeles (SC)	2023 OFF - ConstMin - Plate Compactors	Aggregate	25	Gasoline	0.035646276	0.032787444	0.039226552	1.150660659	0.024544687	2.178811747	0.011905818	0.008995507	6.63455E-05	5.48056E-05	156442.65	497710.35	2567.43	3054568
Los Angeles (SC)	2023 OFF - ConstMin - Plate Compactors	Aggregate	25	Diesel	0.000296759	0.000353168	0.000427333	0.002241535	0.002676122	0.367107938	0.000104571	9.62049E-05	5.71252E-06	3.08065E-06	12245.75	62181.4	103.54	497451.2
Los Angeles (SC)	2023 OFF - ConstMin - Rollers	Aggregate	25	Gasoline	0.018207573	0.016747325	0.020036323	0.751030244	0.013467181	1.238522935	0.00901627	0.006812293	3.33645E-05	3.3059E-05	94367.1	125158.5	502.52	1540388
Los Angeles (SC)	2023 OFF - ConstMin - Rollers	Aggregate	25	Diesel	0.001812017	0.00215645	0.002609304	0.011402579	0.016411295	2.203989997	0.000627806	0.000577581	3.13273E-05	1.846E-05	73379.6	191913.35	275.9	2293116
Los Angeles (SC)	2023 OFF - ConstMin - Rollers	Aggregate	50	Gasoline	0.001023801	0.000941693	0.001126631	0.074948428	0.001326442	0.37612981	2.59301E-05	1.95916E-05	4.57305E-06	6.60311E-06	18848.6	6927.7	11.16	256324.9
Los Angeles (SC)	2023 OFF - ConstMin - Rollers	Aggregate	100	Gasoline	0.001980947	0.001822075	0.002179911	0.085387001	0.00476251	1.417256338	9.88145E-05	7.46599E-05	1.36927E-05	2.06673E-05	58994.95	13023.2	20.96	976740
Los Angeles (SC)	2023 OFF - ConstMin - Rough Terrain Forklifts	Aggregate	50	Gasoline	0.000142832	0.000131377	0.000157178	0.009853919	0.000202552	0.064576	4.45181E-06	3.36359E-06	7.85126E-07	1.06898E-06	3051.4	912.5	2.24	42887.5
Los Angeles (SC)	2023 OFF - ConstMin - Rough Terrain Forklifts	Aggregate	100	Gasoline	0.001833597	0.001686542	0.002017761	0.074674024	0.004829538	1.639735987	0.000114326	8.63799E-05	1.58421E-05	2.33871E-05	66758.5	13088.9	31.69	1112557
Los Angeles (SC)	2023 OFF - ConstMin - Rough Terrain Forklifts	Aggregate	175	Gasoline	7.29254E-05	6.70768E-05	8.025E-05	0.00337326	0.000310207	0.093808597	6.72508E-06	5.08117E-06	9.3189E-07	1.3196E-06	3766.8	463.55	1.11	65824.1
Los Angeles (SC)	2023 OFF - ConstMin - Rubber Tired Loaders	Aggregate	25	Diesel	8.36998E-05	9.96097E-05	0.000120528	0.000411377	0.000761639	0.099908389	2.84589E-05	2.61822E-05	1.26765E-06	8.35585E-07	3321.5	4314.3	4.5	107857.5
Los Angeles (SC)	2023 OFF - ConstMin - Rubber Tired Loaders	Aggregate	50	Gasoline	0.000339967	0.000312702	0.000374113	0.025296387	0.000458421	0.145997852	1.0065E-05	7.60464E-06	1.77507E-06	2.48064E-06	7081	2861.6	5.58	114464
Los Angeles (SC)	2023 OFF - ConstMin - Rubber Tired Loaders	Aggregate	100	Gasoline	0.001996399	0.001836288	0.002196916	0.088749851	0.005019927	1.725362469	0.000120296	9.08906E-05	1.66694E-05	2.48192E-05	70846.5	18969.05	36.97	1365772
Los Angeles (SC)	2023 OFF - ConstMin - Signal Boards	Aggregate	25	Gasoline	0.000909657	0.000836703	0.001001022	0.037412697	0.00072344	0.064003129	0.000464951	0.000351297	1.83979E-06	1.67891E-06	4792.45	8303.75	31.31	64929.85
Los Angeles (SC)	2023 OFF - ConstMin - Signal Boards	Aggregate	25	Diesel	0.004638133	0.005519761	0.006678911	0.035033595	0.041825874	5.7376353	0.001634363	0.001503614	8.92827E-05	4.81279E-05	191311.1	679484	905.19	4076904
Los Angeles (SC)	2023 OFF - ConstMin - Signal Boards	Aggregate	50	Diesel	8.78076E-05	0.000104498	0.000126443	0.000899346	0.00079162	0.119400547	2.77602E-05	2.55394E-05	1.54355E-06	1.00362E-06	3989.45	2401.7	4.51	88862.9
Los Angeles (SC)	2023 OFF - ConstMin - Skid Steer Loaders	Aggregate	25	Gasoline	0.059858353	0.055057713	0.065870466	2.502162943	0.042689179	3.988877173	0.030094917	0.022738382	0.000101234	0.000108272	309063.75	280188.6	877.55	5302924
Los Angeles (SC)	2023 OFF - ConstMin - Skid Steer Loaders	Aggregate	25	Diesel	0.008201173	0.009760073	0.011809689	0.040131048	0.074672851	9.729447156	0.002905202	0.002672786	0.000123448	8.13777E-05	323481.25	515343.5	617.39	10306870
Los Angeles (SC)	2023 OFF - ConstMin - Skid Steer Loaders	Aggregate	50	Gasoline	0.002471907	0.00227366	0.002720183	0.19377932	0.003859677	2.072080954	0.000142847	0.000107929	2.51927E-05	3.16256E-05	90275.45	47190.85	152.11	1510107
Los Angeles (SC)	2023 OFF - ConstMin - Skid Steer Loaders	Aggregate	100	Gasoline	0.001420903	0.001306947	0.001563617	0.074570586	0.003580998	3.064190787	0.000213643	0.000161419	2.96044E-05	4.22323E-05	120552.2	28236.4	91	2258912
Los Angeles (SC)	2023 OFF - ConstMin - Surfacing Equipment	Aggregate	25	Gasoline	0.040704035	0.037439571	0.044792308	1.529737534	0.031523738	2.652058568	0.018568139	0.01402926	7.65688E-05	6.92521E-05	197680.35	536316.4	1253.49	4173297
Los Angeles (SC)	2023 OFF - ConstMin - Tampers/Rammers	Aggregate	25	Gasoline	0.004676397	0.00430135	0.005146089	0.218080133	0.003962478	0.411813276	0.003107011	0.00234752	1.64697E-05	1.0255E-05	29273	136787.4	750.94	577335.1
Los Angeles (SC)	2023 OFF - ConstMin - Tractors/Loaders/Backhoes	Aggregate	25	Diesel	0.001555038	0.001850624	0.002239255	0.007642878	0.014150299	1.85617436	0.000528365	0.000486096	2.35513E-05	1.55235E-05	61706.9	85501.25	90.69	1966529
Los Angeles (SC)	2023 OFF - ConstMin - Tractors/Loaders/Backhoes	Aggregate	100	Gasoline	0.000999731	0.000919552	0.001100143	0.069995466	0.002569509	1.208814497	8.42815E-05	6.36793E-05	1.16788E-05	1.75307E-05	50041.5	17089.3	19.65	1076626
Los Angeles (SC)	2023 OFF - ConstMin - Trenchers	Aggregate	25	Gasoline	0.03687595	0.033918499	0.040579734	1.52493467	0.027619446	2.4797967	0.018709344	0.014135948	6.584E-05	6.66564E-05	190270.85	195720.3	450.58	2897074
Los Angeles (SC)	2023 OFF - ConstMin - Trenchers	Aggregate	25	Diesel	0.000732754	0.000872038	0.001055166	0.003970014	0.006656374	0.880716962	0.000250872	0.000230802	1.16711E-05	7.37243E-06	29305.85	30630.8	49.51	684126.8
Los Angeles (SC)	2023 OFF - ConstMin - Trenchers	Aggregate	50	Gasoline	0.004178338	0.003843236	0.004598006	0.28710177	0.005959078	1.912429366	0.000131841	9.96133E-05	2.32517E-05	3.15463E-05	90049.15	40836.2	101.51	1225086
Los Angeles (SC)	2023 OFF - ConstMin - Trenchers	Aggregate	100	Gasoline	0.001523391	0.001401215	0.001676399	0.061798212	0.004035934	1.38059693	9.62585E-05	7.27287E-05	1.33385E-05	1.96636E-05	56129.7	13552.45	33.65	894461.7
Los Angeles (SC)	2023 OFF - Industrial - Aerial Lifts	Aggregate	25	Gasoline	0.019368033	0.017814717	0.021313339	0.801627722	0.013816554	1.277016731	0.00963472	0.007279566	3.24294E-05	3.46868E-05	99013.55	113482.15	302.34	2140568
Los Angeles (SC)	2023 OFF - Industrial - Aerial Lifts	Aggregate	25	Diesel	0.002078762	0.002473899	0.002993418	0.01191013	0.018856419	2.49506013	0.000736484	0.000677566	3.39938E-05	2.0886E-05	83022.9	180780.85	452.71	3160166
Los Angeles (SC)	2023 OFF - Industrial - Aerial Lifts	Aggregate	25	Nat Gas	0	0	0.001768333	0.47160454	0.012977748	2.775241659	0	0	0	0	185503.95	156975.55	418.24	2961095
Los Angeles (SC)	2023 OFF - Industrial - Aerial Lifts	Aggregate	50	Gasoline	0.005995517	0.005514676	0.0065977	0.494518177	0.009052582	4.684270183	0.000322929	0.000243991	5.69522E-05	7.26956E-05	207509.8	130447.35	361.03	4304763
Los Angeles (SC)	2023 OFF - Industrial - Aerial Lifts	Aggregate	100	Gasoline	0.004727761	0.004348594	0.005202612	0.262900602	0.011945089	9.40364131	0.000655644	0.000495376	9.08523E-05	0.000130333	372037.2	130447.35	361.03	8739972
Los Angeles (SC)	2023 OFF - Industrial - Forklifts	Aggregate	25	Gasoline	0.000571283	0.000525466	0.000628662	0.035323381	0.000481417	0.055839837	2.80864E-05	2.12208E-05	1.41524E-06	1.50757E-06	4303.35	6237.85	6.92	143470.6
Los Angeles (SC)	2023 OFF - Industrial - Forklifts	Aggregate	25	Nat Gas	0	0	8.55174E-05	0.013535506	0.000377938	0.070562969	0	0	0	0	4920.2	5022.4	4.01	115515.2
Los Angeles (SC)	2023 OFF - Industrial - Forklifts	Aggregate	50	Gasoline	0.151950564	0.139764129	0.167212327	17.96508306	0.354340695	63.1196142	0.00435141	0.003287732	0.000767419	0.001218824	3479136.2	2169300.85	1204.13	88941335
Los Angeles (SC)	2023 OFF - Industrial - Forklifts	Aggregate	50	Nat Gas	0	0	0.011860056	1.969377796	0.515046837	122.6943584	0	0	0	0	6536044.05	4895796.1	2717.52	2.01E+08
Los Angeles (SC)	2023 OFF - Industrial - Forklifts	Aggregate	100	Gasoline	0.320734541	0.295011631	0.352948798	30.5546582	1.598756519	373.9324178	0.026071463	0.019698439	0.003612709	0.005608559	16009651.9	7612735.65	4225.65	5.33E+08
Los Angeles (SC)	2023 OFF - Industrial - Forklifts	Aggregate	100	Nat Gas	0	0	0.070350775	33.19939293	3.32969266	735.203045	0	0	0	0	40904659.4	17182718.1	9537.69	1.2E+09
Los Angeles (SC)	2023 OFF - Industrial - Forklifts	Aggregate	175	Gasoline	0.016747368	0.015404229	0.018429457	1.16957809	0.098806922	27.72210067	0.001987379	0.001501575	0.00027539	0.000392599	1120674.1	278224.9	154.43	40620835
Los Angeles (SC)	2023 OFF - Industrial - Forklifts	Aggregate	175	Nat Gas	0	0	0.003227034	1.944855728	0.165634855	56.11560501	0	0	0	0	3070025.95	628807.4	349.03	91805880
Los Angeles (SC)	2023 OFF - Industrial - Other General Industrial Equipment	Aggregate	25	Gasoline	0.015990297	0.014707875	0.017596346	0.979821387	0.012971349	1.620012157	0.000780848	0.000589974	4.49053E-05	4.27553E-05	122045.05	218996.35	564.36	2313158
Los Angeles (SC)	2023 OFF - Industrial - Other General Industrial Equipment	Aggregate	25	Diesel	0.002553495	0.00303887	0.003677033	0.014469258	0.023786521	3.1529374	0.000898113	0.000826264	4.2153E-05	2.6387E-05	104890.05	199921.45	140.18	3602068
Los Angeles (SC)	2023 OFF - Industrial - Other General Industrial Equipment	Aggregate	50	Gasoline	0.004712772	0.004334808	0.005186118	0.453907715	0.010543007	3.153698903	0.000217413	0.000164268	3.83432E-05	5.15014E-05	147011.05	82292.9	115.31	2468787
Los Angeles (SC)	2023 OFF - Industrial - Other General Industrial Equipment	Aggregate	100	Gasoline	0.001457844	0.001340925	0.001604268	0.106527934	0.008689395	2.698459364	0.000188143	0.000142153	2.60709E-05	3.80523E-05	108620.35	27042.85	37.9	2136385
Los Angeles (SC)	2023 OFF - Industrial - Other General Industrial Equipment	Aggregate	175	Gasoline	0.000204615	0.000188205	0.000225166	0.01975866	0.001749068	0.559390801	4.01024E-05	3.02996E-05	5.55696E-06	7.83576E-06	22367.2	2617.05	3.68	455366.7
Los Angeles (SC)	2023 OFF - Industrial - Other Material Handling Equipment	Aggregate	50	Gasoline	6.46109E-05	5.94291E-05	7.11004E-05	0.00499799	0.000129812	0.032369517	2.23153E-06	1.68604E-06	3.93554E-07	5.34489E-07	1525.7	638.75	1.61	26188.75
Los Angeles (SC)	2023 OFF - Industrial - Other Material Handling Equipment	Aggregate	100	Gasoline	0.00171887	0.001581017	0.001891512	0.083447506	0.007682386	1.865317296	0.000130054	9.82633E-05	1.80216E-05	2.65493E-05	75784.95	27860.45	72.11	1504464
Los Angeles (SC)	2023 OFF - Industrial - Sweepers/Scrubbers	Aggregate	25	Gasoline	0.012204682	0.011225867	0.013430508	0.787506396	0.009984286	1.277806728	0.000597213	0.000451228	3.36525E-05	3.40027E-05	97060.8	107255.25	396.91	1387694
Los Angeles (SC)	2023 OFF - Industrial - Sweepers/Scrubbers	Aggregate	25	Diesel	0.000508528	0.00060519	0.00073228	0.003121845	0.004806023	0.641048333	0.000182602	0.000167994	8.83051E-06	5.36519E-06	21326.95	29692.75	45.65	549332.3
Los Angeles (SC)	2023 OFF - Industrial - Sweepers/Scrubbers	Aggregate	50	Gasoline	0.013056339	0.012009221	0.014367705	1.132695473	0.02858696	10.19371686	0.000702746	0.000530963	0.000123937	0.000159375	454936	173400.55	335.76	6069019
Los Angeles (SC)	2023 OFF - Industrial - Sweepers/Scrubbers	Aggregate	100	Gasoline	0.007619764	0.007008659	0.008385086	0.484279495	0.048583203	16.35038182	0.001139988	0.000861324	0.000157968	0.000227146	648389.65	144791.85	280.36	9845846
Los Angeles (SC)	2023 OFF - Industrial - Sweepers/Scrubbers	Aggregate	175	Gasoline	5.90049E-05	5.42727E-05	6.49313E-05	0.006430869	0.000575858	0.190342726	1.36455E-05	1.031E-05	1.89086E-06	2.65966E-06	7592	839.5	1.62	117530
Los Angeles (SC)	2023 OFF - Light Commercial - Air Compressors	Aggregate	25	Gasoline	0.123226834	0.113344041	0.135603613	2.843835169	0.07393498	6.243772506	0.023779933	0.01796706	0.000195026	0.000148786	424710.35	1394854.8	2885.44	8596969
Los Angeles (SC)	2023 OFF - Light Commercial - Air Compressors	Aggregate	25	Diesel	0.000541495	0.000644424	0.000779753	0.002824891	0.004757355	0.608361455	0.000203772	0.00018747	8.0712E-06	5.09615E-06	20257.5	36978.15	45.43	738643.2
Los Angeles (SC)	2023 OFF - Light Commercial - Air Compressors	Aggregate	50	Gasoline	0.00636429	0.005853874	0.007003513	0.462789031	0.008490098	2.679624645	0.000184731	0.000139574	3.25793E-05	4.54968E-05	129870.65	57801.4	119.55	2023049
Los Angeles (SC)	2023 OFF - Light Commercial - Air Compressors	Aggregate	50	Diesel	0.006553225	0.00779888	0.009436644	0.059649851	0.048112543	6.805159642	0.00197376	0.001815859	8.79737E-05	5.73661E-05	228033.75	223248.6	274.28	8260198
Los Angeles (SC)	2023 OFF - Light Commercial - Air Compressors	Aggregate	100	Gasoline	0.020527329	0.018881037	0.022589073	0.885714661	0.051603035	17.18291839	0.001198034	0.000905182	0.000166011	0.000247252	705782.25	187401.95	387.67	13118137
Los Angeles (SC)	2023 OFF - Light Commercial - Air Compressors	Aggregate	175	Gasoline	0.001841148	0.001693488	0.002026071	0.079384434	0.007196863	2.152046084	0.000154279	0.000116566	2.13783E-05	3.02689E-05	86402.8	12607.1	26.1	1689351
Los Angeles (SC)	2023 OFF - Light Commercial - Gas Compressors	Aggregate	50	Nat Gas	0	0	0.000398503	0.07058645	0.01447035	4.806896	0	0	0	0	255405.1	74708.2	8.79	2390662
Los Angeles (SC)	2023 OFF - Light Commercial - Gas Compressors	Aggregate	100	Nat Gas	0	0	0.002173067	1.1287888	0.0856242	27.01227	0	0	0	0	1494685.95	154391.35	18.17	13586439
Los Angeles (SC)	2023 OFF - Light Commercial - Gas Compressors	Aggregate	175	Nat Gas	0	0	0.000606056	0.22962932	0.022912632	7.0300331	0	0	0	0	383855.9	24903.95	2.93	3635977
Los Angeles (SC)	2023 OFF - Light Commercial - Gas Compressors	Aggregate	300	Nat Gas	0	0	0.000466253	0.26423102	0.0221668	7.2453534	0	0	0	0	397550.7	19921.7	2.35	4183557
Los Angeles (SC)	2023 OFF - Light Commercial - Gas Compressors	Aggregate	600	Nat Gas	0	0	0.00065664	0.37212541	0.031218244	10.203874	0	0	0	0	559880.8	17432.4	2.06	5892151
Los Angeles (SC)	2023 OFF - Light Commercial - Generator Sets	Aggregate	25	Gasoline	0.906273374	0.833590249	0.997298565	48.91308052	0.646364567	82.37363983	0.054556521	0.041220483	0.002256382	0.002160224	6166368.4	8707932.75	75788.93	93403861
Los Angeles (SC)	2023 OFF - Light Commercial - Generator Sets	Aggregate	25	Diesel	0.012984204	0.015452276	0.018697254	0.081248988	0.123699711	15.90864467	0.005211579	0.004794652	0.000222043	0.000133245	529655.15	871098.05	2580.4	12525964
Los Angeles (SC)	2023 OFF - Light Commercial - Generator Sets	Aggregate	50	Gasoline	0.032104247	0.029529487	0.035328766	2.037866545	0.067176913	23.26032046	0.001603546	0.001211568	0.000282803	0.000352412	1005961.9	451880.95	3934.19	14460190
Los Angeles (SC)	2023 OFF - Light Commercial - Generator Sets	Aggregate	50	Diesel	0.012475526	0.014846906	0.017964757	0.128122018	0.12338471	18.83505951	0.004329667	0.003983294	0.00024349	0.000158022	628146.75	449395.3	1331.24	14830045
Los Angeles (SC)	2023 OFF - Light Commercial - Generator Sets	Aggregate	100	Gasoline	0.007213958	0.006635398	0.00793852	0.282560276	0.040919244	11.52107538	0.000803277	0.00060692	0.00011131	0.000158935	453680.4	87267.85	759.83	7243232
Los Angeles (SC)	2023 OFF - Light Commercial - Generator Sets	Aggregate	100	Nat Gas	0	0	3.40217E-05	0.023487088	0.002530062	0.74698401	0	0	0	0	40650.05	6497	56.56	539251
Los Angeles (SC)	2023 OFF - Light Commercial - Generator Sets	Aggregate	175	Gasoline	0.000713274	0.000656069	0.000784914	0.06047408	0.007143907	1.862297478	0.000133507	0.000100872	1.85E-05	2.59751E-05	74146.1	8245.35	71.8	1203821
Los Angeles (SC)	2023 OFF - Light Commercial - Generator Sets	Aggregate	175	Nat Gas	0	0	3.77833E-05	0.028143121	0.003486141	1.089303153	0	0	0	0	58761.35	5391.05	46.87	787093.3
Los Angeles (SC)	2023 OFF - Light Commercial - Pressure Washers	Aggregate	25	Gasoline	0.097010707	0.089230448	0.106754365	3.559891521	0.05013938	6.938323228	0.009618564	0.007267359	0.000207826	0.00017144	489377.4	909036.15	7911.82	6293837
Los Angeles (SC)	2023 OFF - Light Commercial - Pressure Washers	Aggregate	25	Diesel	7.06227E-05	8.40469E-05	0.000101697	0.000511734	0.000694423	0.089868994	2.96423E-05	2.72709E-05	1.33285E-06	7.53863E-07	2996.65	12340.65	85.26	174422.6
Los Angeles (SC)	2023 OFF - Light Commercial - Pressure Washers	Aggregate	50	Gasoline	0.000282855	0.00026017	0.000311265	0.01901287	0.000476316	0.235509457	1.62358E-05	1.22671E-05	2.86337E-06	3.533E-06	10084.95	4040.55	35.17	117176
Los Angeles (SC)	2023 OFF - Light Commercial - Pressure Washers	Aggregate	50	Diesel	4.22245E-05	5.02506E-05	6.08033E-05	0.000523371	0.000569106	0.090502641	1.6922E-05	1.55682E-05	1.16997E-06	7.53863E-07	2996.65	4635.5	31.93	176149
Los Angeles (SC)	2023 OFF - Light Commercial - Pumps	Aggregate	25	Gasoline	0.305403233	0.280909894	0.336077628	10.31724347	0.210004325	19.16506426	0.119113999	0.089997244	0.000584371	0.000485712	1386467.1	3859688.85	17488.35	21416266
Los Angeles (SC)	2023 OFF - Light Commercial - Pumps	Aggregate	25	Diesel	0.007156651	0.008517006	0.010305578	0.043581861	0.063483782	8.166998064	0.002784139	0.002561408	0.000116775	6.845E-05	272092.9	585142.45	1453.71	6430763
Los Angeles (SC)	2023 OFF - Light Commercial - Pumps	Aggregate	50	Gasoline	0.004866527	0.004476232	0.005355316	0.361261507	0.007646582	3.511681616	0.000242092	0.000182914	4.26956E-05	5.43209E-05	155059.3	69404.75	314.4	2151547
Los Angeles (SC)	2023 OFF - Light Commercial - Pumps	Aggregate	50	Diesel	0.008026734	0.009552477	0.011558497	0.078767435	0.073189003	11.02389754	0.002692915	0.002477482	0.000142511	9.25755E-05	367993	234581.85	582.85	8679528
Los Angeles (SC)	2023 OFF - Light Commercial - Pumps	Aggregate	100	Gasoline	0.007843442	0.007214398	0.00863123	0.369228775	0.021544204	13.2028856	0.000920537	0.000695517	0.000127558	0.00018306	522544.95	87968.65	398.51	8181084
Los Angeles (SC)	2023 OFF - Light Commercial - Pumps	Aggregate	175	Gasoline	0.000275448	0.000253357	0.000303113	0.01999856	0.001077229	0.59939224	4.297E-05	3.24662E-05	5.95433E-06	8.3728E-06	23900.2	2649.9	11.98	381585.6
Los Angeles (SC)	2023 OFF - Light Commercial - Welders	Aggregate	25	Gasoline	0.298577902	0.274631954	0.328566768	12.43069301	0.216994982	19.97947258	0.150739293	0.113891911	0.000515983	0.000540132	1541807.45	1924013.55	9261.49	30206615
Los Angeles (SC)	2023 OFF - Light Commercial - Welders	Aggregate	25	Diesel	0.006339751	0.007544827	0.009129241	0.03587334	0.055971158	7.179363376	0.002426518	0.002232397	9.90243E-05	6.0141E-05	239064.05	611046.5	951.43	9295933
Los Angeles (SC)	2023 OFF - Light Commercial - Welders	Aggregate	50	Gasoline	0.011920107	0.010964115	0.013117351	0.762599534	0.018853342	7.04604717	0.000485748	0.00036701	8.56671E-05	0.000109899	313706.55	129786.7	624.74	5840402
Los Angeles (SC)	2023 OFF - Light Commercial - Welders	Aggregate	50	Diesel	0.027964873	0.03328051	0.040269417	0.256494553	0.216448253	31.27544006	0.00874387	0.00804436	0.000404313	0.000263328	1046743.35	880328.9	1370.81	40495129
Los Angeles (SC)	2023 OFF - Light Commercial - Welders	Aggregate	100	Gasoline	0.009120723	0.008389241	0.010036799	0.346391503	0.026933864	11.06104314	0.000771202	0.000582686	0.000106865	0.000154279	440390.75	132465.8	637.62	9272606
Los Angeles (SC)	2023 OFF - Light Commercial - Welders	Aggregate	175	Gasoline	0.000776813	0.000714513	0.000854836	0.046225756	0.003755395	1.377182406	9.87293E-05	7.45955E-05	1.36809E-05	1.92531E-05	54958.05	9125	43.97	1186250
Los Angeles (SC)	2023 OFF - Military - A/C unit	Aggregate	100	Diesel	5.74218E-05	6.83367E-05	8.26874E-05	0.001015084	0.000763507	0.173547775	3.5987E-05	3.31081E-05	2.0358E-06	1.44988E-06	5763.35	1660.75	5.54	167735.8
Los Angeles (SC)	2023 OFF - Military - A/C unit	Aggregate	300	Diesel	2.94731E-05	3.50754E-05	4.24413E-05	0.000263287	0.0003594	0.149208047	1.05855E-05	9.73863E-06	1.67885E-06	1.23869E-06	4923.85	697.15	2.31	145007.2
Los Angeles (SC)	2023 OFF - Military - A/C unit	Aggregate	600	Diesel	1.7056E-05	2.0298E-05	2.45606E-05	0.000154755	0.000199624	0.089334645	6.15666E-06	5.66413E-06	8.76849E-07	7.39171E-07	2938.25	273.75	0.9	86231.25
Los Angeles (SC)	2023 OFF - Military - Aircraft Support	Aggregate	100	Diesel	1.05096E-05	1.25073E-05	1.51338E-05	0.000185785	0.00013974	0.031763429	6.5865E-06	6.05958E-06	3.72601E-07	2.68122E-07	1065.8	456.25	1.49	31025
Los Angeles (SC)	2023 OFF - Military - Aircraft Support	Aggregate	175	Diesel	2.34581E-05	2.79171E-05	3.37797E-05	0.000478001	0.000273821	0.093421848	1.18732E-05	1.09234E-05	1.05116E-06	7.79573E-07	3098.85	649.7	2.16	90958
Los Angeles (SC)	2023 OFF - Military - Cart	Aggregate	100	Diesel	5.36518E-06	6.38501E-06	7.72586E-06	9.48439E-05	7.1338E-05	0.016215364	3.36243E-06	3.09344E-06	1.90215E-07	1.34979E-07	536.55	189.8	0.65	15373.8
Los Angeles (SC)	2023 OFF - Military - Cart	Aggregate	175	Diesel	1.92273E-06	2.2882E-06	2.76873E-06	3.9179E-05	2.24436E-05	0.007657255	9.7318E-07	8.95326E-07	8.61573E-08	6.33575E-08	251.85	58.4	0.16	8935.2
Los Angeles (SC)	2023 OFF - Military - Cart	Aggregate	300	Diesel	6.49173E-06	7.72569E-06	9.34809E-06	5.79914E-05	7.91613E-05	0.032864472	2.33155E-06	2.14503E-06	3.69782E-07	2.72713E-07	1084.05	160.6	0.52	31638.2
Los Angeles (SC)	2023 OFF - Military - Communications	Aggregate	50	Diesel	1.58744E-06	1.88919E-06	2.28592E-06	1.75195E-05	1.7437E-05	0.002669196	5.82911E-07	5.36278E-07	3.4506E-08	1.65281E-08	65.7	58.4	0.17	2336
Los Angeles (SC)	2023 OFF - Military - Communications	Aggregate	100	Diesel	2.64947E-06	3.15309E-06	3.81524E-06	4.68365E-05	3.52286E-05	0.008007587	1.66046E-06	1.52762E-06	9.39331E-08	6.61122E-08	262.8	87.6	0.32	7008
Los Angeles (SC)	2023 OFF - Military - Compressor (Military)	Aggregate	50	Diesel	1.94462E-06	2.31425E-06	2.80025E-06	2.14614E-05	2.13603E-05	0.003269765	7.14066E-07	6.56941E-07	4.22699E-08	2.66285E-08	105.85	58.4	0.17	2861.6
Los Angeles (SC)	2023 OFF - Military - Compressor (Military)	Aggregate	100	Diesel	5.91771E-05	7.04256E-05	8.5215E-05	0.001046113	0.000786846	0.178852814	3.70871E-05	3.41201E-05	2.09804E-06	1.49763E-06	5953.15	2441.85	8.13	173371.3
Los Angeles (SC)	2023 OFF - Military - Compressor (Military)	Aggregate	175	Diesel	2.79822E-06	3.33011E-06	4.02943E-06	5.70186E-05	3.2663E-05	0.011143892	1.41631E-06	1.303E-06	1.25388E-07	9.18225E-08	365	58.4	0.17	9752.8
Los Angeles (SC)	2023 OFF - Military - Compressor (Military)	Aggregate	300	Diesel	5.8788E-06	6.99626E-06	8.46547E-06	5.25161E-05	7.16872E-05	0.029761533	2.11141E-06	1.9425E-06	3.34868E-07	2.45166E-07	974.55	124.1	0.42	27674.3
Los Angeles (SC)	2023 OFF - Military - Compressor (Military)	Aggregate	600	Diesel	3.32648E-05	3.95878E-05	4.79013E-05	0.000301823	0.000389331	0.174231752	1.20075E-05	1.10469E-05	1.71014E-06	1.44529E-06	5745.1	456.25	1.49	170181.2
Los Angeles (SC)	2023 OFF - Military - Crane	Aggregate	100	Diesel	4.3658E-06	5.19566E-06	6.28675E-06	0.000157218	7.51725E-05	0.028026556	9.88957E-07	9.0984E-07	3.28766E-07	2.31393E-07	919.8	255.5	0.85	26827.5
Los Angeles (SC)	2023 OFF - Military - Crane	Aggregate	175	Diesel	8.36543E-07	9.95556E-07	1.20462E-06	3.50341E-05	6.46393E-06	0.007056686	1.95886E-07	1.80215E-07	7.93998E-08	5.96846E-08	237.25	32.85	0.16	4631.85
Los Angeles (SC)	2023 OFF - Military - Crane	Aggregate	300	Diesel	7.97226E-07	9.48765E-07	1.14801E-06	1.2078E-05	4.99496E-06	0.007140098	1.52045E-07	1.39882E-07	8.03384E-08	5.96846E-08	237.25	32.85	0.09	7029.9
Los Angeles (SC)	2023 OFF - Military - Deicer	Aggregate	100	Diesel	2.42868E-06	2.89033E-06	3.4973E-06	4.29335E-05	3.22929E-05	0.007340288	1.52209E-06	1.40032E-06	8.61053E-08	6.24393E-08	248.2	58.4	0.17	6424
Los Angeles (SC)	2023 OFF - Military - Generator (Military)	Aggregate	50	Diesel	1.01795E-05	1.21144E-05	1.46584E-05	0.000112344	0.000111815	0.017116216	3.73792E-06	3.43888E-06	2.2127E-07	1.44161E-07	573.05	434.35	1.45	16505.3
Los Angeles (SC)	2023 OFF - Military - Generator (Military)	Aggregate	100	Diesel	0.000307869	0.000366389	0.000443331	0.005442402	0.004093568	0.930481602	0.000192946	0.00017751	1.0915E-05	7.77737E-06	30915.5	10891.6	36.23	904002.8
Los Angeles (SC)	2023 OFF - Military - Generator (Military)	Aggregate	175	Diesel	0.000333134	0.000396458	0.000479714	0.006788206	0.003888604	1.326707102	0.000168615	0.000155125	1.49277E-05	1.10747E-05	44022.65	8770.95	29.16	1289330
Los Angeles (SC)	2023 OFF - Military - Generator (Military)	Aggregate	300	Diesel	0.000105084	0.000125058	0.00015132	0.000938725	0.001281408	0.531987358	3.77415E-05	3.47222E-05	5.98577E-06	4.4185E-06	17563.8	2314.1	7.7	516044.3
Los Angeles (SC)	2023 OFF - Military - Generator (Military)	Aggregate	600	Diesel	6.42873E-05	7.65071E-05	9.25736E-05	0.000583302	0.000752419	0.336719021	2.32056E-05	2.13492E-05	3.30501E-06	2.79508E-06	11110.6	938.05	3.12	326441.4
Los Angeles (SC)	2023 OFF - Military - Generator (Military)	Aggregate	750	Diesel	3.43362E-06	4.08629E-06	4.94441E-06	3.08604E-05	4.05613E-05	0.01781458	1.2405E-06	1.14126E-06	1.79121E-07	1.47834E-07	587.65	25.55	0.14	13669.25
Los Angeles (SC)	2023 OFF - Military - Hydraulic unit	Aggregate	100	Diesel	3.51331E-05	4.18113E-05	5.05917E-05	0.000621072	0.000467147	0.106183948	2.20184E-05	2.02569E-05	1.24559E-06	8.86087E-07	3522.25	1084.05	3.61	102984.8
Los Angeles (SC)	2023 OFF - Military - Lift (Military)	Aggregate	100	Diesel	1.04875E-06	1.2481E-06	1.5102E-06	1.85394E-05	1.39447E-05	0.00316967	6.57266E-07	6.04685E-07	3.71819E-08	2.57103E-08	102.2	25.55	0.14	2427.25
Los Angeles (SC)	2023 OFF - Military - Light	Aggregate	50	Diesel	2.48038E-06	2.95185E-06	3.57174E-06	2.73743E-05	2.72453E-05	0.004170618	9.10799E-07	8.37935E-07	5.39157E-08	3.21379E-08	127.75	62.05	0.25	3102.5
Los Angeles (SC)	2023 OFF - Military - Other tactical support equipment	Aggregate	50	Diesel	4.96075E-07	5.90371E-07	7.14349E-07	5.47486E-06	5.44906E-06	0.000834124	1.8216E-07	1.67587E-07	1.07831E-08	0	0	0	0	0
Los Angeles (SC)	2023 OFF - Military - Other tactical support equipment	Aggregate	100	Diesel	6.97694E-06	8.30314E-06	1.00468E-05	0.000123336	9.27688E-05	0.021086646	4.37255E-06	4.02274E-06	2.47357E-07	1.76299E-07	700.8	255.5	0.85	20184.5
Los Angeles (SC)	2023 OFF - Military - Other tactical support equipment	Aggregate	175	Diesel	9.91943E-06	1.18049E-05	1.4284E-05	0.000202126	0.000115787	0.039504095	5.02068E-06	4.61902E-06	4.44489E-07	3.30561E-07	1314	255.5	0.85	37814
Los Angeles (SC)	2023 OFF - Military - Other tactical support equipment	Aggregate	300	Diesel	4.31024E-06	5.12955E-06	6.20675E-06	3.85039E-05	5.25599E-05	0.021820674	1.54805E-06	1.42421E-06	2.4552E-07	1.8089E-07	719.05	87.6	0.32	19096.8
Los Angeles (SC)	2023 OFF - Military - Other tactical support equipment	Aggregate	600	Diesel	1.71993E-06	2.04686E-06	2.4767E-06	1.56056E-05	2.01301E-05	0.009008536	6.2084E-07	5.71172E-07	8.84217E-08	7.43763E-08	295.65	25.55	0.14	6898.5
Los Angeles (SC)	2023 OFF - Military - Other tactical support equipment	Aggregate	750	Diesel	2.01285E-06	2.39546E-06	2.8985E-06	1.80909E-05	2.37778E-05	0.010443228	7.27205E-07	6.69029E-07	1.05004E-07	8.63132E-08	343.1	0	0	0
Los Angeles (SC)	2023 OFF - Military - Pressure Washers	Aggregate	175	Diesel	1.91016E-06	2.27325E-06	2.75063E-06	3.89229E-05	2.22969E-05	0.007607208	9.66819E-07	8.89474E-07	8.55941E-08	6.33575E-08	251.85	58.4	0.16	8876.8
Los Angeles (SC)	2023 OFF - Military - Pump (Military)	Aggregate	50	Diesel	2.24424E-05	2.67084E-05	3.23171E-05	0.000247683	0.000246515	0.037735756	8.24091E-06	7.58163E-06	4.87829E-07	3.17706E-07	1262.9	938.05	3.12	36583.95
Los Angeles (SC)	2023 OFF - Military - Pump (Military)	Aggregate	100	Diesel	2.48388E-05	2.95602E-05	3.57679E-05	0.000439092	0.000330269	0.075071131	1.55668E-05	1.43215E-05	8.80623E-07	6.27148E-07	2492.95	730	2.43	73000
Los Angeles (SC)	2023 OFF - Military - Start Cart	Aggregate	100	Diesel	5.51973E-07	6.56894E-07	7.94842E-07	9.7576E-06	7.3393E-06	0.001668247	3.45929E-07	3.18255E-07	1.95694E-08	1.46916E-08	58.4	0	0	0
Los Angeles (SC)	2023 OFF - Military - Start Cart	Aggregate	600	Diesel	9.01372E-07	1.07271E-06	1.29798E-06	8.17847E-06	1.05497E-05	0.00472114	3.25366E-07	2.99337E-07	4.63395E-08	3.76472E-08	149.65	0	0	0
Los Angeles (SC)	2023 OFF - Military - Test Stand	Aggregate	100	Diesel	1.67579E-05	1.99433E-05	2.41314E-05	0.000296241	0.000222821	0.050647989	1.05024E-05	9.66222E-06	5.94127E-07	4.23302E-07	1682.65	532.9	1.78	49026.8
Los Angeles (SC)	2023 OFF - Military - Test Stand	Aggregate	175	Diesel	1.18966E-06	1.4158E-06	1.71311E-06	2.42415E-05	1.38867E-05	0.004737822	6.02142E-07	5.53971E-07	5.33086E-08	3.85655E-08	153.3	25.55	0.14	3628.1
Los Angeles (SC)	2023 OFF - Military - Test Stand	Aggregate	300	Diesel	2.01244E-05	2.39496E-05	2.89791E-05	0.000179773	0.0002454	0.101879869	7.2278E-06	6.64958E-06	1.14632E-06	8.47522E-07	3368.95	500.05	1.67	98509.85
Los Angeles (SC)	2023 OFF - Military - Test Stand	Aggregate	600	Diesel	1.31097E-05	1.56016E-05	1.8878E-05	0.000118949	0.000153436	0.06866506	4.73218E-06	4.3536E-06	6.7397E-07	5.71136E-07	2270.3	189.8	0.65	65101.4
Los Angeles (SC)	2023 OFF - Military - Welder	Aggregate	50	Diesel	7.29231E-06	8.67845E-06	1.05009E-05	8.04804E-05	8.01011E-05	0.012261618	2.67775E-06	2.46353E-06	1.58512E-07	1.02841E-07	408.8	335.8	1.13	11753
Los Angeles (SC)	2023 OFF - Military - Welder	Aggregate	100	Diesel	1.9849E-05	2.36219E-05	2.85825E-05	0.000350883	0.000263921	0.059990171	1.24396E-05	1.14445E-05	7.03716E-07	5.02269E-07	1996.55	938.05	3.12	58159.1
Los Angeles (SC)	2023 OFF - Oil Drilling - Compressors (Workover)	Aggregate	25	Diesel	2.74854E-06	3.27099E-06	3.9579E-06	1.35434E-05	2.50254E-05	0.003199756	1.02999E-06	9.47587E-07	4.05988E-08	2.57103E-08	102.2	160.6	0.16	3854.4
Los Angeles (SC)	2023 OFF - Oil Drilling - Generator (Drilling)	Aggregate	50	Diesel	2.12962E-06	2.53442E-06	3.06665E-06	1.98073E-05	1.51384E-05	0.002074605	6.10017E-07	5.61216E-07	2.68195E-08	1.46916E-08	58.4	58.4	0	1927.2
Los Angeles (SC)	2023 Oil Drilling - Drill Rig (Mobile)	Aggregate	25	Diesel	1.00523E-06	1.21633E-06	1.44753E-06	1.60269E-05	1.0196E-05	0.001848787	5.44692E-08	5.01116E-08	1.70628E-08	1.50896E-08	59.98186794	82.99293074	0.052065829	2074.823
Los Angeles (SC)	2023 Oil Drilling - Drill Rig (Mobile)	Aggregate	50	Diesel	5.08264E-05	6.14999E-05	7.319E-05	0.000231037	0.000164942	0.017950726	1.67709E-05	1.54292E-05	1.64439E-07	1.46511E-07	582.3915438	477.5998455	0.416526629	20244.96
Los Angeles (SC)	2023 Oil Drilling - Drill Rig (Mobile)	Aggregate	75	Diesel	4.52473E-06	5.47493E-06	6.51562E-06	4.07277E-05	5.15744E-05	0.004968028	3.7696E-06	3.46803E-06	4.57961E-08	4.05484E-08	161.1822005	93.77055726	0.156197486	6199.218
Los Angeles (SC)	2023 Oil Drilling - Drill Rig (Mobile)	Aggregate	100	Diesel	2.72048E-05	3.29178E-05	3.91749E-05	0.00041176	0.000312761	0.056553404	1.70183E-05	1.56568E-05	5.22048E-07	4.61581E-07	1834.812908	813.1641106	0.624789943	70734.81
Los Angeles (SC)	2023 Oil Drilling - Drill Rig (Mobile)	Aggregate	175	Diesel	0.000203409	0.000246125	0.000292909	0.002914507	0.001668743	0.443074971	0.000103147	9.48955E-05	4.09035E-06	3.61632E-06	14375.07946	3845.946559	3.176015543	551509.1
Los Angeles (SC)	2023 Oil Drilling - Drill Rig (Mobile)	Aggregate	300	Diesel	0.00020301	0.000245643	0.000292335	0.001352403	0.002045778	0.605870993	6.47029E-05	5.95267E-05	5.59549E-06	4.94504E-06	19656.81712	3237.505286	2.499159771	753864.4
Los Angeles (SC)	2023 Oil Drilling - Drill Rig (Mobile)	Aggregate	600	Diesel	0.000286947	0.000347206	0.000413204	0.001826616	0.003269646	0.844152593	0.000106715	9.81774E-05	7.796E-06	6.88986E-06	27387.6012	2406.06607	1.770238171	1047390
Los Angeles (SC)	2023 Oil Drilling - Drill Rig (Mobile)	Aggregate	750	Diesel	8.32758E-05	0.000100764	0.000119917	0.000411966	0.000796386	0.191081629	3.32583E-05	3.05976E-05	1.76415E-06	1.55958E-06	6199.433027	372.6872009	0.260329143	237605.5
Los Angeles (SC)	2023 Oil Drilling - Drill Rig (Mobile)	Aggregate	9999	Diesel	7.05478E-05	8.53628E-05	0.000101589	0.000335211	0.001405426	0.160004824	3.55087E-05	3.2668E-05	1.47721E-06	1.30594E-06	5191.180302	259.6002213	0.156197486	199652.3
Los Angeles (SC)	2023 Oil Drilling - Workover Rig (Mobile)	Aggregate	25	Diesel	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Los Angeles (SC)	2023 Oil Drilling - Workover Rig (Mobile)	Aggregate	75	Diesel	5.52392E-07	6.68394E-07	7.95444E-07	5.03799E-06	7.18548E-06	0.000642616	5.30038E-07	4.87635E-07	5.92473E-09	5.24495E-09	20.84897308	10.83726027	0.054186301	801.9573
Los Angeles (SC)	2023 Oil Drilling - Workover Rig (Mobile)	Aggregate	175	Diesel	8.22534E-06	9.95266E-06	1.18445E-05	9.97324E-05	8.22011E-05	0.014805731	5.93356E-06	5.45888E-06	1.3664E-07	1.20842E-07	480.3556365	108.8602795	0.108372603	18477.8
Los Angeles (SC)	2023 Oil Drilling - Workover Rig (Mobile)	Aggregate	300	Diesel	8.60768E-05	0.000104153	0.000123951	0.0004909	0.000737785	0.209200472	2.67692E-05	2.46276E-05	1.93158E-06	1.70747E-06	6787.278923	1188.576521	2.113265753	257998.5
Los Angeles (SC)	2023 Oil Drilling - Workover Rig (Mobile)	Aggregate	600	Diesel	0.00356182	0.004309802	0.00512902	0.025819055	0.028550523	12.55021037	0.000930735	0.000856276	0.000115926	0.000102433	407177.754	40129.12851	28.82711233	15667168
Los Angeles (SC)	2023 Oil Drilling - Workover Rig (Mobile)	Aggregate	750	Diesel	0.000222175	0.000268832	0.000319932	0.000937318	0.003298479	0.438870019	0.000106299	9.77947E-05	4.05091E-06	3.582E-06	14238.65443	874.2417863	0.541863014	545995.5
Los Angeles (SC)	2023 Portable Equipment - Non-Rental Compressor	Aggregate	50	Diesel	1.74613E-05	2.11282E-05	2.51443E-05	0.000374203	0.00036773	0.059818996	1.12802E-05	1.03777E-05	5.52532E-07	4.88235E-07	1940.761454	2680.976163	6.591184289	111568.2
Los Angeles (SC)	2023 Portable Equipment - Non-Rental Compressor	Aggregate	75	Diesel	0.000200031	0.000242037	0.000288044	0.00421678	0.00325001	0.645251511	5.14278E-05	4.73136E-05	5.95967E-06	5.26646E-06	20934.47467	20554.15058	50.53241289	1337902
Los Angeles (SC)	2023 Portable Equipment - Non-Rental Compressor	Aggregate	100	Diesel	0.00046542	0.000563158	0.000670205	0.013840126	0.007169406	2.072350294	0.000519885	0.000478294	1.91459E-05	1.69142E-05	67235.123	51653.47408	126.9901506	4296933
Los Angeles (SC)	2023 Portable Equipment - Non-Rental Compressor	Aggregate	175	Diesel	0.000637763	0.000771693	0.000918379	0.024050936	0.007929358	4.347297016	0.000305638	0.000281187	4.01738E-05	3.54821E-05	141043.264	66845.67233	164.340195	9013941
Los Angeles (SC)	2023 Portable Equipment - Non-Rental Compressor	Aggregate	300	Diesel	0.000425268	0.000514574	0.000612386	0.004960434	0.004614735	2.607335629	0.000176414	0.000162301	2.40934E-05	2.12807E-05	84592.13302	19481.76012	47.89593917	5406203
Los Angeles (SC)	2023 Portable Equipment - Non-Rental Compressor	Aggregate	600	Diesel	0.000628493	0.000760476	0.000905029	0.006827504	0.006667303	3.568188728	0.000256669	0.000236136	3.29708E-05	2.91231E-05	115765.9536	15549.66175	38.22886888	7398492
Los Angeles (SC)	2023 Portable Equipment - Non-Rental Compressor	Aggregate	750	Diesel	0.000269269	0.000325816	0.000387748	0.002223767	0.004789083	1.168309015	0.000151994	0.000139834	1.07935E-05	9.53558E-06	37904.49932	3574.634884	8.788245719	2422440
Los Angeles (SC)	2023 Portable Equipment - Non-Rental Compressor	Aggregate	9999	Diesel	1.17509E-05	1.42185E-05	1.69212E-05	0.000146587	0.000236929	0.075984705	2.75388E-06	2.53357E-06	7.02164E-07	6.20177E-07	2465.240068	178.7317442	0.439412286	157551.1
Los Angeles (SC)	2023 Portable Equipment - Non-Rental Generator	Aggregate	50	Diesel	9.08253E-05	0.000109899	0.000130788	0.001356579	0.000918445	0.140584961	2.6565E-05	2.44398E-05	1.29705E-06	1.14744E-06	4561.124223	5366.658322	3.954710574	262204.5
Los Angeles (SC)	2023 Portable Equipment - Non-Rental Generator	Aggregate	75	Diesel	0.002699163	0.003265987	0.003886795	0.039670966	0.029259696	5.379309645	0.000586496	0.000539577	4.96534E-05	4.39052E-05	174525.7772	170540.4756	125.6719138	11153776
Los Angeles (SC)	2023 Portable Equipment - Non-Rental Generator	Aggregate	100	Diesel	0.002478758	0.002999298	0.003569412	0.063087234	0.025981024	8.574942056	0.00214868	0.001976786	7.92052E-05	6.99875E-05	278204.5514	186044.1552	137.0966332	17779788
Los Angeles (SC)	2023 Portable Equipment - Non-Rental Generator	Aggregate	175	Diesel	0.005415847	0.006553174	0.007798819	0.117566263	0.042712383	18.59073378	0.002137429	0.001966434	0.000171718	0.000151735	603155.8834	277873.642	204.7661253	38547118
Los Angeles (SC)	2023 Portable Equipment - Non-Rental Generator	Aggregate	300	Diesel	0.006580051	0.007961862	0.009475274	0.04608587	0.047200032	20.33313606	0.002081551	0.001915027	0.000187793	0.000165956	659686.2066	171733.0663	126.5507384	42159917
Los Angeles (SC)	2023 Portable Equipment - Non-Rental Generator	Aggregate	600	Diesel	0.011097737	0.013428262	0.015980742	0.085524512	0.066978821	41.81883395	0.003041412	0.002798099	0.000386303	0.00034132	1356766.012	218244.1051	160.8248967	86709623
Los Angeles (SC)	2023 Portable Equipment - Non-Rental Generator	Aggregate	750	Diesel	0.003436531	0.004158202	0.004948605	0.022276295	0.026195374	10.45293985	0.001228004	0.001129764	9.65395E-05	8.53155E-05	339134.1216	31603.65456	23.28885116	21673739
Los Angeles (SC)	2023 Portable Equipment - Non-Rental Generator	Aggregate	9999	Diesel	0.022428277	0.027138216	0.032296719	0.148042622	0.350186838	68.34426316	0.009614054	0.00884493	0.000631204	0.000557817	2217354.351	113296.1201	83.48833433	1.42E+08
Los Angeles (SC)	2023 Portable Equipment - Non-Rental Other Portable Equipment	Aggregate	50	Diesel	1.3668E-05	1.65383E-05	1.9682E-05	0.000301974	0.000291352	0.051111028	7.5255E-06	6.92346E-06	4.72137E-07	4.17161E-07	1658.241021	2088.378816	6.591184289	95326.99
Los Angeles (SC)	2023 Portable Equipment - Non-Rental Other Portable Equipment	Aggregate	75	Diesel	0.000315054	0.000381215	0.000453677	0.00851524	0.006817368	1.378420233	0.000127677	0.000117463	1.27347E-05	1.12505E-05	44721.32639	40375.32378	127.4295629	2858097
Los Angeles (SC)	2023 Portable Equipment - Non-Rental Other Portable Equipment	Aggregate	100	Diesel	0.000536564	0.000649242	0.000772652	0.019637143	0.010037758	3.102271419	0.000677315	0.00062313	2.86659E-05	2.53203E-05	100649.7797	72397.1323	228.4943887	6432431
Los Angeles (SC)	2023 Portable Equipment - Non-Rental Other Portable Equipment	Aggregate	175	Diesel	0.001541647	0.001865393	0.002219972	0.055292723	0.021098391	10.03415323	0.000802061	0.000737896	9.27245E-05	8.18974E-05	325547.051	151059.401	476.7623303	20805402
Los Angeles (SC)	2023 Portable Equipment - Non-Rental Other Portable Equipment	Aggregate	300	Diesel	0.000614794	0.000743901	0.000885303	0.006658634	0.00694972	3.367452823	0.000263375	0.000242305	3.11153E-05	2.74847E-05	109253.2983	29654.97919	93.59481691	6982274
Los Angeles (SC)	2023 Portable Equipment - Non-Rental Other Portable Equipment	Aggregate	600	Diesel	0.00078368	0.000948252	0.001128498	0.008359512	0.008770036	4.428591386	0.000313946	0.00028883	4.0921E-05	3.61456E-05	143680.7703	20883.78816	65.91184289	9182501
Los Angeles (SC)	2023 Portable Equipment - Non-Rental Other Portable Equipment	Aggregate	750	Diesel	0.000363292	0.000439583	0.000523141	0.003639534	0.005377612	1.93996061	0.00020189	0.000185738	1.7925E-05	1.58337E-05	62939.8855	5847.460685	18.45531601	4022428
Los Angeles (SC)	2023 Portable Equipment - Non-Rental Other Portable Equipment	Aggregate	9999	Diesel	0.003905866	0.004726097	0.005624447	0.032794598	0.094283989	17.1163481	0.002012666	0.001851653	0.000158132	0.000139701	555321.0638	14757.87697	46.57770231	35490040
Los Angeles (SC)	2023 Portable Equipment - Non-Rental Pump	Aggregate	50	Diesel	2.93477E-06	3.55107E-06	4.22607E-06	6.3922E-05	4.87325E-05	0.010351407	5.64757E-07	5.19576E-07	9.56158E-08	8.44868E-08	335.8399847	418.5686679	1.318236858	19306.37
Los Angeles (SC)	2023 Portable Equipment - Non-Rental Pump	Aggregate	75	Diesel	0.000206416	0.000249763	0.000297239	0.004896382	0.004041485	0.779657115	0.000102599	9.43914E-05	7.20212E-06	6.36346E-06	25295.11644	23021.27674	72.50302718	1616587
Los Angeles (SC)	2023 Portable Equipment - Non-Rental Pump	Aggregate	100	Diesel	0.000263301	0.000318595	0.000379154	0.009437504	0.004980518	1.494894577	0.000321001	0.000295321	1.38131E-05	1.22011E-05	48500.20823	33904.0621	106.7771855	3099602
Los Angeles (SC)	2023 Portable Equipment - Non-Rental Pump	Aggregate	175	Diesel	0.000403981	0.000488817	0.000581733	0.014397632	0.005581203	2.610030478	0.000224222	0.000206284	2.41189E-05	2.13027E-05	84679.56444	39205.93189	123.4748524	5411790
Los Angeles (SC)	2023 Portable Equipment - Non-Rental Pump	Aggregate	300	Diesel	0.000278277	0.000336716	0.000400719	0.003650156	0.002722543	1.925071632	0.000100225	9.22074E-05	1.77899E-05	1.57122E-05	62456.829	16742.74672	52.72947432	3991556
Los Angeles (SC)	2023 Portable Equipment - Non-Rental Pump	Aggregate	600	Diesel	0.000583622	0.000706183	0.000840416	0.006691585	0.008580478	3.641296683	0.000324125	0.000298195	3.36481E-05	2.97198E-05	118137.8607	18696.06717	58.88124632	7550078
Los Angeles (SC)	2023 Portable Equipment - Non-Rental Pump	Aggregate	750	Diesel	0.000296925	0.00035928	0.000427572	0.003387012	0.005446403	1.846512763	0.000220309	0.000202685	1.7063E-05	1.5071E-05	59908.07302	5580.915572	17.57649144	3828668
Los Angeles (SC)	2023 Portable Equipment - Non-Rental Pump	Aggregate	9999	Diesel	0.000174074	0.00021063	0.000250667	0.001995498	0.003978502	1.053406149	6.69673E-05	6.16099E-05	9.73404E-06	8.59776E-06	34176.60239	1674.274672	5.272947432	2184194
Los Angeles (SC)	2023 Portable Equipment - Rental Compressor	Aggregate	50	Diesel	1.45693E-05	1.76288E-05	2.09798E-05	0.000335916	0.000264377	0.056762025	3.97319E-06	3.65534E-06	5.24356E-07	4.63284E-07	1841.5814	2107.859542	3.954710574	105866.6
Los Angeles (SC)	2023 Portable Equipment - Rental Compressor	Aggregate	75	Diesel	5.27501E-05	6.38276E-05	7.59601E-05	0.001086736	0.000814447	0.164520217	1.09156E-05	1.00423E-05	1.51949E-06	1.34279E-06	5337.677243	5386.752163	10.10648258	341125.9
Los Angeles (SC)	2023 Portable Equipment - Rental Compressor	Aggregate	100	Diesel	3.06911E-05	3.71362E-05	4.41952E-05	0.001034734	0.000437288	0.152942439	3.20527E-05	2.94885E-05	1.41311E-06	1.2483E-06	4962.049006	3747.305852	7.030596575	317119.8
Los Angeles (SC)	2023 Portable Equipment - Rental Compressor	Aggregate	175	Diesel	0.000516788	0.000625313	0.000744175	0.019688564	0.007127815	3.577533212	0.000220476	0.000202838	3.30606E-05	2.91993E-05	116069.1251	53633.31501	100.6254135	7417867
Los Angeles (SC)	2023 Portable Equipment - Rental Compressor	Aggregate	300	Diesel	0.00031243	0.00037804	0.000449899	0.004369954	0.001821455	2.285684812	7.72973E-05	7.11135E-05	2.11229E-05	1.86555E-05	74156.52648	16628.66972	31.1982723	4739273
Los Angeles (SC)	2023 Portable Equipment - Rental Compressor	Aggregate	600	Diesel	0.004772	0.00577412	0.00687168	0.061294562	0.037737667	32.17360136	0.001555213	0.001430796	0.000297318	0.000262597	1043837.063	121319.027	227.6155641	66710632
Los Angeles (SC)	2023 Portable Equipment - Rental Compressor	Aggregate	750	Diesel	0.000570938	0.000690835	0.000822151	0.00644145	0.004987286	3.299666555	0.000261408	0.000240495	3.04899E-05	2.69314E-05	107054.0475	10773.50433	20.21296515	6841722
Los Angeles (SC)	2023 Portable Equipment - Rental Compressor	Aggregate	9999	Diesel	0.000331758	0.000401427	0.000477731	0.004583958	0.007457804	2.424502363	0.000123701	0.000113805	2.24058E-05	1.97885E-05	78660.30904	4684.132315	8.788245719	5027105

Los Angeles (SC)	2023 Portable Equipment - Rental Generator	Aggregate	50 Diesel	1.24845E-05	1.51062E-05	1.79777E-05	0.000180332	9.66579E-05	0.017549211	6.79874E-07	6.25484E-07		1.61877E-07	1.43234E-07	569.3648315	638.6566845	0.439412286	32730.97			
Los Angeles (SC)	2023 Portable Equipment - Rental Generator	Aggregate	75 Diesel	0.002749406	0.003326782	0.003959145	0.043211227	0.031691736	5.980565587	0.000670015	0.000616414		5.52108E-05	4.88128E-05	194932.8641	186487.7519	128.3083875	12400455			
Los Angeles (SC)	2023 Portable Equipment - Rental Generator	Aggregate	100 Diesel	0.003876508	0.004690575	0.005582171	0.102064145	0.045130522	14.005062	0.003575148	0.003289136		0.000129367	0.000114307	454378.8127	303361.9251	208.7208358	29038917			
Los Angeles (SC)	2023 Portable Equipment - Rental Generator	Aggregate	175 Diesel	0.006516981	0.007885547	0.009384452	0.168991589	0.048218939	27.07939986	0.001816497	0.001671177		0.000292167	0.000221018	878561.3058	381278.0406	262.1291347	56148016			
Los Angeles (SC)	2023 Portable Equipment - Rental Generator	Aggregate	300 Diesel	0.01628572	0.019705722	0.023451638	0.12117473	0.107851817	55.32346775	0.004596414	0.004228701		0.000511004	0.000451543	1794908.983	452807.5893	311.5433107	1.15E+08			
Los Angeles (SC)	2023 Portable Equipment - Rental Generator	Aggregate	600 Diesel	0.022402585	0.027107127	0.032259722	0.174687064	0.113250741	85.31753896	0.006460199	0.005943383		0.000788131	0.000696635	2768033.526	621513.4118	290.0120387	1.77E+08			
Los Angeles (SC)	2023 Portable Equipment - Rental Generator	Aggregate	750 Diesel	0.005265139	0.00637106	0.007582088	0.028267458	0.059845362	12.36145621	0.002303701	0.002119405		0.00011413	0.000100893	403053.833	376867.4439	25.92532487	25630968			
Los Angeles (SC)	2023 Portable Equipment - Rental Generator	Aggregate	9999 Diesel	0.046831599	0.056666235	0.067437502	0.319290554	0.770089912	156.8289116	0.021219681	0.019522106		0.001448556	0.001280016	5088141.32	255462.6738	175.7649144	1.25E+08			
Los Angeles (SC)	2023 Portable Equipment - Rental Other Portable Equipment	Aggregate	50 Diesel	3.58128E-05	4.33335E-05	5.15705E-05	0.000589899	0.000469413	0.071335583	1.56149E-05	1.43657E-05		6.58458E-07	5.82231E-07	2314.404437	3154.129462	2.036473716	133047.7			
Los Angeles (SC)	2023 Portable Equipment - Rental Other Portable Equipment	Aggregate	75 Diesel	0.001093561	0.001323209	0.001574728	0.021993526	0.016433362	3.308924346	0.000221382	0.000203672		3.05413E-05	2.69907E-05	107289.5185	93347.97986	74.26067633	6856771			
Los Angeles (SC)	2023 Portable Equipment - Rental Other Portable Equipment	Aggregate	100 Diesel	0.000449961	0.000544453	0.000647944	0.01131685	0.004827349	1.754900733	0.000412937	0.000379902		1.62114E-05	1.43218E-05	56935.8216	40321.90846	32.07709688	3638714			
Los Angeles (SC)	2023 Portable Equipment - Rental Other Portable Equipment	Aggregate	175 Diesel	0.002019984	0.00244418	0.002908777	0.057391621	0.016294261	9.619051348	0.000620105	0.000570497		8.88723E-05	7.85094E-05	312079.5275	146926.4062	116.8836681	19944705			
Los Angeles (SC)	2023 Portable Equipment - Rental Other Portable Equipment	Aggregate	300 Diesel	0.001975139	0.002389918	0.00284442	0.104408496	0.012178864	6.393223239	0.000516137	0.000474846		5.90493E-05	5.21808E-05	207421.0871	54130.78122	43.06240402	13256084			
Los Angeles (SC)	2023 Portable Equipment - Rental Other Portable Equipment	Aggregate	600 Diesel	0.001368206	0.001655288	0.001969929	0.010293288	0.008642253	5.012948896	0.000392422	0.000361028		4.60862E-05	4.09176E-05	162939.6061	25408.32588	20.21296515	10399142			
Los Angeles (SC)	2023 Portable Equipment - Rental Other Portable Equipment	Aggregate	750 Diesel	0.000849229	0.001027567	0.001222889	0.007210453	0.006377549	3.599089242	0.000354857	0.000326469		3.32499E-05	2.93753E-05	116768.4868	11047.09821	8.788245719	7462563			
Los Angeles (SC)	2023 Portable Equipment - Rental Other Portable Equipment	Aggregate	9999 Diesel	0.001115	0.00134915	0.0016056	0.006899209	0.015579651	3.35580053	0.000413411	0.000380338		3.09926E-05	2.73896E-05	108875.2524	5523.549104	4.39412286	6958114			
Los Angeles (SC)	2023 Portable Equipment - Rental Pump	Aggregate	50 Diesel	1.29836E-05	1.57102E-05	1.86964E-05	0.000127883	0.000107704	0.013140559	7.69858E-06	7.08271E-06		1.09082E-07	9.66413E-08	384.1539024	430.9055356	0.439412286	22083.78			
Los Angeles (SC)	2023 Portable Equipment - Rental Pump	Aggregate	75 Diesel	0.000454622	0.000550093	0.000654656	0.009952768	0.008001857	1.513570525	0.000265752	0.000244492		1.41465E-05	1.25009E-05	49690.11697	43090.55356	41.9412286	3175648			
Los Angeles (SC)	2023 Portable Equipment - Rental Pump	Aggregate	100 Diesel	0.000666987	0.000807054	0.000960461	0.017049032	0.007723298	2.350609283	0.000625095	0.000575087		2.17125E-05	1.91854E-05	76262.92946	56879.5307	58.00242175	4873891			
Los Angeles (SC)	2023 Portable Equipment - Rental Pump	Aggregate	175 Diesel	0.001656289	0.001278109	0.001520356	0.024882611	0.009629674	3.978249114	0.000447029	0.000411267		3.67492E-05	3.24699E-05	129069.9112	56037.71963	57.12359718	8248735			
Los Angeles (SC)	2023 Portable Equipment - Rental Pump	Aggregate	300 Diesel	0.001351408	0.001635264	0.001946028	0.012518845	0.009342811	6.005077145	0.000368159	0.000338706		5.54794E-05	4.90126E-05	194828.1146	45675.98677	46.57770231	12451279			
Los Angeles (SC)	2023 Portable Equipment - Rental Pump	Aggregate	600 Diesel	0.001551845	0.001877733	0.002234657	0.01650992	0.00938094	8.518003082	0.000455842	0.000420294		7.87066E-05	6.95228E-05	276357.2291	45675.98677	46.57770231	17661727			
Los Angeles (SC)	2023 Portable Equipment - Rental Pump	Aggregate	750 Diesel	0.000287646	0.000348052	0.000414211	0.003179809	0.002717886	0.865362792	0.000122515	0.000112714		7.99115E-06	7.06218E-06	28072.49836	2585.433214	2.036473716	1794087			
Los Angeles (SC)	2023 TRU - Instate Genset TRU	Aggregate	50 Diesel	0.007187884	0.00869734	0.010350553	0.135431266	0.099658674	2.730787719	0.000450685	0.00041463		2.52012E-05	2.24378E-05	1731.405123	1044254.423	1337.551913	32894014			
Los Angeles (SC)	2023 TRU - Instate Trailer TRU	Aggregate	50 Diesel	0.142935952	0.172925201	0.205827777	2.100742115	1.324367872	31.13044317	0.018827627	0.017321417		0.000285459	0.000255787	19760.47776	7912893.908	5975.919079	2.69E+08			
Los Angeles (SC)	2023 TRU - Instate Truck TRU	Aggregate	25 Diesel	0.017970039	0.021743747	0.025876856	0.176210711	0.211018349	4.229244264	0.003480378	0.007801948		3.88246E-05	3.47501E-05	2684.572056	2129111.988	1566.373246	30020479			
Los Angeles (SC)	2023 TRU - Instate Van TRU	Aggregate	25 Diesel	0.000416019	0.000503383	0.000599367	0.004079401	0.004883222	0.097909965	0.000196327	0.000180621		8.98617E-07	8.04488E-07	62.14969925	77221.67832	56.73892603	694995.1			
Los Angeles (SC)	2023 TRU - Out-of-State Genset TRU	Aggregate	50 Diesel	0.004522233	0.005471901	0.006513015	0.085271377	0.062783722	1.720763682	0.000283739	0.000261004		1.58802E-05	1.42187E-05	1092.265756	65803.1395	5321.899626	20727414			
Los Angeles (SC)	2023 TRU - Out-of-State Trailer TRU	Aggregate	50 Diesel	0.07511359	0.090887444	0.108163577	1.195981617	0.769750743	19.53864482	0.005247183	0.004827408		0.000179603	0.000160541	12402.42395	4965929.679	23667.14873	1.69E+08			
Los Angeles (SC)	2023 TRU - Railcar TRU	Aggregate	50 Diesel	0.007775224	0.009408021	0.011196323	0.123795504	0.079679118	2.02250144	0.000543151	0.000499699		1.85912E-05	1.66181E-05	1283.81065	514037.694	1594.261372	17477282			

Proposed Project

PROPOSED PROJECT CONDITIONS

Vehicle type	Fleet percent	VMT	
	Golf Course	Golf Course	Total
LDA	54.48%	865,410	865,410
LDT1	6.28%	99,830	99,830
LDT2	18.75%	297,816	297,816
MDV	12.72%	202,117	202,117
LHD1	2.31%	36,678	36,678
LHD2	0.61%	9,663	9,663
MHD	1.05%	16,640	16,640
HHD	0.80%	12,727	12,727
OBUS	0.09%	1,469	1,469
UBUS	0.06%	971	971
MCY	2.44%	38,751	38,751
SBUS	0.07%	1,109	1,109
MH	0.34%	5,360	5,360
	100.00%	1,588,536	1,588,536

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Golf Course	403.30	403.30	403.30	1,588,536	1,588,536
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Total	403.30	403.30	403.30	1,588,536	1,588,536

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Golf Course	0.544785	0.062844	0.187478	0.127235	0.023089	0.006093	0.010475	0.008012	0.000925	0.000611	0.024394	0.000698	0.003374
Other Non-Asphalt Surfaces	0.544785	0.062844	0.187478	0.127235	0.023089	0.006093	0.010475	0.008012	0.000925	0.000611	0.024394	0.000698	0.003374

PROPOSED CONDITIONS

Vehicle type	Gas percent	Diesel percent	CNG percent	Electricity percent	
LDA	96.62%	0.92%	0.00%	2.46%	
LDT1	98.85%	0.03%	0.00%	1.12%	
LDT2	98.14%	0.76%	0.00%	1.10%	
MDV	96.51%	2.46%	0.00%	1.02%	
LHD1	56.77%	43.23%	0.00%	0.00%	
LHD2	35.72%	64.28%	0.00%	0.00%	
MHD	15.81%	84.19%	0.00%	0.00%	<< Equal to T6 (https://www.arb.ca.gov/msei/downloads/emfac2014/emfac2014-vol3-technical-documentation-052015.pdf)
HHD	0.08%	98.29%	1.63%	0.00%	<< Equal to T7 (https://www.arb.ca.gov/msei/downloads/emfac2014/emfac2014-vol3-technical-documentation-052015.pdf)
OBUS	39.79%	60.21%	0.00%	0.00%	<< Motor coach, all other buses, and OBUS (https://www.arb.ca.gov/msei/downloads/emfac2014/emfac2014-vol3-technical-documentation-052015.pdf)
UBUS	6.98%	0.25%	92.54%	0.23%	
MCY	100.00%	0.00%	0.00%	0.00%	
SBUS	34.75%	65.25%	0.00%	0.00%	
MH	74.85%	25.15%	0.00%	0.00%	

PROPOSED CONDITIONS

Vehicle type	Gasoline			Diesel			CNG			Electricity		
	VMT	mpg	Gallons	VMT	mpg	Gallons	VMT	mpg	Gallons	VMT	m/kWh	kWh
LDA	836,129	31.12	26,867	7,981	48.57	164	0	0.00	0	21,300	3.07	6,948
LDT1	98,677	26.80	3,682	35	22.08	2	0	0.00	0	1,118	3.07	365
LDT2	292,275	25.20	11,597	2,265	35.74	63	0	0.00	0	3,275	3.07	1,068
MDV	195,070	20.46	9,534	4,979	27.66	180	0	0.00	0	2,068	3.07	675
LHD1	20,823	10.57	1,969	15,855	22.10	717	0	0.00	0	0	3.07	0
LHD2	3,451	9.21	375	6,212	19.90	312	0	0.00	0	0	3.07	0
MHD	2,630	5.12	514	14,010	11.00	1,274	0	0.00	0	0	3.07	0
HHD	11	4.20	3	12,509	7.00	1,786	207	2.27	91	0	3.07	0
OBUS	585	5.06	116	885	9.06	98	0	0.00	0	0	3.07	0
UBUS	68	4.35	16	2	5.66	0	898	3.93	228	2	3.07	0
MCY	38,751	35.68	1,086	0	0.00	0	0	0.00	0	0	3.07	0
SBUS	385	9.27	42	724	7.70	94	0	0.00	0	0	3.07	0
MH	4,012	5.21	771	1,348	10.67	126	0	0.00	0	0	3.07	0
	1,492,867		**56,570**	**66,804**		**4,816**	**1,105**		**320**	**27,764**		**9,056**

EMFAC Fuel Usage: Year 2022

Vehicle type	GAS			DSL			NG			ELEC
	VMT/day	Gallons/day	Miles/gallon	VMT/day	Gallons/day	Miles/gallon	VMT/day	Gallons/day	Miles/gallon	VMT/day
All other buses	0	0	0.00	144,213	14,122	10.21	0	0	0.00	0
LDA	149,966,457	4,951,891	30.28	1,365,564	28,876	47.29	0	0	0.00	3,181,478
LDT1	17,043,180	652,540	26.12	6,627	304	21.78	0	0	0.00	144,752
LDT2	51,802,173	2,129,498	24.33	378,461	10,888	34.76	0	0	0.00	469,870
LHD1	3,836,225	367,280	10.44	2,744,971	126,149	21.76	0	0	0.00	0
LHD2	625,803	68,770	9.10	1,067,421	54,454	19.60	0	0	0.00	0
MCY	1,237,635	34,667	35.70	0	0	0.00	0	0	0.00	0
MDV	32,233,548	1,629,223	19.78	771,652	28,703	26.88	0	0	0.00	250,682
MH	190,935	37,177	5.14	61,785	5,859	10.54	0	0	0.00	0
Motor coach	0	0	0.00	91,142	13,998	6.51	0	0	0.00	0
OBUS	163,041	32,643	4.99	0	0	0.00	0	0	0.00	0
PTO	0	0	0.00	76,505	15,508	4.93	0	0	0.00	0
SBUS	55,608	6,053	9.19	109,536	14,360	7.63	0	0	0.00	0
T6	793,122	157,239	5.04	4,140,797	393,561	10.52	0	0	0.00	0
T7	5,769	1,407	4.10	6,735,541	1,021,710	6.59	106,828	47,783	2.24	0
UBUS	32,989	7,783	4.24	1,181	209	5.66	437,121	111,088	3.93	1,070
Total	**257,986,485**	**10,076,171**	**25.60**	**17,695,397**	**1,728,701**	**10.24**	**543,949**	**158,871**	**3.42**	**4,047,852**

3,496,431,421

0.36%

81875000 12419573.21

Source: EMFAC2017 (v1.0.3) Emissions Inventory
Region Type: Sub-Area
Region: Los Angeles (SC)
Calendar Year: 2022
Season: Annual
Vehicle Classification: EMFAC2011 Categories
Units: miles/day for VMT, trips/day for Trips, tons/day for Emissions, 1000 gallons/day for Fuel Consumption

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	Population	VMT	Trips	Fuel Consumption
Los Angeles (SC)	2022	All Other Buses	Aggregate	Aggregate	DSL	2387.615771	144212.5891	20055.97247	14.12157342
Los Angeles (SC)	2022	LDA	Aggregate	Aggregate	GAS	3949334.32	149966456.8	18636854.28	4951.890616
Los Angeles (SC)	2022	LDA	Aggregate	Aggregate	DSL	34750.74201	1365564.321	164528.3052	28.87579459
Los Angeles (SC)	2022	LDA	Aggregate	Aggregate	ELEC	78084.60157	3181477.948	389918.6908	0
Los Angeles (SC)	2022	LDT1	Aggregate	Aggregate	GAS	458115.2498	17043179.81	2118381.376	652.5401757
Los Angeles (SC)	2022	LDT1	Aggregate	Aggregate	DSL	270.6503295	6627.200698	961.4710483	0.304298206
Los Angeles (SC)	2022	LDT1	Aggregate	Aggregate	ELEC	3508.68045	144752.0157	17546.16027	0
Los Angeles (SC)	2022	LDT2	Aggregate	Aggregate	GAS	1372144.276	51802172.9	6443902.5	2129.497975
Los Angeles (SC)	2022	LDT2	Aggregate	Aggregate	DSL	8920.377392	378460.5711	44003.20424	10.88805719
Los Angeles (SC)	2022	LDT2	Aggregate	Aggregate	ELEC	14383.25646	469869.8144	72773.64326	0
Los Angeles (SC)	2022	LHD1	Aggregate	Aggregate	GAS	105423.6869	3836224.58	1570655.854	367.2799521
Los Angeles (SC)	2022	LHD1	Aggregate	Aggregate	DSL	64097.22758	2744971.33	806262.4886	126.1492688
Los Angeles (SC)	2022	LHD2	Aggregate	Aggregate	GAS	17796.61867	625803.0177	265143.1013	68.76969502
Los Angeles (SC)	2022	LHD2	Aggregate	Aggregate	DSL	25927.3097	1067421.343	326132.9395	54.45422002
Los Angeles (SC)	2022	MCY	Aggregate	Aggregate	GAS	177319.3254	1237635.154	354638.6508	34.66720507
Los Angeles (SC)	2022	MDV	Aggregate	Aggregate	GAS	921693.6708	32233548.24	4274374.135	1629.222502
Los Angeles (SC)	2022	MDV	Aggregate	Aggregate	DSL	19516.67089	771652.3864	96044.41776	28.70279505
Los Angeles (SC)	2022	MDV	Aggregate	Aggregate	ELEC	7423.218148	250681.8433	37959.59904	0
Los Angeles (SC)	2022	MH	Aggregate	Aggregate	GAS	18777.11371	190934.9774	1878.462455	37.17660803
Los Angeles (SC)	2022	MH	Aggregate	Aggregate	DSL	5865.304828	61785.30748	586.5304828	5.859423982
Los Angeles (SC)	2022	Motor Coach	Aggregate	Aggregate	DSL	676.2916755	91141.88557	9873.858462	13.99760817
Los Angeles (SC)	2022	OBUS	Aggregate	Aggregate	GAS	3972.712037	163041.1007	79486.02243	32.64328018
Los Angeles (SC)	2022	PTO	Aggregate	Aggregate	DSL	0	76505.4461	0	15.50775389
Los Angeles (SC)	2022	SBUS	Aggregate	Aggregate	GAS	1378.869452	55608.41612	5515.47781	6.053496228
Los Angeles (SC)	2022	SBUS	Aggregate	Aggregate	DSL	3460.157096	109535.682	39929.73315	14.35975618
Los Angeles (SC)	2022	T6 Ag	Aggregate	Aggregate	DSL	12.10479957	101.9666453	53.26111809	0.012181572
Los Angeles (SC)	2022	T6 CAIRP heavy	Aggregate	Aggregate	DSL	272.1638062	53846.97659	3973.591571	4.680155196
Los Angeles (SC)	2022	T6 CAIRP small	Aggregate	Aggregate	DSL	144.6349106	7530.75419	2111.669694	0.699944378
Los Angeles (SC)	2022	T6 instate construction heavy	Aggregate	Aggregate	DSL	2518.967495	168570.4564	11388.15411	16.56194729
Los Angeles (SC)	2022	T6 instate construction small	Aggregate	Aggregate	DSL	8157.753968	433957.0754	36880.88852	42.40587222
Los Angeles (SC)	2022	T6 instate heavy	Aggregate	Aggregate	DSL	10296.35106	1423092.141	118818.4637	128.9338909
Los Angeles (SC)	2022	T6 instate small	Aggregate	Aggregate	DSL	37908.6179	1932060.83	437460.1947	186.9232192
Los Angeles (SC)	2022	T6 OOS heavy	Aggregate	Aggregate	DSL	156.4590604	31080.56962	2284.302283	2.699014263
Los Angeles (SC)	2022	T6 OOS small	Aggregate	Aggregate	DSL	83.58460294	4317.240411	1220.335203	0.401773955
Los Angeles (SC)	2022	T6 Public	Aggregate	Aggregate	DSL	4445.935083	69430.49194	13486.00307	8.507368053
Los Angeles (SC)	2022	T6 utility	Aggregate	Aggregate	DSL	996.7203316	16808.24099	11462.28381	1.735997959
Los Angeles (SC)	2022	T6TS	Aggregate	Aggregate	GAS	14505.49561	793122.3284	290225.9562	157.2392835
Los Angeles (SC)	2022	T7 Ag	Aggregate	Aggregate	DSL	5.193051548	102.8930892	22.84942681	0.01852168
Los Angeles (SC)	2022	T7 CAIRP	Aggregate	Aggregate	DSL	6003.500987	1067306.387	87651.11441	155.0696328
Los Angeles (SC)	2022	T7 CAIRP construction	Aggregate	Aggregate	DSL	671.4917023	121085.6232	3035.787878	16.55458348
Los Angeles (SC)	2022	T7 NNOOS	Aggregate	Aggregate	DSL	6498.761345	1301079.701	94881.91563	179.099333
Los Angeles (SC)	2022	T7 NOOS	Aggregate	Aggregate	DSL	2371.048773	419354.6563	34617.31208	62.47642547
Los Angeles (SC)	2022	T7 POLA	Aggregate	Aggregate	DSL	8258.014728	1072153.038	62760.91194	188.7409496
Los Angeles (SC)	2022	T7 Public	Aggregate	Aggregate	DSL	5475.906144	110937.1004	16610.24862	19.0808356
Los Angeles (SC)	2022	T7 Single	Aggregate	Aggregate	DSL	5794.937297	385296.7187	66872.77297	58.88961274
Los Angeles (SC)	2022	T7 single construction	Aggregate	Aggregate	DSL	4300.116371	300391.1598	19440.65893	44.46501106
Los Angeles (SC)	2022	T7 SWCV	Aggregate	Aggregate	DSL	1379.990695	56384.18389	5381.963711	27.81339016
Los Angeles (SC)	2022	T7 SWCV	Aggregate	Aggregate	NG	2623.533087	106827.7218	10231.77904	47.782843
Los Angeles (SC)	2022	T7 tractor	Aggregate	Aggregate	DSL	12166.67647	1645420.533	154516.7912	230.7310322
Los Angeles (SC)	2022	T7 tractor construction	Aggregate	Aggregate	DSL	3592.159925	247796.2601	16240.01536	37.46414496
Los Angeles (SC)	2022	T7 utility	Aggregate	Aggregate	DSL	405.4684121	8232.431424	4662.886739	1.306947156
Los Angeles (SC)	2022	T7IS	Aggregate	Aggregate	GAS	55.2683338	5768.621752	1105.808823	1.407168754
Los Angeles (SC)	2022	UBUS	Aggregate	Aggregate	GAS	460.6006493	32989.32038	1842.402597	7.783285084
Los Angeles (SC)	2022	UBUS	Aggregate	Aggregate	DSL	10.1389	1181.230112	40.5556	0.208547568
Los Angeles (SC)	2022	UBUS	Aggregate	Aggregate	ELEC	12	1070.403311	48	0
Los Angeles (SC)	2022	UBUS	Aggregate	Aggregate	NG	4129.345993	437121.0718	16517.38397	111.0876976

EMFAC Fuel Usage: Year 2023

Vehicle type	GAS			DSL			NG			ELEC
	VMT/day	Gallons/day	Miles/gallon	VMT/day	Gallons/day	Miles/gallon	VMT/day	Gallons/day	Miles/gallon	VMT/day
All other buses	0	0	0.00	148,348	14,082	10.53	0	0	0.00	0
LDA	149,418,106	4,801,115	31.12	1,426,245	29,363	48.57	0	0	0.00	3,806,342
LDT1	17,372,475	648,191	26.80	6,133	278	22.08	0	0	0.00	196,782
LDT2	52,162,943	2,069,800	25.20	404,272	11,313	35.74	0	0	0.00	584,569
LHD1	3,800,052	359,383	10.57	2,893,383	130,924	22.10	0	0	0.00	0
LHD2	625,879	67,954	9.21	1,126,544	56,597	19.90	0	0	0.00	0
MCY	1,265,085	35,455	35.68	0	0	0.00	0	0	0.00	0
MDV	32,264,362	1,576,940	20.46	823,486	29,770	27.66	0	0	0.00	342,100
MH	191,392	36,760	5.21	64,319	6,026	10.67	0	0	0.00	0
Motor coach	0	0	0.00	92,744	13,826	6.71	0	0	0.00	0
OBUS	159,343	31,499	5.06	0	0	0.00	0	0	0.00	0
PTO	0	0	0.00	77,199	14,935	5.17	0	0	0.00	0
SBUS	58,916	6,358	9.27	110,638	14,360	7.70	0	0	0.00	0
T6	797,300	155,868	5.12	4,246,866	386,115	11.00	0	0	0.00	0
T7	5,905	1,406	4.20	6,872,058	981,183	7.00	113,852	50,168	2.27	0
UBUS	33,184	7,630	4.35	1,181	209	5.66	439,713	111,745	3.93	1,070
Total	**258,154,940**	**9,798,359**	**26.35**	**18,293,417**	**1,688,982**	**10.83**	**553,565**	**161,913**	**3.42**	**4,930,863**

3,400,030,661

0.34%

81875000 11690001.06

Source: EMFAC2017 (v1.0.3) Emissions Inventory
Region Type: Sub-Area
Region: Los Angeles (SC)
Calendar Year: 2023
Season: Annual
Vehicle Classification: EMFAC2011 Categories
Units: miles/day for VMT, trips/day for Trips, tons/day for Emissions, 1000 gallons/day for Fuel Consumption

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	Population	VMT	Trips	Fuel Consumption
Los Angeles (SC)	2023	All Other Buses	Aggregate	Aggregate	DSL	2413.362241	148347.7525	20272.24282	14.0818541
Los Angeles (SC)	2023	LDA	Aggregate	Aggregate	GAS	3986929.129	149418105.6	18815397.63	4801.114553
Los Angeles (SC)	2023	LDA	Aggregate	Aggregate	DSL	36740.62878	1426244.815	174171.2985	29.36298643
Los Angeles (SC)	2023	LDA	Aggregate	Aggregate	ELEC	91678.53845	3806341.937	457107.9273	0
Los Angeles (SC)	2023	LDT1	Aggregate	Aggregate	GAS	472375.6724	17372474.6	2187811.198	648.1906909
Los Angeles (SC)	2023	LDT1	Aggregate	Aggregate	DSL	252.4118747	6132.921962	894.9059766	0.277775308
Los Angeles (SC)	2023	LDT1	Aggregate	Aggregate	ELEC	4635.248736	196781.6242	23233.68477	0
Los Angeles (SC)	2023	LDT2	Aggregate	Aggregate	GAS	1397479.324	52162943.36	6567821.268	2069.799895
Los Angeles (SC)	2023	LDT2	Aggregate	Aggregate	DSL	9765.230182	404272.1374	48008.05802	11.31280557
Los Angeles (SC)	2023	LDT2	Aggregate	Aggregate	ELEC	18283.62829	584568.8418	92279.45183	0
Los Angeles (SC)	2023	LHD1	Aggregate	Aggregate	GAS	105195.9307	3800052.408	1567262.626	359.3833271
Los Angeles (SC)	2023	LHD1	Aggregate	Aggregate	DSL	68776.35703	2893383.107	865120.0508	130.9243641
Los Angeles (SC)	2023	LHD2	Aggregate	Aggregate	GAS	17937.98852	625878.5235	267249.3013	67.95438628
Los Angeles (SC)	2023	LHD2	Aggregate	Aggregate	DSL	27873.77545	1126544.027	350617.0299	56.59739854
Los Angeles (SC)	2023	MCY	Aggregate	Aggregate	GAS	183955.3723	1265084.637	367910.7446	35.45479504
Los Angeles (SC)	2023	MDV	Aggregate	Aggregate	GAS	931795.9713	32264362.15	4326648.043	1576.940395
Los Angeles (SC)	2023	MDV	Aggregate	Aggregate	DSL	21297.50738	823486.0536	104465.3428	29.77006577
Los Angeles (SC)	2023	MDV	Aggregate	Aggregate	ELEC	10378.92649	342100.1259	52903.33041	0
Los Angeles (SC)	2023	MH	Aggregate	Aggregate	GAS	18786.35518	191391.548	1879.386973	36.76042896
Los Angeles (SC)	2023	MH	Aggregate	Aggregate	DSL	6166.797629	64319.47927	616.6797629	6.026053915
Los Angeles (SC)	2023	Motor Coach	Aggregate	Aggregate	DSL	658.0910352	92743.98303	9608.129114	13.82589661
Los Angeles (SC)	2023	OBUS	Aggregate	Aggregate	GAS	3965.955178	159342.8081	79350.83121	31.49929974
Los Angeles (SC)	2023	PTO	Aggregate	Aggregate	DSL	0	77198.6472	0	14.93547066
Los Angeles (SC)	2023	SBUS	Aggregate	Aggregate	GAS	1481.565044	58916.21473	5926.260176	6.358131428
Los Angeles (SC)	2023	SBUS	Aggregate	Aggregate	DSL	3497.078427	110638.3688	40355.80019	14.36000383
Los Angeles (SC)	2023	T6 Ag	Aggregate	Aggregate	DSL	11.67476155	97.073849	51.36895084	0.011080203
Los Angeles (SC)	2023	T6 CAIRP heavy	Aggregate	Aggregate	DSL	280.5602581	54871.42749	4096.179768	4.630891473
Los Angeles (SC)	2023	T6 CAIRP small	Aggregate	Aggregate	DSL	147.0353228	7680.714425	2146.715713	0.690922567
Los Angeles (SC)	2023	T6 instate construction heavy	Aggregate	Aggregate	DSL	2593.685207	170789.0459	11725.94998	16.01357351
Los Angeles (SC)	2023	T6 instate construction small	Aggregate	Aggregate	DSL	7838.439815	439668.4712	35437.28165	40.85987457
Los Angeles (SC)	2023	T6 instate heavy	Aggregate	Aggregate	DSL	10535.34865	1466280.47	121576.4628	127.6396288
Los Angeles (SC)	2023	T6 instate small	Aggregate	Aggregate	DSL	37375.9816	1984183.072	431313.6457	183.0271301
Los Angeles (SC)	2023	T6 OOS heavy	Aggregate	Aggregate	DSL	161.7713139	31697.11686	2361.861183	2.673821474
Los Angeles (SC)	2023	T6 OOS small	Aggregate	Aggregate	DSL	84.77351604	4403.138169	1237.693334	0.39634697
Los Angeles (SC)	2023	T6 Public	Aggregate	Aggregate	DSL	4479.460204	70241.70163	13587.69594	8.450363812
Los Angeles (SC)	2023	T6 utility	Aggregate	Aggregate	DSL	1011.45952	16954.26417	11631.78448	1.721713991
Los Angeles (SC)	2023	T6TS	Aggregate	Aggregate	GAS	14623.10816	797300.0842	292579.148	155.8676623
Los Angeles (SC)	2023	T7 Ag	Aggregate	Aggregate	DSL	5.450542727	89.56607012	23.982388	0.015745035
Los Angeles (SC)	2023	T7 CAIRP	Aggregate	Aggregate	DSL	5967.126018	1085857.383	87120.03986	152.0768811
Los Angeles (SC)	2023	T7 CAIRP construction	Aggregate	Aggregate	DSL	672.7726984	122679.2552	3041.579212	16.23989484
Los Angeles (SC)	2023	T7 NNOOS	Aggregate	Aggregate	DSL	6698.602472	1323677.931	97799.59609	176.2912352
Los Angeles (SC)	2023	T7 NOOS	Aggregate	Aggregate	DSL	2364.918201	426649.092	34527.80573	61.26348855
Los Angeles (SC)	2023	T7 POLA	Aggregate	Aggregate	DSL	8486.558826	1131828.731	64497.84707	175.4952223
Los Angeles (SC)	2023	T7 Public	Aggregate	Aggregate	DSL	5541.588258	112265.4557	16809.48436	19.02171313
Los Angeles (SC)	2023	T7 Single	Aggregate	Aggregate	DSL	5934.360332	388787.818	68481.69547	56.1742218
Los Angeles (SC)	2023	T7 single construction	Aggregate	Aggregate	DSL	4385.71399	304344.6678	19827.64243	42.88123171
Los Angeles (SC)	2023	T7 SWCV	Aggregate	Aggregate	DSL	1255.519365	51298.487	4896.525523	25.30419893
Los Angeles (SC)	2023	T7 SWCV	Aggregate	Aggregate	NG	2795.817267	113851.643	10903.68734	50.16782394
Los Angeles (SC)	2023	T7 tractor	Aggregate	Aggregate	DSL	12205.73158	1665217.666	155012.7911	219.5996373
Los Angeles (SC)	2023	T7 tractor construction	Aggregate	Aggregate	DSL	3685.502446	251057.5562	16662.01327	35.5101791
Los Angeles (SC)	2023	T7 utility	Aggregate	Aggregate	DSL	409.1727144	8303.947199	4705.486215	1.309375599
Los Angeles (SC)	2023	T7IS	Aggregate	Aggregate	GAS	52.86814563	5904.510911	1057.785858	1.405502268
Los Angeles (SC)	2023	UBUS	Aggregate	Aggregate	GAS	463.3229945	33183.96593	1853.291978	7.630187276
Los Angeles (SC)	2023	UBUS	Aggregate	Aggregate	DSL	10.1389	1181.230112	40.5556	0.208547568
Los Angeles (SC)	2023	UBUS	Aggregate	Aggregate	ELEC	12	1070.403311	48	0
Los Angeles (SC)	2023	UBUS	Aggregate	Aggregate	NG	4153.840831	439713.4848	16615.36332	111.7447779

Appendix

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Appendix C Biological Resources Study

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ESA

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November 10, 2020

George Cunningham
1001 Rose Bowl Drive
Pasadena CA 91103

Subject: Biological Resources Assessment for the Brookside Golf Course Improvement Project

Dear Mr. Cunningham :

This letter report documents the results of biological resources assessment at the proposed Brookside Golf Course Improvement Project site. The project site and 100-foot survey buffer area constitute the survey area. This report provides an overview of the survey area, methodology used for the assessment, results, conclusions, and recommended minimization measures.

Project Location

The survey area is located within the U.S. Geological Survey (USGS) Pasadena, California 7.5-minute topographic quadrangles (quad) in the City of Pasadena, Los Angeles County, California, at the base of the San Rafael Hills (**Figure 1 – Regional Location**). More specifically, it is situated within the Brookside Golf Course; bound to the north, south and west by associated golf course amenities and to the east by Rosemont Avenue and Rose Bowl Drive (**Figure 2 – Project Location**). A concrete channelized portion of the Arroyo Seco traverses the western boundary of the survey area, located immediately adjacent to the project site. Interstate 210 is located within 1 mile to the north and east, and the California State Route 134 is situated within 1 mile to the south.

Topography within the survey area has been heavily modified through the development and maintenance of the Brookside Golf Course and is relatively flat. Elevation ranges from approximately 860 feet above mean sea level (amsl) in the northwest corner of the survey area and 840 feet amsl in the southeast corner of the survey area.

Project Description

The Rose Bowl Operating Company (RBOC) proposes to relocate and expand the existing driving range and construct a new miniature golf facility within the Brookside Golf Course. The expanded driving range and new miniature golf course would remain in the same general location as the existing driving range that is between the Arroyo Seco and the Brookside Clubhouse.

The proposed expansion of the driving range would include an increase from 20 to 60 hitting bays and the miniature golf course would include 36 holes. The proposed project would remain a championship layout and the reduction in size would be designed to improve the pace of play. In order to accommodate the expanded driving range and new miniature golf course, tree removal and relocation and surficial grading would be required.

SOURCE: ESRI, 2020; ESA, 2020

Brookside Golf Course Improvements Project

Figure 1
Regional Location

ESA

SOURCE: Mapbox, 2020; ESA, 2020.

Brookside Golf Course Improvements Project

Figure 2
Project Location

ESA

Methods

The following resources were queried to reveal special-status plants and wildlife to that have been reported within the Pasadena United States Geological Survey (USGS) Quadrangle map and surrounding eight (8) quadrangles that include Burbank, Chilao Flat, Condor Peak, El Monte, Hollywood, Los Angeles, Mt. Wilson and Sunland:

- California Department of Fish and Wildlife (CDFW). 2020a. California Natural Diversity Data Base (CNDDB). Accessed October 22, 2020.
- California Department of Fish and Wildlife (CDFW). 2020b. California Natural Community List. Sacramento, CA: CDFW, Natural Heritage Division, November 8, 2019. Accessed October 22, 2020. https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=153398&inline
- California Native Plant Society (CNPS). 2020. Inventory of Rare and Endangered Vascular Plants of California. Accessed October 22, 2020.
- U.S. Fish and Wildlife Service (USFWS). 2020a. Critical Habitat Portal. Accessed October 22, 2020. https://fws.maps.arcgis.com/home/webmap/viewer.html?webmap=9d8de5e265 ad4fe09893cf75b8dbfb77
- U.S. Fish and Wildlife Service (USFWS). 2020b. Accessed October 22, 2020. https://ecos.fws.gov/ipac/location/HEJJ2LUXB5EBVO3TDFU4UHPFXI/resources

A field visit was conducted to verify the conditions of the survey area. In addition, a detailed desktop analysis of aerial imagery and review of the available database information was completed to verify adjacent land uses (Google Earth Pro 2020). The information that was gathered was used to determine the potential for special-status species and other sensitive biological resources to occur within the project site and survey area.

All native and non-native plant communities and land uses were characterized and delineated on aerial photographs and then digitized on aerial maps using a Geographic Information System software (ArcGIS). The plant communities and land use within the survey area were described based on vegetation type and/or other visual characteristics. The Manual of California Vegetation, Second Edition (Sawyer 2009), a common tool used to characterize vegetation, was merely used as a guide, because alliances listed in the publication did not accurately describe the communities present within the survey area. A detailed description of each plant community and land use is provided below. Representative photos were taken during the field assessment conducted on September 23, 2020 and are provided at the end of this report (**Attachment A – Photographic Exhibit**).

Results

Plant Communities and Land Use

Three distinct areas were identified within the survey area that include landscaped vegetation, developed land use and unvegetated concrete-lined channel (**Figure 3 – Plant Communities and Land Use**), each of which are described in detail below.

Landscaped Vegetation. Landscaped vegetation is present throughout the majority of the project site and survey area. This community is characterized by a collection of common (non-native) turf grasses planted along course fairway and putting greens, that may include bent grass (*Agrostis* sp.), Bermuda grass (*Cynodon dactylon*), perennial ryegrass (*Lolium perenne*) and Zoysia grass (*Zoysia japonica*), among others, interspersed with various ornamental trees and landscaping. Trees within the project site are documented within a protected tree report (ESA 2020). As indicated in the protected tree report, the trees located within the survey area include native species such as coast live oak (*Quercus agrifolia*), California sycamore (*Platanus racemosa*), California bay laurel (*Umbellularia californica*) and white alder (*Alnus rhombifolia*); and non-native species such as Chinese elm (*Ulmus parvifolia*), carob (*Ceratonia siliqua*), red ironbark (*Eucalyptus sideroxylon*) American sweetgum (*Liquidambar styraciflua*).

Unvegetated Concrete-Lined Channel. The Arroyo Seco traverses the western portion of the survey, immediately adjacent to the project site. This portion of the drainage consists of concrete-lined channel and is entirely devoid of vegetation.

Developed. Developed land use generally includes the golf course facilities, that includes the golf course and the paved golf cart/pedestrian pathways, driving range platform and the club house.

Common Fish and Wildlife

Avian species expected to forage and breed within the landscaped vegetation located in the survey area include, but are not limited to, Anna's hummingbird (*Calypte anna*), house finch (*Carpodacus mexicanus*), American kestrel (*Falco sparverius*), California towhee (*Melozone crissalis*), Northern mockingbird (*Mimus polyglottos*), spotted towhee (*Pipilo maculatus*), bushtit (*Psaltriparus minimus*), lesser goldfinch (*Spinus psaltria*), Bewick's wren (*Thryomanes bewickii*) and mourning dove (*Zenaida macroura*). No evidence of raptor nesting was observed within the tree located in the survey area; however, it should be noted that a specific search of predated nest material was not conducted.

California ground squirrels (*Otospermophilus beecheyi*) and Botta's pocket gopher (*Thomomys bottae*) could burrow within friable soil available within the survey area and utilize it to forage and breed; however, it is expected that the golf course maintenance staff control these ground dwellers on the golf course and driving range. Various other mammal species that include coyote (*Canis latrans*), Virginia opossum (*Didelphis virginiana*), mule deer (*Odocoileus hemionus*) and raccoon (*Procyon lotor*) are expected to utilize the Arroyo Seco for local movement and to a limited degree, may forage within the landscaped vegetation of the golf course during nighttime hours when it is closed.

SOURCE: Mapbox, 2020; ESA, 2020.

Brookside Golf Course Improvements Project

Figure 3
Plant Communities and Land Use

ESA

Sensitive Biological Resources

Special-status Wildlife. Special-status wildlife is defined as those animals that, because of their recognized rarity or vulnerability to various forms of habitat loss or population decline, are considered by federal, state, or other agencies to be under threat from human-associated developments. Some of these species receive specific protection that is defined by federal or state endangered species legislation and others have been designated as special-status on the basis of adopted local policies (e.g., city and county) or the educated opinion of respected resource interest groups (e.g., Western Bat Working Group). Special-status wildlife is defined as any of the following:

- Wildlife listed or proposed for listing as threatened or endangered, or are candidates for possible future listing as threatened or endangered, under the federal Endangered Species Act (FESA) or the California Endangered Species Act (CESA).
- Wildlife that meet the definitions of rare or endangered under California Environmental Quality Act (CEQA) Guidelines Section 15380.
- Wildlife designated by CDFW as species of special concern, included on the Watch List or considered "Special Animals."
- Wildlife fully protected in California (Fish and Game Code Sections 3511, 4700, and 5050).
- Bird species protected by the Migratory Bird Treaty Act (MBTA).
- Bat species considered priority by the Western Bat Working Group (WBWG).

Special-status Plants. Special-status plants are defined as those plants that, because of their recognized rarity or vulnerability to various causes of habitat loss or population decline, are recognized by federal, state, or other agencies as under threat from human-associated developments. Some of these species receive specific protection that is defined by federal or state endangered species legislation. Others have been designated as special-status on the basis of adopted policies and expertise of state resource agencies or organizations with acknowledged expertise, or policies adopted by local governmental agencies such as Counties, Cities, and special districts to meet local conservation objectives. Special-status plants are defined as any of the following:

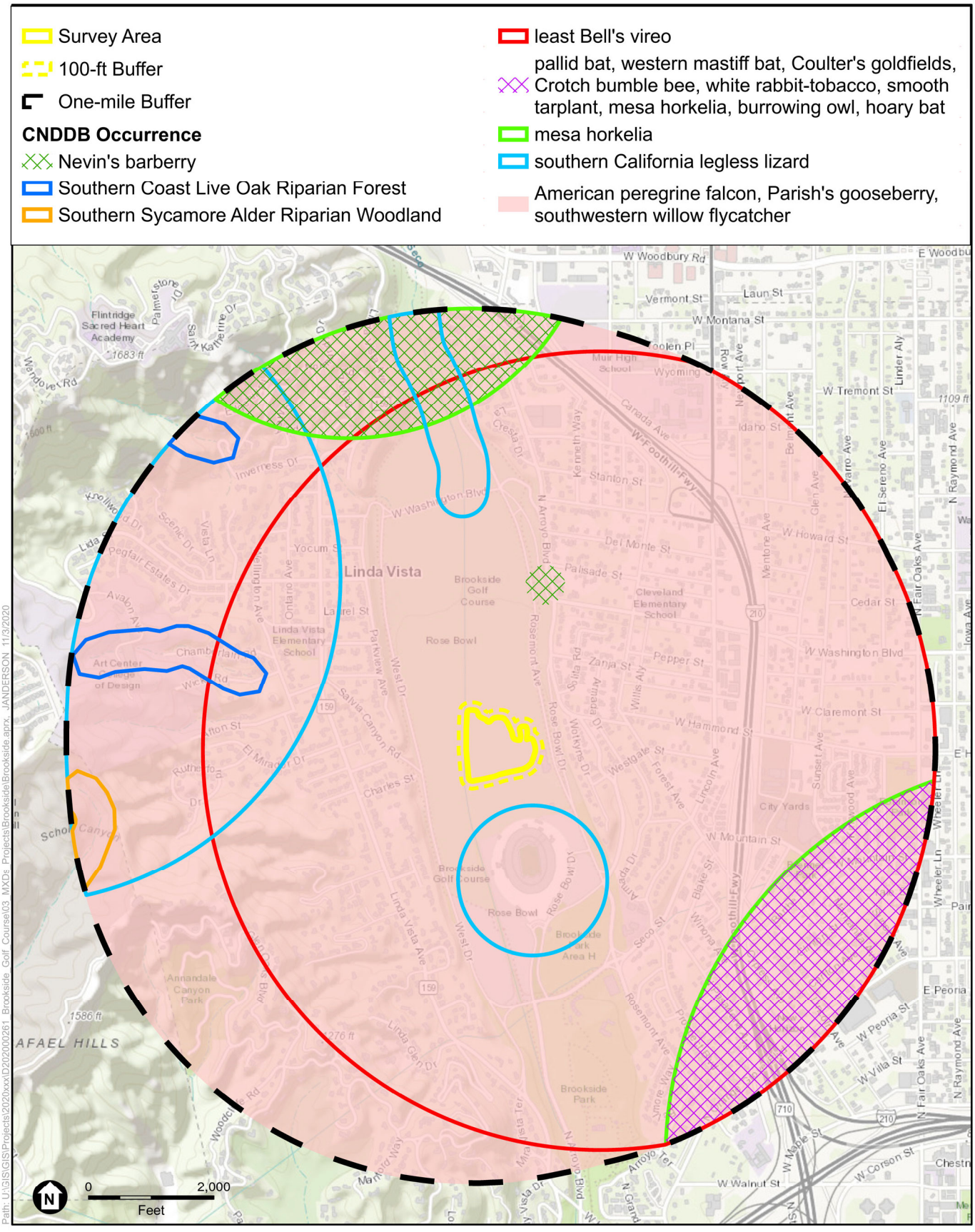
- Plants listed or proposed for listing as threatened or endangered, or are candidates for possible future listing as threatened or endangered, under FESA or CESA.
- Plants that meet the definitions of rare or endangered under State CEQA Guidelines Section 15380.
- Plants considered by the CNPS to be rare, threatened, or endangered (Rank 1A, 1B, 2A and 2B plants) in California.
- Plants listed by the CNPS as plants for which more information is needed to determine their status and plants of limited distribution (Rank 3 and 4 plants).

- Plants listed as rare under the California Native Plant Protection Act (Fish and Game Code 1900 et seq.).

The special-status plant and wildlife species listed in **Table 3 – Potentially Occurring Special-Status Species in the Survey Area** below were determined to have varying levels of potential to occur based on the following criteria:

- **None:** The survey area currently does not habitat for a particular species; therefore, they are not expected to occur onsite.
- **Low Potential:** The survey area supports limited habitat for a particular species. For example, the appropriate vegetation assemblage may be present while the substrate preferred by the species may be absent.
- **Moderate Potential:** The survey area provides marginal habitat for a particular species. For example, the habitat may be heavily disturbed and/or may not support all stages of a species life cycle; however, it is present nonetheless.
- **High Potential:** The survey area provides suitable habitat conditions for a particular species and/or known populations occur in the immediate area.
- **Present:** The species was observed within the survey area during the site visit.

Numerous special-status species and habitat occurrences have been documented within the eight-USGS quadrangle query of the CNDDB, CNPS and IPaC databases (**Attachment B – Database Review**), of which, nine (9) special-status wildlife species and six (6) special-status plant species have been reported within or immediately adjacent to the survey area that includes: southern California legless lizard (*Anniella stebbinsi*), pallid bat (*Antrozous pallidus*), western burrowing owl (*Athene cunicularia*), Crotch's bumblebee (*Bombus crotchii*), southwestern willow flycatcher (*Empidonax traillii* ssp. extimus), Greater western mastiff bat (*Eumops perotis* ssp. *californicus*), American Peregrine falcon (*Falco peregrinus* ssp. *anatum*), hoary bat (*Lasiurus cinereus*) least Bell's vireo (*Vireo bellii* ssp. *pusillus*), Nevin's barberry (*Berberis nevinii*), smooth tarplant (*Centromadia pungens* ssp. *laevis*), Mesa horkelia (*Horkelia cuneata* var. *puberula*), Coulter's goldfields (*Lasthenia glabrata* ssp. *coulteri*), white rabbit-tobacco (*Pseudognaphalium leucocephalum*) and Parish's gooseberry (*Ribes divaricatum* var. *parishii*) (See **Figure 4 – CNDDB**). While these species have been previously documented within or in close proximity to the survey area (most in the early- to mid-1900's), in its current state, suitable habitat (i.e., native plant communities, suitable roost sites, etc.) is not present. Nonetheless, one special-status species has potential to occur, Cooper's hawk (*Accipiter cooperii*), which has a moderate potential to forage and breed within 500 feet of the project site.



SOURCE: ESRI; CNDDB, 2020; ESA, 2020.

Brookside Golf Course Improvements Project

Figure 4
CNDDB

ESA

TABLE 1
POTENTIALLY OCCURRING SPECIAL-STATUS PLANT AND WILDLIFE SPECIES WITHIN THE SURVEY AREA

Common Name	Scientific Name	Status (Federal/State/Other)	Habitat	Potential to Occur
Wildlife				
Birds				
Cooper's hawk	*Accipiter cooperii*	None/WL, SA/None	Cismontane woodland, riparian forest and woodland and upper montane coniferous forest.	**Moderate.** Suitable foraging habitat is present throughout much of the landscaped golf greens and nesting habitat is present within the many of the ornamental trees planted within the survey area. This species may nest within 500 feet of the project site.
burrowing owl	*Athene cunicularia*	FSC/SSC, SA/None	Open scrub and grassland communities that allow for optimal visibility when foraging. Generally, this species prefers fossorial mammal burrows for use as wintering and breeding refuge; however, may also use disused material or infrastructure (e.g., concrete/metal pipes, culverts, debris piles, etc.) for this purpose. This species readily utilizes disturbed areas to forage and breed.	**None.** This species was observed within the vicinity of the Brookside Golf Course, to the southeast of the survey area, in 1895. However, suitable habitat for this species does not currently exist onsite.
Southwestern willow flycatcher	*Empidonax traillii* ssp. *extimus*	FE/SE,WL, SA/None	Riparian vegetation. This species is generally associated with open water.	**None.** This species was observed within the vicinity of the Brookside Golf Course, to the west of the survey area, in 1906. However, suitable habitat for this species does not currently exist onsite.
American peregrine falcon	*Falco peregrinus* ssp. *anatum*	BCC/FP,SA/None	Utilizes various habitat types such as chaparral, forest and woodland communities for foraging. Nests on skyscrapers, water towers, cliffs, power pylons and other tall structures (Cornell 2020).	**None.** This species was observed within the vicinity of the Brookside Golf Course, to the west of the survey area, in 2005. However, suitable habitat for this species does not exist onsite.
least Bell's vireo	*Vireo bellii* ssp. *pusillus*	FE/SE,SA/None	Riparian vegetation.	**None.** This species was observed within the vicinity of the Brookside Golf Course, to the west of the survey area, in 1911. However, suitable habitat for this species does not currently exist onsite.

Common Name	Scientific Name	Status (Federal/State/Other)	Habitat	Potential to Occur
Mammals				
Pallid bat	*Antrozous pallidus*	None/SSC, SA/WBWG-H	Grasslands, shrublands, woodlands, and coniferous forests; most common in open, dry habitat with rocky areas for roosting, as well as abandon buildings and medal clad structures Species is known to roost in cavities of oak trees (WBWG 2020).	**None.** This species was observed within the vicinity of the Brookside Golf Course, to the southeast of the survey area, in 1910. However, suitable habitat for this species does not currently exist onsite.
Greater western mastiff bat	*Eumops perotis* ssp. *californicus*	None/SSC, SA/WBWG-H	Chaparral, cismontane woodland, coastal scrub and valley and foothill grassland. Roosts in small colonies in rock fissures in high cliff faces (WBWG 2020).	**None.** This species was observed within the vicinity of the Brookside Golf Course, to the southeast of the survey area, in 1941. However, suitable habitat for this species does not currently exist onsite.
Hoary bat	*Lasiurus cinereus*	None/SA/WBWG-M	Roosts in coniferous and/or deciduous trees, commonly along the edge of clearings (WBWG 2020).	**None.** This species was observed within the vicinity of the Brookside Golf Course, to the southeast of the survey area, in 1945. However, suitable habitat for this species does not currently exist onsite.
Reptiles				
Southern California legless lizard	*Anniella stebbinsi*	None/SSC,SA	Chaparral, coastal dunes and coastal scrub. This species is regularly found associated with woodrat middens.	**None.** This species was observed within and southeast of the survey area, in 1941. However, suitable habitat for this species no longer exists onsite.
Invertebrates				
Crotch bumble bee	*Bombus crotchii*	None/SA/None	Coastal scrub and chaparral.	**None.** This species was observed within the vicinity of the Brookside Golf Course, to the southeast of the survey area, in 1933. However, suitable habitat for this species does not currently exist onsite.
Plants				
Nevin's barberry	*Berberis nevinii*	FE/SE/1B	Sandy/gravelly soils along washes, associated within coastal sage scrub and chaparral communities.	**None.** This species was observed immediately adjacent to the Brookside Golf Course, approximately 1,500 feet to the north of the project site, in1927. However, suitable habitat for this species does not currently exist onsite.

Common Name	Scientific Name	Status (Federal/State/Other)	Habitat	Potential to Occur
Smooth tarplant	*Centromadia pungens* ssp. *laevis*	None/None/1B	Shadescale scrub, alkali sink and valley grassland.	**None.** This species was observed within the vicinity of the Brookside Golf Course, to the southeast of the project site, in 1901. However, suitable habitat for this species does not currently exist onsite.
Mesa horkelia	*Horkelia cuneata* var. *puberula*	None/None/1B	Dry, sandy soils within coastal sage scrub and chaparral communities.	**None.** This species was observed within the vicinity of the Brookside Golf Course, to the southeast of the project site, in 1901. However, suitable habitat for this species does not currently exist onsite.
Coulter's goldfields	*Lasthenia glabrata* ssp. *coulteri*	None/None/1B	Alkali sink, coastal salt marsh, freshwater wetlands and wetland-riparian.	**None.** This species was observed within the vicinity of the Brookside Golf Course, to the southeast of the project site, in 1882. However, suitable habitat for this species does not currently exist onsite.
White rabbit-tobacco	*Pseudognaphalium leucocephalum*	None/None/2B		**None.** This species was observed within the vicinity of the Brookside Golf Course, to the south of the project site, within 1908. However, suitable habitat for this species does not currently exist onsite.
Parish's gooseberry	*Ribes divaricatum* var. *parishii*	None/None/1A	Moist woodland.	**None.** This species was observed within the vicinity of the Brookside Golf Course, to the west of the project site, in 1893. However, suitable habitat for this species does not currently exist onsite.

Federal/State/Other Status: FE – federally endangered, FP – Fully Protected, FSC – Federal Species of Concern; SA – State Special Animal, SE – State endangered, BCC – Federal Bird of Conservation Concern; SSC – State Species of Special Concern, WL – State watch List; WBWG – Western Bat Working Group List (M – medium priority, H – High Priority); California Native Plant Society (CNPS): 1A – Plants presumed extinct in California; 1B – Plants rare, threatened or endangered in California and elsewhere; 2B – Plants rare, threatened, or endangered in California, but more common elsewhere.

Protected Trees

Numerous trees protected under Title 8, Chapter 8.52 of the Pasadena Municipal Code are present throughout the survey area and may be impacted by the project. A protected tree survey was conducted on October 5 and 6, 2020, the results of which have been compiled and analyzed in a tree report (ESA 2020).

Critical Habitat

Under FESA, to the extent feasible, the USFWS and National Marine Fisheries Service (NMFS) are required to designate critical habitat for endangered and threatened species. Critical habitat is defined as areas of land, water, and air space containing the physical and biological features essential for the survival and recovery of endangered and threatened species. Designated critical habitat includes sites for breeding and rearing, movement or migration, feeding, roosting, cover, and shelter. Designated critical habitats require special management and protection of existing resources, including water quality and quantity, host animals and plants, food availability, pollinators, sunlight, and specific soil types. Critical habitat designates this suitable habitat, occupied or not, as essential to the survival and recovery of the species.

There is no critical habitat in the vicinity of the survey area.

Migration Corridors

The project site and immediate surroundings contain landscaping and regularly maintained trees associated with the Brookside Golf Course. The Central Arroyo Seco flows north-south along the western portion of the project site and provides connectivity to the Upper Arroyo/Hahamongna Watershed Park to the north of the project site, upstream of Devils Gate Dam. The Central Arroyo Seco provides a suitable corridor for native resident species to move through the area, particularly medium to large mammals such as coyote, bear, deer and mountain lion. Coyote and deer have been frequently observed in the area by local residents due to the Project location's proximity to Los Angeles National Forest (ESA 2015). Mountain lion (*Puma concolor*) have the potential to move through the project site using the Central Arroyo Seco and surrounding recreation areas (Wilson, 2015). Additionally, the Rose Bowl Operating Committee (RBOC) observed a black bear (*Ursus americanus*), near the golf course in 2013, at night, near the ponds that occur on the golf course that currently is enclosed by an 8-foot tall fence (RBOC pers. comm. 2015).

While the project site and vicinity provide opportunities for local wildlife movement, the immediate surroundings are entirely developed and frequently used for recreational purposes and various events that are held at the Rose Bowl. The channelized portion of the Arroyo Seco that traverses the western boundary of the project site could support wildlife movement.

Aquatic Resources

The Arroyo Seco is likely regulated by the United States Army Corps of Engineers (USACE), Regional Water Quality Control Board (RWQCB) and CDFW; however, with the implementation of a Stormwater Pollution Prevention Plan (SWPPP) and the appropriate Best Management Practices (BMP's), the proposed project activities are not expected to have a significant effect on aquatic resources.

Regulatory Setting

Federal and State Endangered Species Acts

FESA provides guidance for conserving federally listed species and the ecosystems upon which they depend. Section 9 of the FESA and its implementing regulations prohibit the "take" of any federally-listed endangered or threatened plant or animal species, unless otherwise authorized by federal regulations. "Take" includes the destruction of a listed species' habitat. Section 9 also prohibits a number of specified activities with respect to endangered and threatened plants.

CESA mandates that state agencies not approve a project that would jeopardize the continued existence of species if reasonable and prudent alternatives are available that would avoid a jeopardy finding. CESA also prohibits the take of any fish, wildlife, or plant species listed as endangered or threatened, or designated as candidates for listing, under CESA. Similar to the FESA, CESA contains a procedure for the CDFW to issue an incidental take permit authorizing the take of listed and candidate species incidental to an otherwise lawful activity, subject to specified conditions.

Migratory Bird Treaty Act

The MBTA prohibits the take of native birds "by any means or manner to pursue, hunt, take, capture (or) kill" any migratory birds except as permitted by regulations issued by the USFWS. The term "take" is defined by USFWS regulation to mean to "pursue, hunt, shoot, wound, kill, trap, capture or collect" any migratory bird or any part, nest or egg of any migratory bird covered by the conventions, or to attempt those activities.

Sections 3503, 3503.5 and 3513 of the California Fish and Game Code

Section 3503 of the California Fish and Game Code prohibits the killing of birds or the destruction of bird nests. Birds of prey are protected under Section 3503.5 of the California Fish and Game Code, which provides that it is "unlawful to take, possess, or destroy any birds in the order Falconiformes or Strigiformes (birds of prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto." Section 3513 of the California Fish and Game Code prohibits any take or possession of birds that are designated by the Migratory Bird Treaty Act as migratory nongame birds except as allowed by federal rules and regulations promulgated pursuant to the MBTA. Migratory birds include all native

birds in the United States, except those non-migratory game species such as quail and turkey that are managed by individual states.

Clean Water Act

In accordance with Section 404 of the Clean Water Act (CWA), the USACE regulates discharge of dredged or fill material into waters of the U.S. Waters of the U.S. and their lateral limits are defined in 33 CFR 328.3(a) and includes navigable waters of the U.S., interstate waters, all other waters where the use or degradation or destruction of the waters could affect interstate or foreign commerce, tributaries to any of these waters, and wetlands that meet any of these criteria or that are adjacent to any of these waters or their tributaries. Waters of the U.S. are often categorized as "jurisdictional wetlands" (i.e., wetlands over which the USACE exercises jurisdiction under Section 404) and "other waters of the United States" when habitat values and characteristics are being described. "Fill" is defined as any material that replaces any portion of a water of the U.S. with dry land or that changes the bottom elevation of any portion of a water of the U.S. Any activity resulting in the placement of dredged or fill material within waters of the United States requires a permit from USACE. In accordance with Section 401 of the CWA, projects that apply for a Section 404 permit for discharge of dredged or fill material must obtain water quality certification from the appropriate RWQCB indicating that the proposed project would uphold State of California water quality standards.

Section 1602 of the California Fish and Game Code

Section 1602 of the California Fish and Game Code requires a Streambed Alteration Agreement for any activity that may alter the bed and/or bank of a lake, stream, river, or channel. Typical activities that require a Streambed Alteration Agreement include, but are not limited to, excavation or fill placed within a channel, vegetation clearing, installation of culverts and bridge supports, and bank reinforcement. As part of the notification process, the CDFW requires documentation of any trees to be removed as part of the project. Trees that have a trunk diameter at breast height (dbh) of greater than two inches are subject to regulation by the CDFW via the Streambed Alteration Agreement.

City of Pasadena Tree Protection Ordinance

The City of Pasadena's City Trees and Tree Protection Ordinance under Title 8, Chapter 8.52 of the Pasadena Municipal Code provides protection for the following trees, broadly defined as "protected tree(s)":

- Landmark tree – A tree designated as a landmark under Chapter 17.62 of the municipal code as a tree of historic or cultural significance and of importance to the community due to various factors.
- Landmark-eligible tree – A tree which meets the criteria for designation as a landmark tree
- Mature tree – An otherwise non-protected tree with a diameter-at-breast height (DBH) of 19 inches or greater (except for trees in RS or RM-12 Zones.

- Native tree – Any tree with a trunk more than 8 inches in diameter at a height of 4 ½ feet above natural grade that is one of the following species: *Quercus agrifolia* (coast live oak), *Quercus engelmannii* (Engelmann oak), *Quercus chrysolepis* (canyon oak), *Platanus racemosa* (California sycamore), *Juglans californica* (California walnut), *Quercus berberidifolia* (scrub oak), *Quercus lobata* (valley oak), *Umbellularia californica* (California bay), *Populus fremontii* (cottonwood), *Alnus rhombifolia* (California alder), *Populus trichocarpa* (black cottonwood), *Salix lasiolepis* (arroyo willow), and *Aesculus californica* (California buckeye)".

- Public Tree – A tree located in a place or area under ownership or control of the City, including but without limitation streets, parkways, open space, parkland and including city owned property under the operation control of another entity by virtue of a lease, license, operating or other agreement.

Arroyo Seco Master Plans

The City of Pasadena maintains three Master Plans for the Arroyo Seco: The Hahamongna Watershed Park Master Plan (for the Upper Arroyo area); the Central Arroyo Master Plan; and the Lower Arroyo Master Plan. The project site is located within the Central Arroyo Seco Plan Area and is therefore subject to the provisions set forth within that plan.

Central Arroyo Master Plan. The Central Arroyo Master Plan Advisory Committee developed the Central Arroyo Master Plan in 2003 based on community input, interviews with public agencies, analysis of the Recreation Loop, and a review of pertinent City plans. The Master Plan was adopted by the City Council as of September 26, 2005. The Master Plan was designed to modify and enhance existing facilities and to provide recommendations for areas within the Central Arroyo, including the area surrounding the Rose Bowl. Recommendations generally fall into the following topic areas: Brookside Park (including both hillside areas and group picnic areas); Rosemont Pavilion; the Recreation Loop; Recreation Trails, Landscape and Aesthetic Improvements; Parking; Flood Protection; Permitting Process; Management and Maintenance; Land and Conservation Acquisition; Accessibility and Security; and Implementation. Many of these recommendations have components that outline the protection and/or restoration of biological resources that persist within the plan area.

Conclusions and Recommended Minimization Measures

Special-Status Species and Nesting Birds

Cooper's hawk and other native bird species may nest within 500 feet of the project site and may be affected by project construction. Moreover, nighttime lighting associated with the driving range improvements and proposed miniature golf course may contribute to existing nighttime lighting. The minimization measures below are recommended to avoid impacts to nesting birds during construction, including indirect impacts that may be created by additional nighttime light sources during operation.

- If construction activities occur within the bird nesting season (generally defined as February 15 through September 15), a qualified biologist shall conduct a nesting bird survey within 3 days prior to the proposed

start date, to identify any active nests (including Cooper's hawk) within 500 feet of the project site. If an active nest is found, the nest shall be avoided and a suitable buffer zone shall be delineated in the field such that no impacts shall occur until the chicks have fledged the nest as determined by a qualified biologist. Construction buffers shall be 300 feet for passerines and up to 500 feet for any raptor species; however, avoidance buffers may be reduced at the discretion of the biologist, depending on the location of the nest and species tolerance to human presence and construction-related noises and vibrations.

- To minimize potential indirect impact to nesting birds that may utilize ornamental/landscape vegetation onsite and/or wildlife movement along the Arroyo Seco, nighttime lighting associated with the driving range and miniature golf course shall be shielded downward to limit spillage onto these sensitive receptors.

Aquatic Resources

The Arroyo Seco is located outside of the project site. The implementation of a Stormwater Pollution Prevention Plan (SWPPP) and Best Management Practices (BMP's) would avoid and/or minimize any inadvertent impacts to this water course, including water quality. As such, the proposed project activities are not expected to have a significant effect on aquatic resources.

Migration Corridors

Wildlife is expected to utilize the Arroyo Seco and while it is situated within the survey area, the project is not expected to have an impact on wildlife movement. Specifically, no direct effects to the Arroyo Seco would occur from construction activities. Indirect impacts to wildlife movement would be minimized by restricting construction activities between the hours of 1900 and 0700, when wildlife is least likely to move through the survey area.

Nighttime light spillage associated with the operation of the driving range and proposed miniature golf course is not expected to significantly disrupt wildlife movement when considering existing conditions. Nonetheless, nighttime lighting should be shielded away from the Arroyo Seco to reduce any potential affects it may have on wildlife movement.

Protected Trees

Protected trees are present within the project site and may be impacted as a result of construction activities. The Brookside Golf Course Improvements Project Tree Report (ESA 2020) includes an inventory of the protected trees that may be affected by the project and provides appropriate mitigation to offset these potential impacts.

Central Arroyo Seco Master Plan

In accordance with Section 4.5 Landscape and Aesthetic Improvements of the Central Arroyo Seco Master Plan, certain areas identified for native plant restoration shall be incorporated into the landscape design of the project.

References

Cornell Lab of Ornithology. 2020. All About Birds. Accessed at: https://www.allaboutbirds.org/

Environmental Science Associates (ESA). 2020. Brookside Golf Course Improvements Project, Tree Report. October 2020.

Environmental Science Associates (ESA). 2015. Arroyo Seco Music and Arts Festival Project, Draft EIR.

Google Earth Pro. 2020

Sawyer, J.O., T. Keeler-Wolf, and J.M. Evens. 2009. A Manual of California Vegetation, Second Edition. California Native Plant Society, Sacramento. 1300 pp.

Western Bat Working Group (WBWG). 2020. Species Info. Accessed at http://wbwg.org/western-bat-species/

Wilson, Larry, *Proving that Lions Roam in Pasadena: Larry Wilson,* Pasadena Star-News. June 23, 2015.

On behalf of ESA, it has been a pleasure preparing this information for you. Please do not hesitate to contact Robbie Sweet or Greg Ainsworth at (805) 914-1500 if you have any questions or comments regarding this report.

Sincerely,

Robbie Sweet
Senior Associate Biologist

Greg Ainsworth
Director, Biological Resources

Attachments: Attachment A – Representative Site Photographs
Attachment B– Database Review - CNDDB, CNPS and IPaC

Attachment A

Representative Site Photographs

Photo 1 (E). Photograph depicts the project site from its western boundary.

Photo 2 (S). Photograph depicts the project site from its northern boundary.

Photo 3 (W). Photograph depicts the project site from its southeastern boundary.

Photo 4 (E). Photograph depicts the project site from its southern boundary.

Photo 5 (N). Photograph depicts the Arroyo Seco, situated along the western project boundary.

Photo 6 (S). Photograph depicts the Arroyo Seco, situated along the western project boundary.

Attachment B

Database Review – CNDDB, CNPS and IPaC

CALIFORNIA DEPARTMENT OF FISH and WILDLIFE **RareFind**

Query Summary:
Quad IS (Burbank (3411823) OR Chilao Flat (3411831) OR Condor Peak (3411832) OR El Monte (3411811) OR Hollywood (3411813) OR Los Angeles (3411812) OR Mt. Wilson (3411821) OR Sunland (3411833) OR Pasadena (3411822))

Print Close

CNDDB Element Query Results

Scientific Name	Common Name	Taxonomic Group	Element Code	Total Occs	Returned Occs	Federal Status	State Status	Global Rank	State Rank	CA Rare Plant Rank	Oth Stat
Aimophila ruficeps canescens	southern California rufous-crowned sparrow	Birds	ABPBX91091	235	1	None	None	G5T3	S3	null	CDFW_WI List
Anaxyrus californicus	arroyo toad	Amphibians	AAABB01230	139	5	Endangered	None	G2G3	S2S3	null	CDFW_SS Species of Concern, IUCN_EN-Endangere
Anniella spp.	California legless lizard	Reptiles	ARACC01070	119	19	None	None	G3G4	S3S4	null	CDFW_SS Species of Concern
Anniella stebbinsi	Southern California legless lizard	Reptiles	ARACC01060	417	34	None	None	G3	S3	null	CDFW_SS Species of Concern, USFS_S-S
Antrozous pallidus	pallid bat	Mammals	AMACC10010	420	7	None	None	G5	S3	null	BLM_S-Se CDFW_SS Species of Concern, I Least Con USFS_S-S WBWG_H Priority
Arctostaphylos glandulosa ssp. gabrielensis	San Gabriel manzanita	Dicots	PDERI042P0	35	12	None	None	G5T3	S3	1B.2	SB_CalBG California/I Santa Ana Garden, USFS_S-S
Arenaria paludicola	marsh sandwort	Dicots	PDCAR040L0	16	1	Endangered	Endangered	G1	S1	1B.1	SB_SBBG Barbara Bo Garden
Arizona elegans occidentalis	California glossy snake	Reptiles	ARADB01017	260	3	None	None	G5T2	S2	null	CDFW_SS Species of Concern
Aspidoscelis tigris stejnegeri	coastal whiptail	Reptiles	ARACJ02143	148	10	None	None	G5T5	S3	null	CDFW_SS Species of Concern
Astragalus brauntonii	Braunton's milk-vetch	Dicots	PDFAB0F1G0	42	4	Endangered	None	G2	S2	1B.1	SB_CalBG California/I Santa Ana

											Garden, S Santa Barb Botanic Ga
Athene cunicularia	burrowing owl	Birds	ABNSB10010	1989	2	None	None	G4	S3	null	BLM_S-Se CDFW_SS Species of Concern, I Least Con USFWS_B of Conserv Concern
Atriplex parishii	Parish's brittlescale	Dicots	PDCHE041D0	15	1	None	None	G1G2	S1	1B.1	SB_CRES Diego Zoo Native Ger Bank, USFS_S-S
Atriplex serenana var. davidsonii	Davidson's saltscale	Dicots	PDCHE041T1	27	2	None	None	G5T1	S1	1B.2	SB_CalBG California/I Santa Ana Garden
Berberis nevinii	Nevin's barberry	Dicots	PDBER060A0	32	7	Endangered	Endangered	G1	S1	1B.1	SB_CalBG California/I Santa Ana Garden, S Santa Barb Botanic Ga
Bombus crotchii	Crotch bumble bee	Insects	IIHYM24480	288	8	None	Candidate Endangered	G3G4	S1S2	null	null
Buteo swainsoni	Swainson's hawk	Birds	ABNKC19070	2535	1	None	Threatened	G5	S3	null	BLM_S-Se IUCN_LC- Concern, USFWS_B of Conserv Concern
California Walnut Woodland	California Walnut Woodland	Woodland	CTT71210CA	76	2	None	None	G2	S2.1	null	null
Calochortus clavatus var. gracilis	slender mariposa-lily	Monocots	PMLIL0D096	143	2	None	None	G4T2T3	S2S3	1B.2	SB_CalBG California/I Santa Ana Garden, USFS_S-S
Calochortus palmeri var. palmeri	Palmer's mariposa-lily	Monocots	PMLIL0D122	111	7	None	None	G3T2	S2	1B.2	BLM_S-Se SB_CalBG California/I Santa Ana Garden, S Santa Barb Botanic Ga USFS_S-S
Calochortus plummerae	Plummer's mariposa-lily	Monocots	PMLIL0D150	230	49	None	None	G4	S4	4.2	SB_CalBG California/I Santa Ana Garden
Calochortus striatus	alkali mariposa-lily	Monocots	PMLIL0D190	113	1	None	None	G3?	S2S3	1B.2	BLM_S-Se SB_CalBG California/I Santa Ana Garden, USFS_S-S
Calochortus weedii var. intermedius	intermediate mariposa-lily	Monocots	PMLIL0D1J1	140	2	None	None	G3G4T2	S2	1B.2	SB_CalBG California/I Santa Ana

											Garden, USFS_S-S
Calystegia felix	lucky morning-glory	Dicots	PDCON040P0	10	2	None	None	G1Q	S1	1B.1	null
Carolella busckana	Busck's gallmoth	Insects	IILEM2X090	4	1	None	None	G1G3	SH	null	null
Castilleja gleasoni	Mt. Gleason paintbrush	Dicots	PDSCR0D140	33	16	None	Rare	G2	S2	1B.2	SB_CalBG California/I Santa Ana Garden, USFS_S-S
Catostomus santaanae	Santa Ana sucker	Fish	AFCJC02190	28	2	Threatened	None	G1	S1	null	AFS_TH-Threatene IUCN_VU-Vulnerable
Centromadia parryi ssp. australis	southern tarplant	Dicots	PDAST4R0P4	94	6	None	None	G3T2	S2	1B.1	SB_CalBG California/I Santa Ana Garden, SI San Diego CRES Nat Seed Bank SB_SBBG Barbara Bo Garden
Centromadia pungens ssp. laevis	smooth tarplant	Dicots	PDAST4R0R4	126	1	None	None	G3G4T2	S2	1B.1	SB_CalBG California/I Santa Ana Garden
Chorizanthe parryi var. fernandina	San Fernando Valley spineflower	Dicots	PDPGN040J1	21	3	None	Endangered	G2T1	S1	1B.1	SB_CalBG California/I Santa Ana Garden, USFS_S-S
Chorizanthe parryi var. parryi	Parry's spineflower	Dicots	PDPGN040J2	150	3	None	None	G3T2	S2	1B.1	BLM_S-Se SB_CalBG California/I Santa Ana Garden, USFS_S-S
Cladium californicum	California saw-grass	Monocots	PMCYP04010	13	1	None	None	G4	S2	2B.2	SB_CalBG California/I Santa Ana Garden, USFS_S-S
Coccyzus americanus occidentalis	western yellow-billed cuckoo	Birds	ABNRB02022	165	1	Threatened	Endangered	G5T2T3	S1	null	BLM_S-Se NABCI_RV Watch List USFS_S-S USFWS_E of Conserv Concern
Corynorhinus townsendii	Townsend's big-eared bat	Mammals	AMACC08010	635	3	None	None	G3G4	S2	null	BLM_S-Se CDFW_SS Species of Concern, I Least Con USFS_S-S WBWG_H Priority

Coturnicops noveboracensis	yellow rail	Birds	ABNME01010	45	1	None	None	G4	S1S2	null	CDFW_SS Species of Concern, I Least Con NABCI_RV Watch List USFS_S-S USFWS_E of Conserv Concern
Cuscuta obtusiflora var. glandulosa	Peruvian dodder	Dicots	PDCUS01111	6	1	None	None	G5T4?	SH	2B.2	null
Cypseloides niger	black swift	Birds	ABNUA01010	46	1	None	None	G4	S2	null	CDFW_SS Species of Concern, I Least Con NABCI_YW Yellow Wa USFWS_E of Conserv Concern
Diadophis punctatus modestus	San Bernardino ringneck snake	Reptiles	ARADB10015	14	1	None	None	G5T2T3	S2?	null	USFS_S-S
Dodecahema leptoceras	slender-horned spineflower	Dicots	PDPGN0V010	41	6	Endangered	Endangered	G1	S1	1B.1	SB_CalBG California/I Santa Ana Garden
Dudleya multicaulis	many-stemmed dudleya	Dicots	PDCRA040H0	154	2	None	None	G2	S2	1B.2	SB_CalBG California/I Santa Ana Garden, USFS_S-S
Empidonax traillii extimus	southwestern willow flycatcher	Birds	ABPAE33043	70	2	Endangered	Endangered	G5T2	S1	null	NABCI_RV Watch List
Emys marmorata	western pond turtle	Reptiles	ARAAD02030	1398	13	None	None	G3G4	S3	null	BLM_S-Se CDFW_SS Species of Concern, IUCN_VU-Vulnerable USFS_S-S
Eumops perotis californicus	western mastiff bat	Mammals	AMACD02011	296	9	None	None	G5T4	S3S4	null	BLM_S-Se CDFW_SS Species of Concern, WBWG_H Priority

Falco peregrinus anatum	American peregrine falcon	Birds	ABNKD06071	58	1	Delisted	Delisted	G4T4	S3S4	null	CDF_S-Se CDFW_FP Protected, USFWS_E of Conserv Concern
Galium grande	San Gabriel bedstraw	Dicots	PDRUB0N0V0	9	3	None	None	G1	S1	1B.2	SB_CalBG California/I Santa Ana Garden, USFS_S-S
Gila orcuttii	arroyo chub	Fish	AFCJB13120	49	1	None	None	G2	S2	null	AFS_VU-Vulnerable CDFW_SS Species of Concern, USFS_S-S
Glyptostoma gabrielense	San Gabriel chestnut	Mollusks	IMGASB1010	24	15	None	None	G2	S2	null	null
Gonidea angulata	western ridged mussel	Mollusks	IMBIV19010	157	2	None	None	G3	S1S2	null	null
Helianthus nuttallii ssp. parishii	Los Angeles sunflower	Dicots	PDAST4N102	7	3	None	None	G5TX	SX	1A	null
Horkelia cuneata var. puberula	mesa horkelia	Dicots	PDROS0W045	103	14	None	None	G4T1	S1	1B.1	USFS_S-S
Icteria virens	yellow-breasted chat	Birds	ABPBX24010	100	1	None	None	G5	S3	null	CDFW_SS Species of Concern, I Least Con
Imperata brevifolia	California satintail	Monocots	PMPOA3D020	32	1	None	None	G4	S3	2B.1	SB_CalBG California/I Santa Ana Garden, SI Santa Barb Botanic Ga USFS_S-S
Lasionycteris noctivagans	silver-haired bat	Mammals	AMACC02010	139	1	None	None	G5	S3S4	null	IUCN_LC-Concern, WBWG_M Priority
Lasiurus blossevillii	western red bat	Mammals	AMACC05060	128	1	None	None	G5	S3	null	CDFW_SS Species of Concern, I Least Con WBWG_H Priority
Lasiurus cinereus	hoary bat	Mammals	AMACC05030	238	10	None	None	G5	S4	null	IUCN_LC-Concern, WBWG_M Priority
Lasiurus xanthinus	western yellow bat	Mammals	AMACC05070	58	1	None	None	G5	S3	null	CDFW_SS Species of Concern, I Least Con WBWG_H Priority
Lasthenia glabrata ssp. coulteri	Coulter's goldfields	Dicots	PDAST5L0A1	111	1	None	None	G4T2	S2	1B.1	BLM_S-Se SB_CalBG

											California/I Santa Ana Garden, SI Santa Barb Botanic Ga
Lepidium virginicum var. robinsonii	Robinson's pepper-grass	Dicots	PDBRA1M114	142	5	None	None	G5T3	S3	4.3	null
Lepus californicus bennettii	San Diego black-tailed jackrabbit	Mammals	AMAEB03051	103	1	None	None	G5T3T4	S3S4	null	CDFW_SS Species of Concern
Linanthus concinnus	San Gabriel linanthus	Dicots	PDPLM090D0	43	4	None	None	G2	S2	1B.2	SB_CalBG California/I Santa Ana Garden, USFS_S-S
Malacothamnus davidsonii	Davidson's bush-mallow	Dicots	PDMAL0Q040	83	36	None	None	G2	S2	1B.2	SB_CalBG California/I Santa Ana Garden
Microtus californicus stephensi	south coast marsh vole	Mammals	AMAFF11035	7	1	None	None	G5T1T2	S1S2	null	CDFW_SS Species of Concern
Muhlenbergia californica	California muhly	Monocots	PMPOA480A0	5	1	None	None	G4	S4	4.3	null
Nasturtium gambelii	Gambel's water cress	Dicots	PDBRA270V0	13	1	Endangered	Threatened	G1	S1	1B.1	SB_CalBG California/I Santa Ana Garden, SI Santa Barb Botanic Ga
Navarretia prostrata	prostrate vernal pool navarretia	Dicots	PDPLM0C0Q0	61	1	None	None	G2	S2	1B.2	null
Neotoma lepida intermedia	San Diego desert woodrat	Mammals	AMAFF08041	132	2	None	None	G5T3T4	S3S4	null	CDFW_SS Species of Concern
Nyctinomops macrotis	big free-tailed bat	Mammals	AMACD04020	32	2	None	None	G5	S3	null	CDFW_SS Species of Concern, I Least Con WBWG_M Medium-H Priority
Onychomys torridus ramona	southern grasshopper mouse	Mammals	AMAFF06022	28	2	None	None	G5T3	S3	null	CDFW_SS Species of Concern
Open Engelmann Oak Woodland	Open Engelmann Oak Woodland	Woodland	CTT71181CA	2	2	None	None	G2	S2.2	null	null
Opuntia basilaris var. brachyclada	short-joint beavertail	Dicots	PDCAC0D053	199	7	None	None	G5T3	S3	1B.2	BLM_S-Se SB_CalBG California/I Santa Ana Garden, USFS_S-S
Orobanche valida ssp. valida	Rock Creek broomrape	Dicots	PDORO040G2	12	1	None	None	G4T2	S2	1B.2	USFS_S-S

Palaeoxenus dohrni	Dohrn's elegant eucnemid beetle	Insects	IICOL5K010	3	1	None	None	G3?	S3?	null	null
Phacelia stellaris	Brand's star phacelia	Dicots	PDHYD0C510	15	1	None	None	G1	S1	1B.1	SB_CalBG California/I Santa Ana Garden
Phrynosoma blainvillii	coast horned lizard	Reptiles	ARACF12100	784	21	None	None	G3G4	S3S4	null	BLM_S-Se CDFW_SS Species of Concern, I Least Con
Polioptila californica californica	coastal California gnatcatcher	Birds	ABPBJ08081	883	16	Threatened	None	G4G5T2Q	S2	null	CDFW_SS Species of Concern, NABCI_YV Yellow Wa
Pseudognaphalium leucocephalum	white rabbit-tobacco	Dicots	PDAST440C0	62	6	None	None	G4	S2	2B.2	null
Quercus dumosa	Nuttall's scrub oak	Dicots	PDFAG050D0	180	1	None	None	G3	S3	1B.1	BLM_S-Se SB_CRES Diego Zoo Native Ger Bank, USFS_S-S
Rana muscosa	southern mountain yellow-legged frog	Amphibians	AAABH01330	186	14	Endangered	Endangered	G1	S1	null	CDFW_WI List, IUCN_ Endangere USFS_S-S
Rhinichthys osculus ssp. 3	Santa Ana speckled dace	Fish	AFCJB3705K	13	1	None	None	G5T1	S1	null	AFS_TH-Threatene CDFW_SS Species of Concern, USFS_S-S
Ribes divaricatum var. parishii	Parish's gooseberry	Dicots	PDGRO020F3	5	4	None	None	G5TX	SX	1A	null
Riparia riparia	bank swallow	Birds	ABPAU08010	298	2	None	Threatened	G5	S2	null	BLM_S-Se IUCN_LC-Concern
Riversidian Alluvial Fan Sage Scrub	Riversidian Alluvial Fan Sage Scrub	Scrub	CTT32720CA	30	7	None	None	G1	S1.1	null	null
Scutellaria bolanderi ssp. austromontana	southern mountains skullcap	Dicots	PDLAM1U0A1	43	1	None	None	G4T3	S3	1B.2	SB_CalBG California/I Santa Ana Garden, USFS_S-S
Setophaga petechia	yellow warbler	Birds	ABPBX03010	78	2	None	None	G5	S3S4	null	CDFW_SS Species of Concern, USFWS_B of Conserv Concern
Sidalcea neomexicana	salt spring checkerbloom	Dicots	PDMAL110J0	30	3	None	None	G4	S2	2B.2	USFS_S-S

Southern California Arroyo Chub/Santa Ana Sucker Stream	Southern California Arroyo Chub/Santa Ana Sucker Stream	Inland Waters	CARE2330CA	4	1	None	None	GNR	SNR	null	null
Southern Coast Live Oak Riparian Forest	Southern Coast Live Oak Riparian Forest	Riparian	CTT61310CA	246	33	None	None	G4	S4	null	null
Southern Cottonwood Willow Riparian Forest	Southern Cottonwood Willow Riparian Forest	Riparian	CTT61330CA	111	4	None	None	G3	S3.2	null	null
Southern Mixed Riparian Forest	Southern Mixed Riparian Forest	Riparian	CTT61340CA	14	4	None	None	G2	S2.1	null	null
Southern Sycamore Alder Riparian Woodland	Southern Sycamore Alder Riparian Woodland	Riparian	CTT62400CA	230	52	None	None	G4	S4	null	null
Spea hammondii	western spadefoot	Amphibians	AAABF02020	1409	6	None	None	G3	S3	null	BLM_S-Se CDFW_SS Species of Concern, IUCN_NT-Threatene
Symphyotrichum defoliatum	San Bernardino aster	Dicots	PDASTE80C0	102	2	None	None	G2	S2	1B.2	SB_CalBG California/I Santa Ana Garden, SI San Diego CRES Nat Seed Bank USFS_S-S
Symphyotrichum greatae	Greata's aster	Dicots	PDASTE80U0	56	21	None	None	G2	S2	1B.3	SB_CalBG California/I Santa Ana Garden
Taricha torosa	Coast Range newt	Amphibians	AAAAF02032	88	3	None	None	G4	S4	null	CDFW_SS Species of Concern
Taxidea taxus	American badger	Mammals	AMAJF04010	594	1	None	None	G5	S3	null	CDFW_SS Species of Concern, I Least Con

Thamnophis hammondii	two-striped gartersnake	Reptiles	ARADB36160	184	7	None	None	G4	S3S4	null	BLM_S-Se CDFW_SS Species of Concern, I Least Con USFS_S-S
Thelypteris puberula var. sonorensis	Sonoran maiden fern	Ferns	PPTHE05192	27	3	None	None	G5T3	S2	2B.2	USFS_S-S
Vireo bellii pusillus	least Bell's vireo	Birds	ABPBW01114	503	19	Endangered	Endangered	G5T2	S2	null	IUCN_NT- Threatene NABCI_YW Yellow Wa
Walnut Forest	Walnut Forest	Forest	CTT81600CA	6	1	None	None	G1	S1.1	null	null

CNPS California Native Plant Society

Inventory of Rare and Endangered Plants

*The database used to provide updates to the Online Inventory is under construction. View updates and changes made since May 2019 here.

Plant List

75 matches found. *Click on scientific name for details*

Search Criteria

California Rare Plant Rank is one of [1A, 1B, 2A, 2B, 3, 4], FESA is one of [Endangered, Threatened, Cand
CESA is one of [Endangered, Threatened, Rare, Not Listed], Found in Quads 3411833, 3411832, 3411831,
3411822, 3411821, 3411813, 3411812 and 3411811;
Lifeform is one of [Tree, Shrub, Leaf succulent, Herb, Vine, Stem succulent, Lichen, Moss, Liverwort],
Duration is one of [ann, per, ephem],
Bloom Time is one of [January, February, March, April, May, June, July, August, September, October, Nove

Modify Search Criteria Export to Excel Modify Columns Modify Sort Display Photos

Scientific Name	Common Name	Family	Lifeform	Blooming Period	CA Rare Plant Rank	State Rank	Global Rank
Acanthoscyphus parishii var. parishii	Parish's oxytheca	Polygonaceae	annual herb	Jun-Sep	4.2	S3S4	G4? T3T4
Arctostaphylos glandulosa ssp. gabrielensis	San Gabriel manzanita	Ericaceae	perennial evergreen shrub	Mar	1B.2	S3	G5T3
Arctostaphylos parryana ssp. tumescens	interior manzanita	Ericaceae	perennial evergreen shrub	Feb-Apr	4.3	S3S4	G4T3T4
Arenaria paludicola	marsh sandwort	Caryophyllaceae	perennial stoloniferous herb	May-Aug	1B.1	S1	G1
Asplenium vespertinum	western spleenwort	Aspleniaceae	perennial rhizomatous herb	Feb-Jun	4.2	S4	G4
Astragalus brauntonii	Braunton's milk-vetch	Fabaceae	perennial herb	Jan-Aug	1B.1	S2	G2
Astragalus pycnostachyus var. lanosissimus	Ventura marsh milk-vetch	Fabaceae	perennial herb	(Jun)Aug-Oct	1B.1	S1	G2T1
Atriplex parishii	Parish's brittlescale	Chenopodiaceae	annual herb	Jun-Oct	1B.1	S1	G1G2
Atriplex serenana var. davidsonii	Davidson's saltscale	Chenopodiaceae	annual herb	Apr-Oct	1B.2	S1	G5T1

Berberis nevinii	Nevin's barberry	Berberidaceae	perennial evergreen shrub	(Feb)Mar-Jun	1B.1	S1	G1
Calochortus catalinae	Catalina mariposa lily	Liliaceae	perennial bulbiferous herb	(Feb)Mar-Jun	4.2	S3S4	G3G4
Calochortus clavatus var. gracilis	slender mariposa lily	Liliaceae	perennial bulbiferous herb	Mar-Jun (Nov)	1B.2	S2S3	G4T2T3
Calochortus palmeri var. palmeri	Palmer's mariposa lily	Liliaceae	perennial bulbiferous herb	Apr-Jul	1B.2	S2	G3T2
Calochortus plummerae	Plummer's mariposa lily	Liliaceae	perennial bulbiferous herb	May-Jul	4.2	S4	G4
Calochortus weedii var. intermedius	intermediate mariposa lily	Liliaceae	perennial bulbiferous herb	May-Jul	1B.2	S2	G3G4T2
Calystegia felix	lucky morning-glory	Convolvulaceae	annual rhizomatous herb	Mar-Sep	1B.1	S1	G1Q
Camissoniopsis lewisii	Lewis' evening-primrose	Onagraceae	annual herb	Mar-May (Jun)	3	S4	G4
Castilleja gleasoni	Mt. Gleason paintbrush	Orobanchaceae	perennial herb (hemiparasitic)	May-Jun (Sep)	1B.2	S2	G2
Castilleja plagiotoma	Mojave paintbrush	Orobanchaceae	perennial herb (hemiparasitic)	Apr-Jun	4.3	S4	G4
Centromadia parryi ssp. australis	southern tarplant	Asteraceae	annual herb	May-Nov	1B.1	S2	G3T2
Centromadia pungens ssp. laevis	smooth tarplant	Asteraceae	annual herb	Apr-Sep	1B.1	S2	G3G4T2
Chorizanthe parryi var. fernandina	San Fernando Valley spineflower	Polygonaceae	annual herb	Apr-Jul	1B.1	S1	G2T1
Chorizanthe parryi var. parryi	Parry's spineflower	Polygonaceae	annual herb	Apr-Jun	1B.1	S2	G3T2
Cladium californicum	California sawgrass	Cyperaceae	perennial rhizomatous herb	Jun-Sep	2B.2	S2	G4
Clinopodium mimuloides	monkey-flower savory	Lamiaceae	perennial herb	Jun-Oct	4.2	S3	G3
Convolvulus simulans	small-flowered morning-glory	Convolvulaceae	annual herb	Mar-Jul	4.2	S4	G4
Cuscuta obtusiflora var. glandulosa	Peruvian dodder	Convolvulaceae	annual vine (parasitic)	Jul-Oct	2B.2	SH	G5T4?
Diplacus johnstonii	Johnston's monkeyflower	Phrymaceae	annual herb	(Apr)May-Aug	4.3	S4	G4
Dodecahema leptoceras	slender-horned spineflower	Polygonaceae	annual herb	Apr-Jun	1B.1	S1	G1
Dudleya multicaulis	many-stemmed dudleya	Crassulaceae	perennial herb	Apr-Jul	1B.2	S2	G2
Erythranthe diffusa	Palomar monkeyflower	Phrymaceae	annual herb	Apr-Jun	4.3	S3	G4
Frasera neglecta	pine green-gentian	Gentianaceae	perennial herb	May-Jul	4.3	S4	G4
Galium angustifolium ssp. gabrielense	San Antonio Canyon bedstraw	Rubiaceae	perennial herb	Apr-Aug	4.3	S3	G5T3

Galium grande	San Gabriel bedstraw	Rubiaceae	perennial deciduous shrub	Jan-Jul	1B.2	S1	G1
Galium jepsonii	Jepson's bedstraw	Rubiaceae	perennial rhizomatous herb	Jul-Aug	4.3	S3	G3
Galium johnstonii	Johnston's bedstraw	Rubiaceae	perennial herb	Jun-Jul	4.3	S4	G4
Helianthus nuttallii ssp. parishii	Los Angeles sunflower	Asteraceae	perennial rhizomatous herb	Aug-Oct	1A	SH	G5TH
Heuchera caespitosa	urn-flowered alumroot	Saxifragaceae	perennial rhizomatous herb	May-Aug	4.3	S3	G3
Hordeum intercedens	vernal barley	Poaceae	annual herb	Mar-Jun	3.2	S3S4	G3G4
Horkelia cuneata var. puberula	mesa horkelia	Rosaceae	perennial herb	Feb-Jul (Sep)	1B.1	S1	G4T1
Hulsea vestita ssp. gabrielensis	San Gabriel Mountains sunflower	Asteraceae	perennial herb	May-Jul	4.3	S3	G5T3
Imperata brevifolia	California satintail	Poaceae	perennial rhizomatous herb	Sep-May	2B.1	S3	G4
Juglans californica	Southern California black walnut	Juglandaceae	perennial deciduous tree	Mar-Aug	4.2	S4	G4
Lasthenia glabrata ssp. coulteri	Coulter's goldfields	Asteraceae	annual herb	Feb-Jun	1B.1	S2	G4T2
Lepechinia fragrans	fragrant pitcher sage	Lamiaceae	perennial shrub	Mar-Oct	4.2	S3	G3
Lepidium virginicum var. robinsonii	Robinson's pepper-grass	Brassicaceae	annual herb	Jan-Jul	4.3	S3	G5T3
Lilium humboldtii ssp. ocellatum	ocellated Humboldt lily	Liliaceae	perennial bulbiferous herb	Mar-Jul (Aug)	4.2	S4?	G4T4?
Linanthus concinnus	San Gabriel linanthus	Polemoniaceae	annual herb	Apr-Jul	1B.2	S2	G2
Linanthus orcuttii	Orcutt's linanthus	Polemoniaceae	annual herb	May-Jun	1B.3	S2	G3
Lupinus peirsonii	Peirson's lupine	Fabaceae	perennial herb	Apr-Jun	1B.3	S3	G3
Malacothamnus davidsonii	Davidson's bush-mallow	Malvaceae	perennial deciduous shrub	Jun-Jan	1B.2	S2	G2
Monardella australis ssp. cinerea	gray monardella	Lamiaceae	perennial rhizomatous herb	Jul-Aug	4.3	S3	G4T3
Muhlenbergia californica	California muhly	Poaceae	perennial rhizomatous herb	Jun-Sep	4.3	S4	G4
Nasturtium gambelii	Gambel's water cress	Brassicaceae	perennial rhizomatous herb	Apr-Oct	1B.1	S1	G1
Navarretia prostrata	prostrate vernal pool navarretia	Polemoniaceae	annual herb	Apr-Jul	1B.1	S2	G2
Opuntia basilaris var. brachyclada	short-joint beavertail	Cactaceae	perennial stem succulent	Apr-Jun (Aug)	1B.2	S3	G5T3
Orobanche valida ssp. valida	Rock Creek broomrape	Orobanchaceae	perennial herb (parasitic)	May-Sep	1B.2	S2	G4T2
Phacelia hubbyi	Hubby's phacelia	Hydrophyllaceae	annual herb	Apr-Jul	4.2	S4	G4

Phacelia mohavensis	Mojave phacelia	Hydrophyllaceae	annual herb	Apr-Aug	4.3	S4	G4Q
Phacelia stellaris	Brand's star phacelia	Hydrophyllaceae	annual herb	Mar-Jun	1B.1	S1	G1
Pseudognaphalium leucocephalum	white rabbit-tobacco	Asteraceae	perennial herb	(Jul)Aug-Nov(Dec)	2B.2	S2	G4
Quercus dumosa	Nuttall's scrub oak	Fagaceae	perennial evergreen shrub	Feb-Apr (May-Aug)	1B.1	S3	G3
Quercus durata var. gabrielensis	San Gabriel oak	Fagaceae	perennial evergreen shrub	Apr-May	4.2	S3	G4T3
Quercus engelmannii	Engelmann oak	Fagaceae	perennial deciduous tree	Mar-Jun	4.2	S3	G3
Ribes divaricatum var. parishii	Parish's gooseberry	Grossulariaceae	perennial deciduous shrub	Feb-Apr	1A	SX	G5TX
Romneya coulteri	Coulter's matilija poppy	Papaveraceae	perennial rhizomatous herb	Mar-Jul (Aug)	4.2	S4	G4
Rupertia rigida	Parish's rupertia	Fabaceae	perennial herb	Jun-Aug	4.3	S4	G4
Scutellaria bolanderi ssp. austromontana	southern mountains skullcap	Lamiaceae	perennial rhizomatous herb	Jun-Aug	1B.2	S3	G4T3
Senecio astephanus	San Gabriel ragwort	Asteraceae	perennial herb	May-Jul	4.3	S3	G3
Sidalcea neomexicana	salt spring checkerbloom	Malvaceae	perennial herb	Mar-Jun	2B.2	S2	G4
Sidotheca caryophylloides	chickweed oxytheca	Polygonaceae	annual herb	Jul-Sep (Oct)	4.3	S4	G4
Spermolepis lateriflora	western bristly scaleseed	Apiaceae	annual herb	Mar-Apr	2A	SH	G5
Symphyotrichum defoliatum	San Bernardino aster	Asteraceae	perennial rhizomatous herb	Jul-Nov (Dec)	1B.2	S2	G2
Symphyotrichum greatae	Greata's aster	Asteraceae	perennial rhizomatous herb	Jun-Oct	1B.3	S2	G2
Thelypteris puberula var. sonorensis	Sonoran maiden fern	Thelypteridaceae	perennial rhizomatous herb	Jan-Sep	2B.2	S2	G5T3

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Questions and Comments

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IPaC **U.S. Fish & Wildlife Service**

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Los Angeles County, California

Local office

Carlsbad Fish And Wildlife Office

(760) 431-9440
(760) 431-5901

2177 Salk Avenue - Suite 250
Carlsbad, CA 92008-7385

http://www.fws.gov/carlsbad/

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population, even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species

[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information.
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Birds

NAME	STATUS
California Condor Gymnogyps californianus There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/8193	Endangered
Least Bell's Vireo Vireo bellii pusillus There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/5945	Endangered

Flowering Plants

NAME	STATUS
Braunton's Milk-vetch Astragalus brauntonii There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/5674	Endangered
Nevin's Barberry Berberis nevinii There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/8025	Endangered

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act

[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Nationwide conservation measures for birds http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservati

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that

occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)
Allen's Hummingbird Selasphorus sasin This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9637	Breeds Feb 1 to Jul 15
Bald Eagle Haliaeetus leucocephalus This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Jan 1 to Aug 31

Black Swift Cypseloides niger — Breeds Jun 15 to Sep 10
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/8878

Black-chinned Sparrow Spizella atrogularis — Breeds Apr 15 to Jul 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9447

California Spotted Owl Strix occidentalis occidentalis — Breeds Mar 10 to Jun 15
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/7266

California Thrasher Toxostoma redivivum — Breeds Jan 1 to Jul 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Common Yellowthroat Geothlypis trichas sinuosa — Breeds May 20 to Jul 31
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/2084

Costa's Hummingbird Calypte costae — Breeds Jan 15 to Jun 10
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/9470

Golden Eagle Aquila chrysaetos — Breeds Jan 1 to Aug 31
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/1680

Lawrence's Goldfinch Carduelis lawrencei — Breeds Mar 20 to Sep 20
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9464

Lewis's Woodpecker Melanerpes lewis — Breeds Apr 20 to Sep 30
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9408

Nuttall's Woodpecker Picoides nuttallii — Breeds Apr 1 to Jul 20
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/9410

Oak Titmouse Baeolophus inornatus — Breeds Mar 15 to Jul 15
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9656

Rufous Hummingbird selasphorus rufus — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/8002

Song Sparrow Melospiza melodia — Breeds Feb 20 to Sep 5
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

Spotted Towhee Pipilo maculatus clementae — Breeds Apr 15 to Jul 20
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/4243

Whimbrel Numenius phaeopus — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9483

White Headed Woodpecker Picoides albolarvatus — Breeds May 1 to Aug 15
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/9411

Wrentit Chamaea fasciata — Breeds Mar 15 to Aug 10
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence ( )

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by

the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.

3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (▪)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

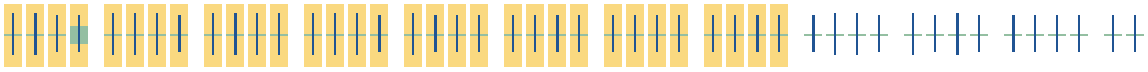
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

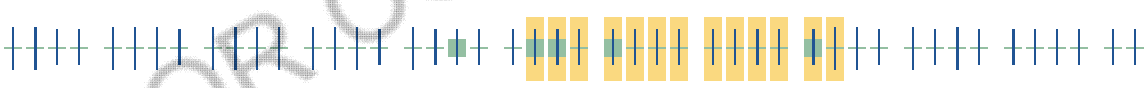
Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

Allen's Hummingbird
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

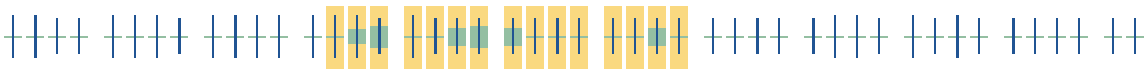
Bald Eagle
Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)



Black Swift
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

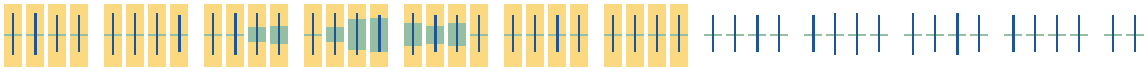


Black-chinned Sparrow
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



California Spotted Owl
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

California Thrasher
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Common Yellowthroat
BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)

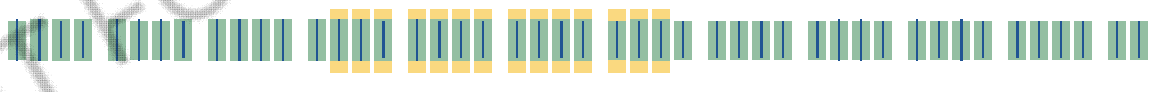
Costa's Hummingbird
BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)

Oak Titmouse
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Rufous Hummingbird
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

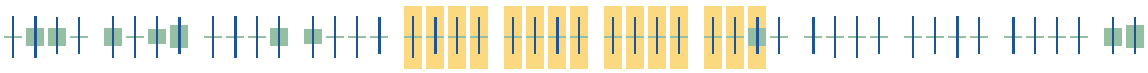
Song Sparrow
BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)

Spotted Towhee
BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)



Whimbrel
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

White Headed Woodpecker
BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)



Wrentit
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures and/or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the AKN Phenology Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

FRESHWATER POND

PUBHx

RIVERINE

R4SBCx

A full description for each wetland code can be found at the National Wetlands Inventory website

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

Appendix

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Appendix C Tree Survey Report

BROOKSIDE GOLF COURSE IMPROVEMENTS PROJECT

Tree Report

Prepared for

George Cunningham

Rose Bowl Operating Company

November 2020

BROOKSIDE GOLF COURSE IMPROVEMENTS PROJECT

Tree Report

Prepared for

George Cunningham

Rose Bowl Operating Company

November 2020

Prepared by

Douglas Gordon-Blackwood

Senior Biologist/Arborist, ESA

RCA #689 / ISA WE-11726-AU

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Oakland	**San Francisco**	

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  - Specimen trees 6
- **Number of protected trees that could be removed 47**
  - Specimen trees 4
  - Native trees 10
  - Public trees 33
- **Number of protected trees that could be encroached 16**
  - Specimen trees 0
  - Native trees 4
  - Public trees 12
- **Number of protected trees that could be avoided 18**
  - Specimen trees 2
  - Native trees 1
  - Public trees 15

BROOKSIDE GOLF COURSE IMPROVEMENT PROJECT

Tree Report

Introduction

On behalf of the Rose Bowl Operating Company (RBOC), Environmental Science Associates (ESA) conducted a tree survey at the proposed site of the Brookside Golf Course Improvements Project (Project), located in the City of Pasadena (City), Los Angeles County, California. The survey was conducted to document protected trees as defined in the City of Pasadena Code of Ordinances (Pasadena, 2018) that are within the proposed grading limits of the Project, including those that may be removed, encroached, or avoided by the project.

The City's Trees and Tree Protection Ordinance (Title 8, Chapter 8.52) defines a Protected tree as "a native, specimen, landmark, landmark-eligible, mature (except for the trees in RS or RM-12 Zones), or public tree". Furthermore, it defines native trees as:

> "*any tree with a trunk more than 8 inches in diameter at a height of 4 ½ feet above natural grade that is one of the following species: Quercus agrifolia (coast live oak), Quercus engelmanii (Engelmann oak), Quercus chrysolepis (canyon oak), Platanus racemosa (California sycamore), Juglans californica (California walnut), Quercus berberidifolia (scrub oak), Quercus lobata (valley oak), Umbellularia californica (California bay), Populus fremontii (cottonwood), Alnus rhombifolia (California alder), Populus trichocarpa (black cottonwood), Salix lasiolepis (arroyo willow), and Aesculus californica (California buckeye)*."

In accordance with the Ordinance, public trees are defined as "*a tree located in a place or area under ownership or control of the city including but without limitation streets, parkways, open space, parkland, and including city owned property under the operational control of another entity by virtue of a lease, license, operating or other agreement*". All trees located within the boundaries of the Brookside Golf Course are considered public trees and are therefore protected. Mature trees are defined as "*an otherwise non-protected tree with a diameter-at-breast-height (DBH) of 19 inches or greater*". The City also provides a list[1] of tree species and criteria of trees that possess distinctive form, size or age at certain trunk diameters or heights, herein referred to as 'specimen' trees. Specimen trees are also considered protected.

[1] https://www.cityofpasadena.net/wp-content/uploads/sites/52/2017/06/TPO_6-Specimen-Tree-List.pdf

Existing Conditions

The Project site is located at the Brookside Golf Course, which is within the Central Arroyo Seco area of Arroyo Seco Canyon in the western portion of the City (See **Figure 1 – Project Vicinity** and **Figure 2 – Project Location**). Central Arroyo Seco is generally bounded by the Colorado Street Bridge to the south, Arroyo Boulevard and Arroyo Terrace to the east, Interstate-210 to the north/east, and Linda Vista Avenue to the west. Uses surrounding the golf course include residential uses to the west and east, Interstate-210 to the north, and the Rose Bowl to the south. Project site is surrounded by the golf course to the north, east and south, and the Arroyo Seco abuts its western boundary. The Arroyo Seco is a concrete-lined channel that is a major tributary of the Los Angeles River. The golf course is a contributor to the Pasadena Arroyo Parks and Recreation District, which is loosely defined as the central and lower Arroyo and is listed on the National Register of Historic Places (NRHP) for its cultural landscape.

Project Description

The Project proposes to relocate and expand the existing driving range and construct a new 36-hole miniature golf facility. The expanded driving range and new miniature golf facility would generally be located in the same area as the existing driving range, which is currently located between the concrete channeled Arroyo Seco to the west, the Brookside Clubhouse to the east, and the C.W. Koiner Course to the north and south. The proposed expansion of the driving range would increase the number of hitting bays from 20 to 60 . Brookside Golf Course would remain a championship layout and the course reduction would be designed to improve the pace of play.

A previous tree survey was conducted for the entire Brookside Golf Course by Davey Resource Group in 2016 and provided detailed information for trees within the Project including tree number and species. Those trees were reassessed and are included in this report.

Methods

ESA Arborist Douglas Gordon-Blackwood (See **Appendix C – Resume**) conducted the field survey on October 5 and 6, 2020. During the field survey, the area identified by RBOC as the grading limits (See **Figure 2**) was walked and a Global Positioning System with sub-meter accuracy (Eos Arrow 100 Global Navigation Satellite System) unit used in conjunction with ESRI's Collector for Arc GIS (Classic) application to collect location and survey data. At the discretion of RBOC, previously affixed tree tags and numbering were utilized in order to remain consistent with previous tree inventories conducted by Davey Resource Group (2016), Arborjet and other unknown arborists. A Canon EOS Rebel T3i DSLR Camera was used to take photographs of each surveyed tree.

SOURCE: ESRI, 2020; ESA, 2020

Brookside Golf Course Improvements Project

Figure 1
Regional Location

ESA

SOURCE: Mapbox, 2020; ESA, 2020.

Brookside Golf Course Improvements Project

Figure 2
Project Location

ESA

Data collected for all protected trees included the tree species and physical characteristics. Survey data for each tree is provided in **Appendix A –Tree Measurements** and photographs of each tree are provided in **Appendix B – Tree Photographs**. The following physical condition and characteristic data was collected for each tree:

Physical Characteristics

- Diameter at Breast Height (DBH) – measured four feet, six inches from the base of the tree using a forester's diameter-equivalent tape. For Palms, Height-to-brown-trunk (base of lowest frond) is measured in place of DBH.
- Canopy spread: The canopy spread from the trunk to the dripline in eight (8) directions (N, NE, E, SE, S, SW, W, NW).
- Height – Measured using a Nikon Forestry Pro Laser hypsometer.
- Balance and symmetry of the tree based on the crown radius measurements and whether the tree leans or is otherwise unstable.

Physical Condition

- Identification of damage caused by pathogens or insect pests, by natural causes such as lightning, or by human activity (such as golf ball damage).
- Evaluation of vigor based on such parameters as amount of new growth, leaf color, abnormal bark, dead wood, evidence of wilt, excessive necrosis or leaf chlorosis, thinning of crown, etc.
- Assessment of the overall health of the tree based on the evaluation of vigor, presence of damage, and comparison to the typical archetype tree of the same species.
- Evaluation of vigor based on such parameters as amount of new growth, leaf color, abnormal bark, dead wood, evidence of wilt, excessive necrosis or leaf chlorosis, thinning of crown, etc.

Rating

For each tree, a subjective alphabetical rank of "A" through "F" was assigned for health, vigor, balance and aesthetic. Ranks were based on the criteria described below:

- "A" = Very Healthy/Excellent: A healthy and vigorous tree characteristic of its species and reasonably free of any visible signs of stress, disease, or pest infestation. With regards to balance and aesthetics, trunks are straight and canopies well balanced and the tree exemplifies the ideal archetype for the species.
- "B" = Healthy/Good: A healthy and vigorous tree with minor visible signs of stress, disease, and/or pest infestation. Some maintenance measures may need to be implemented, such as pruning of dead wood or broken branches. Tree may lean slightly, canopies may not be evenly balanced, or the tree may otherwise be marginally challenged aesthetically.
- "C" = Average Health/Fair: Although healthy in overall appearance, there is abnormal amount of stress or disease/insect infestation, and a substantial amount of maintenance may be needed. The trunk may be growing at a more substantial angle or the canopy may have "holes" or be further out of balance.

- "D" = Dying/Poor: A tree that may be exhibiting substantially more stress, disease, or insect damage than what is expected for the species. The tree may be in a state of rapid decline, and may show various signs of dieback, necrosis, or other symptoms caused by pathogens or insect pests. The tree may lean significantly and the canopy is far out of balance.
- "F" = Dead/Very Poor: This tree has no foliage and exhibits no sign of life or vigor. Tree may be prone on the ground or otherwise severely aesthetically compromised.

Scope of Work Limitations

Measurement estimates were made for 6 trees (#'s 58, 65, 71, 85, 87, and 88) located within the driving range, because the driving range was open during the assessments and the arborist was unable to access these trees safely.

Results

Eighty-one (81) trees were surveyed. Fifteen (15) trees are native trees that include three coast live oaks (*Quercus agrifolia*; trees 91, 109, & 179), three California bay laurels (*Umbellularia californica*; tree's 115, 116, & 160), eight California sycamores (*Platanus racemosa*; tree's 85, 87, 88, 89, 90, 103, 165, & 1064), and one white alder (*Alnus rhombifolia*; tree 111). Six (6) trees are specimen trees that include one American sweetgum (*Liquidambar styraciflua*; tree 69), one red ironbark (*Eucalyptus sideroxylon;* tree 84), two Sydney red gums (*Angophora costata*; trees 105 & 110), and two Italian stone pines (*Pinus pinea*; trees 167 and 177).

All of the surveyed trees are considered 'public trees' that include: one Mexican fan palm (*Washingtonia robusta*; tree 102), twenty-seven (27) Peruvian pepper trees (*Schinus molle*; tree's 55, 56, 57, 59, 60, 61, 62, 63, 64, 66, 67, 68, 70, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 86, and 174), five (5) shamel ash trees (*Fraxinus uhdei*; tree's 106, 107, 108, 173, 1051), one Chinese privet (*Ligustrum lucidum*; tree 104), five (5) holly oaks (*Quercus ilex*; tree's 65, 127, 134, 161, and 162), six (6) Canary Island pines (*Pinus* canariensis; tree #168, 169, 170, 172, 175, and 178), two (2) American sweetgums (tree's 112 and 164), one Chinese elm (*Ulmus parvifolia*; tree 1556), four (4) red ironbark (tree's 150, 156, 157, and 158), two (2) carob trees (*Ceratonia siliqua;* tree's 148 and 152), two (2) swamp mahogany trees (*Eucalyptus robusta*; tree's 113 and 114), one Japanese yew (*Podocarpus macrophyllus*; tree 71) and two (2) white paperbark trees (*Melaleuca quinquenervia*; tree's 58 and 159). The locations of the trees are provided in **Figure 3 – Tree Locations** and the tree canopies are provided in **Figure 4 – Tree Canopies**.

As shown in **Table 1**, forty-seven (47) trees are located within the grading limits of the Project footprint and could be removed as a result of the project (tree's 58, 61, 63, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 90, 91, 102, 103, 104, 105, 106, 107, 108, 109, 110, 157, 158, 169, 160, 161, 162, 163, 164, 1051, and 1064). Sixteen (16) trees will be encroached by construction activities (tree's 55, 59, 60, 66, 89, 112, 114, 115, 116, 127, 134, 148, 152, 156, 179, and 1556). Eighteen (18) trees will be completely avoided (tree's 56, 57, 62, 64, 111, 113, 150, 167, 168, 169, 170, 171, 172, 173, 174, 175, 177, and 178. Of the 81 trees inventoried, 93 percent, or 76 trees, were rated to be in excellent to fair condition

(A, B, or C health grade). This includes ten trees in excellent (A) condition, 32 trees in good (B) condition and34 in fair (C) condition. In addition, 5 trees were rated in poor (D) condition.

TABLE 1
TREE IMPACT SUMMARY

Removals	Encroachments	Avoided
58, 61, 63, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 90, 91, 102, 103, 104, 105, 106, 107, 108, 109, 110, 157, 158, 169, 160, 161, 162, 163, 164, 1051, and 1064	55, 59, 60, 66, 89, 112, 114, 115, 116, 127, 134, 148, 152, 156, 179, and 1556	56, 57, 62, 64, 111, 113, 150, 167, 168, 169, 170, 171, 172, 173, 174, 175, 177, and 178

SOURCE: Mapbox, 2020; ESA, 2020.

Brookside Golf Course Improvements Project

Figure 3
Tree Locations

ESA

SOURCE: Mapbox, 2020; ESA, 2020.

Brookside Golf Course Improvements Project

Figure 4
Tree Canopies

ESA

SOURCE: RBOC; ESA, 2020.

Brookside Golf Course Improvements Project

Figure 5
Tree Encroachments

ESA

Discussion

All 81 of the trees that were surveyed are considered protected trees in accordance with the City's ordinance. Based on the current project description which is subject to change, forty-seven (47) of the protected trees are could require removal to accommodate project construction, sixteen (16) could be encroached upon to accommodate project construction, and eighteen (18) protected trees within the survey area could be avoided. In addition, trees qualifying as specimen or native also exist within the grading limits of the project and are included in the aforementioned trees that could be removed, encroached and avoided.

The City Manager is responsible for the review of this tree report, and will make determinations on public tree removal based upon tree reports prepared by certified arborists, other relevant facts, and upon established public tree removal criteria and review development and construction plans as they affect mature, landmark, landmark-eligible, native, public and specimen trees. If trees are to be removed as a result of the Project, the City Manager gives at least 10-days' notice to abutting property owners prior to the removal. Projects that would result in the removal of 3 or more public trees, notification will be provided to the city council, the design commission, and any neighborhood organizations in such area which are known. Tree replacements or alternative solutions (based on discretionary approval) will be provided after consultation with the City Manager and the design commission.

The City Manager can deny permits for removal of protected trees, including native or specimen trees, unless there is (1) a public, health or safety benefit from the removal of the tree, (2) the tree is deemed dead/dying and determined that it is not likely to survive, (3) there are objective features of the tree that make the tree not suitable for protections (such as invasive, damaging or nuisance trees), (4) the tree represents a substantial financial/recreational hardship to the property owner, (5) the tree injury/removal would constitute a taking of the underlying real property or (6) the corresponding landscape design plan will result in a greater canopy coverage than the tree being removed (within a reasonable time frame). The proposed Project could be considered a 'public benefit' (as defined within Code 8.52) in that it provides upgraded recreational areas and facilities which would broaden the usability of the site for the general public.

Based on the Project as described in this report (which is subject to refinement), it could result in the removal of 47 protected trees and the encroachment of 16 protected trees. These activities have the potential to negatively affect not only the encroached trees, but also other trees present in the vicinity of construction activities. For example, Project-related activities such as excavation, trenching, soil compaction, change of grade, drainage, pruning, mechanical damage from construction equipment, landscaping, and irrigation may negatively affect the root system of trees in the vicinity without implementing protective measures. The guidelines provided in the City of Pasadena Tree Protection Guidelines (**Appendix D – City of Pasadena Tree Protection Guidelines**) should be implemented to ensure that all preserved trees within or adjacent to the property will be protected during construction activities, as well as in perpetuity following completion of the Project.

Certification of Performance

I, Douglas Gordon-Blackwood, certify:

- That I have personally inspected the tree(s) and/or the property referred to in this report, and have stated my findings accurately.
- That I have no current or prospective interest in the vegetation or the property that is the subject of this report and have no personal interest or bias with respect to the parties involved;
- That the analysis, opinions, and conclusions stated herein are my own;
- That my analysis, opinions, and conclusions were developed and this report has been prepared according to commonly accepted arboricultural practices;
- That no one provided significant professional assistance to the consultant, except as indicated within the report;
- That my compensation is not contingent upon the reporting of a predetermined conclusion that favors the cause of the client or any other party.

I further certify that I am a member of the American Society of Consulting Arborists, Registered Consulting Arborist #689, and acknowledge, accept, and adhere to the ASCA Standards of Professional Practice. I am an International Society of Arboriculture Certified Arborist, and have been involved in the practice of arboriculture and the study of trees for over 13 years.

Signed:

Date: 11/9/2020

Douglas Gordon-Blackwood
Registered Consulting Arborist, #689
Certified Arborist, WE-11726-AU
Qualified Tree Risk Assessor

This report comprises a total of 13 pages, plus appendices. Unauthorized separation or removal of any portion of this report deems it invalid as a whole.

Conditions represented in this report are limited to the inventory date and time. Rating for health and structure do not constitute a health or structural guarantee beyond that date. Risk assessments were not performed for the purposes of this report.

Appendix A
Tree Measurements

Appendix A – Tree Measurements

Tree Number[1]	Common Name	Latin Name	Latitude	Longitude	Protected Tree Classification[2]	DBH[3]	Height[5]	Canopy North[6]	Canopy NorthWest	Canopy West	Canopy SouthWest	Canopy South	Canopy SouthEast	Canopy East	Canopy NorthEast	Health	Aesthetics	Balance	Vigor	Comments	Soil Condition
55	Peruvian pepper	*Schinus molle*	34.1646235	-118.1680865	P	15.0	22	5	11	23	19	16	12	11	6	B	C	B	B	exposed damaged roots	normal
56	Peruvian pepper	*Schinus molle*	34.16462881	-118.1682396	P	13.7	25	11	12	13	15	15	16	12	13	B	B	B	C	slight lean, minor root damage	normal
57	Peruvian pepper	*Schinus molle*	34.16465072	-118.168289	P	14.7	20	10	8	13	12	12	8	9	8	C	C	D	C	strong lean, exposed damaged roots, crown raised and lion tailed	normal
58	white paperbark tree	*Melaleuca quinquinervia*	34.16528314	-118.1682843	P, M	21	24	3	6	13	6	3	2	2	2	C	C	D	C	severe golf ball damage, topped, damaged exposed roots, measurements estimated due to location on active driving range	normal
59	Peruvian pepper	*Schinus molle*	34.16462272	-118.1683236	P	10.5	20	8	13	15	15	13	10	4	4	B	C	C	C	self corrected lean, root damage, exposed roots, basal sprouting	normal
60	Peruvian pepper	*Schinus molle*	34.1646015	-118.1682719	P	8.0	13	1	1	18	16	5	1	1	1	C	C	D	C	strong lean to w-sw, basal sprouting, lion tailed, exposed damaged roots, decay at base	normal
61	Peruvian pepper	*Schinus molle*	34.164594	-118.1683748	P	15.6	30	11	12	10	14	18	15	12	8	B	B	C	C	root damage, self corrected lean, basal sprouting,	normal
62	Peruvian pepper	*Schinus molle*	34.16460405	-118.1684377	P	13.1	26	10	12	13	16	15	14	12	13	C	B	B	C	damaged roots with decay, crown raised, recommend decay assessment	normal
63	Peruvian pepper	*Schinus molle*	34.1647125	-118.1684683	P	14.5	25	5	11	15	17	17	11	14	6	C	C	C	B	basal sprouting, lopsided due to presence of driving range fence, built up soil over roots, burls on trunk	normal
64	Peruvian pepper	*Schinus molle*	34.16456372	-118.1684914	P	12.7	19	10	11	12	16	13	12	6	4	C	B	B	C	exposed roots, mechanical damage at base, slight lean	normal
65	holly oak	*Quercus ilex*	34.16534225	-118.1684775	P, M	19.0, 15.0 (24.2)[4]	30	7	6	7	9	6	6	5	6	C	C	C	C	golfball damage, topped, dead hangers in canopy, measurements estimated due to location on active driving range	normal
66	Peruvian pepper	*Schinus molle*	34.16455606	-118.1685528	P	14.1	25	10	17	15	10	11	14	10	6	C	C	B	C	root decay present, exposed damaged roots, fungus at base, basal sprouting, recommend decay assessment	normal
67	Peruvian pepper	*Schinus molle*	34.16455511	-118.1686195	P	12.5	23	13	12	14	14	15	9	5	8	B	B	B	B	crown raised, built up soil over roots	normal
68	Peruvian pepper	*Schinus molle*	34.16452709	-118.1687499	P	15.0	23	10	14	17	15	14	15	14	12	B	C	B	B	basal sprouting, minor bark beetle	pavement over roots
69	American sweetgum	*Liquidambar styraciflua*	34.16549444	-118.1687804	P, S	23	50	16	20	18	14	15	18	15	16	C	C	B	C	dieback in canopy with multiple dead hangers, leaf scorch, golfball damage, exposed damaged roots, remove dead hangers	normal
70	Peruvian pepper	*Schinus molle*	34.16476468	-118.1688068	P	14.5	19	11	13	15	15	13	12	10	6	C	C	C	C	golfball damage, slight lean, large limb removal, bark beetle, basal sprouting	normal
71	Japanese yew	*Podocarpus macrophyllus*	34.16553927	-118.1688504	P	11.0	20	6	8	6	6	4	6	7	6	D	D	C	C	golfball damage, dieback in crown, multiple dead hangers, mold/mildew on trunk due to sprinkler overspray, measurements estimated due to location on active driving range	normal
72	Peruvian pepper	*Schinus molle*	34.16476679	-118.1688848	P	13.3	26	14	16	15	18	16	20	15	13	C	C	B	C	golfball damage, basal sprouting, bark beetle	saturated
73	Peruvian pepper	*Schinus molle*	34.1646987	-118.1689294	P	15.5	29	12	15	12	11	11	14	12	10	C	C	B	C	built up turf over crown, basal sprouting, possible decay at base	normal
74	Peruvian pepper	*Schinus molle*	34.16479735	-118.1689614	P	13.3	25	12	13	9	13	10	7	8	9	B	C	C	B	golfball damage, basal sprouting	normal
75	Peruvian pepper	*Schinus molle*	34.1647948	-118.1690292	P	18.3	18	10	11	19	11	12	12	13	11	C	C	C	C	golfball damage, exposed damaged roots	normal
76	Peruvian pepper	*Schinus molle*	34.1648121	-118.1690845	P	8.3	14	10	12	11	10	12	7	5	5	C	C	B	C	golfball damage, basal sprouting, crown raised	normal
77	Peruvian pepper	*Schinus molle*	34.16481319	-118.1691521	P	13.3	28	9	13	14	15	13	12	12	8	C	B	C	C	golfball damage, crown raised	normal
78	Peruvian pepper	*Schinus molle*	34.1648411	-118.1692159	P	8.3	18	6	8	10	9	10	6	7	7	C	C	C	C	golfball damage, basal sprouting, crown raised	normal
79	Peruvian pepper	*Schinus molle*	34.16483821	-118.1692768	P	12.3	25	13	14	13	19	12	11	13	12	B	B	B	C	golfball damage, crown raised, basal sprouting	normal
80	Peruvian pepper	*Schinus molle*	34.16486196	-118.1693348	P	8.0	16	6	8	9	7	8	6	4	3	D	C	C	C	slight lean, decay at base, basal sprouting, flush cuts along trunk	compacted
81	Peruvian pepper	*Schinus molle*	34.16485852	-118.1694193	P	8.4	16	2	5	8	11	12	9	6	6	C	C	B	C	basal sprouting, golfball damage, exudate in upper canopy	normal
82	Peruvian pepper	*Schinus molle*	34.16488537	-118.1694786	P	7.0	11	5	6	6	6	7	5	4	4	C	B	B	C	golfball damage, lean,	compacted
83	Peruvian pepper	*Schinus molle*	34.16488429	-118.1695386	P	9.1	18	8	7	7	6	5	6	9	8	B	B	B	C	golfball damage, crown raised, basal sprouting	normal
84	red ironbark	*Eucalyptus sideroxylon*	34.16439789	-118.1695949	P, S	26.6	30	14	17	11	10	11	13	12	9	C	C	B	C	epicormic and basal sprouting, included bark, built up turf/soil on crown	normal
85	western sycamore	*Platanus racemosa*	34.16583031	-118.1696162	P, N, M	29	19	5	5	5	5	5	5	5	5	D	F	D	D	tree mostly dead, basal resprouts present, upper 20 feet of canopy all dead decaying wood, measurements estimated due to location on driving range, recommend removal	normal
86	Peruvian pepper	*Schinus molle*	34.16490345	-118.1696161	P	10.4	20	6	8	7	8	10	6	6	7	B	C	B	B	golfball damage, slight lean, crown raised	compacted
87	western sycamore	*Platanus racemosa*	34.16514762	-118.1696988	P, N	12	28	10	10	10	10	10	10	10	10	C	D	C	C	golfball damage, dieback in crown, ISHB-FD[7] likely, measurements estimated due to location on active driving range	normal
88	western sycamore	*Platanus racemosa*	34.16515487	-118.1697231	P, N, M	23	30	10	8	12	15	18	10	10	10	C	D	C	C	ISHB-FD likely, dieback in crown, large dead hangers in canopy, golfball damage, measurements estimated due to location on active driving range	normal
89	western sycamore	*Platanus racemosa*	34.16420445	-118.1699793	P, N, M	27.5	50	17	19	21	15	17	19	19	14	D	C	C	C	ISHB-FD likely, basal resprout, decay in trunk, termites, frass	pavement over roots
90	western sycamore	*Platanus racemosa*	34.16586899	-118.1700128	P, N, M	23.4	37	20	23	19	19	24	16	20	19	C	C	C	C	multiple cavities and woodpecker holes, ISHB-FD likely, golfball damage, lean	normal

Appendix A – Tree Measurements

Tree Number[1]	Common Name	Latin Name	Latitude	Longitude	Protected Tree Classification[2]	DBH[3]	Height[5]	Canopy North[6]	Canopy NorthWest	Canopy West	Canopy SouthWest	Canopy South	Canopy SouthEast	Canopy East	Canopy NorthEast	Health	Aesthetics	Balance	Vigor	Comments	Soil Condition
91	coast live oak	*Quercus agrifolia*	34.16571731	-118.1700568	P, N, M	19.0, 18.6, 15.0 (30.53)	40	18	21	30	28	25	20	18	14	C	C	B	C	built up soil over roots, dieback and canker in upper canopy, dead hangers, golfball damage	normal
102	Mexican fan palm	*Washingtonia robusta*	34.16434393	-118.1702501	P	30 bt	35	5	5	5	5	5	5	5	5	B	B	A	B	ash tree growing from base	compacted
103	western sycamore	*Platanus racemosa*	34.16465106	-118.1702749	P, N, M	28.6	65	21	20	19	28	30	24	28	27	C	C	C	C	ISHB-FD likely, large limb dead in lower canopy, basal sprouting, remove dead limb	normal
104	Chinese privet	*Ligustrum lucidum*	34.16458844	-118.1702719	P	10.1	19	6	4	3	3	5	5	5	5	A	A	A	A	Grouping of 3 hedges with one trunk of appropriate size	normal
105	Sydney red gum	*Angophora costata*	34.16534667	-118.170263	P, S, M	34.5	50	18	6	4	6	27	25	20	23	C	C	B	C	multiple dead hangers in upper canopy, golfball damage, dieback in crown	normal
106	shamel ash	*Fraxinus uhdei*	34.16507957	-118.1702809	P, M	10.0, 10.2, 14.0 (20.0)	35	16	18	20	22	24	10	11	16	B	C	C	B	large exposed buttress roots with mechanical damage, multiple trunks, fence girdling trunk and base, growing over concrete	compacted
107	shamel ash	*Fraxinus uhdei*	34.16475871	-118.1702734	P	8.1, 2.0, 1.0 (8.4)	21	10	8	9	10	10	8	8	11	B	B	B	A	multiple trunks, growing in fence	normal
108	shamel ash	*Fraxinus uhdei*	34.16491561	-118.1702779	P	10.0	20	11	10	12	9	8	1	1	1	B	C	D	B	growing in fence, half of tree pruned at fence, basal sprouting	normal
109	coast live oak	*Quercus agrifolia*	34.16540595	-118.1702754	P, N	4.0	10	5	6	4	4	6	7	6	5	B	B	C	B	growing in fence, poor pruning,	pavement over roots
110	Sydney red gum	*Angophora costata*	34.16538686	-118.1702957	P, S, M	28.0	45	20	23	20	23	25	12	6	10	B	B	B	B	roots covered by concrete, fence pruning made tree lopsided	pavement over roots
111	white alder	*Alnus rhombifolia*	34.16540811	-118.167398	P, N	9.7	35	12	11	10	10	10	9	12	13	B	B	A	B	slight lean, golfball damage and mechanical damage at base	normal
112	American sweetgum	*Liquidambar styraciflua*	34.16526892	-118.1675728	P	8.5	33	8	7	8	6	5	6	8	9	A	A	B	A	mechanical damage at base	normal
113	swamp mahogany	*Eucalyptus robusta*	34.16534997	-118.1675964	P, M	19.9	35	11	7	6	12	17	18	11	10	B	B	B	B	slight lean, large cavity on main trunk, golfball damage, wetwood on east side,	pavement over roots
114	swamp mahogany	*Eucalyptus robusta*	34.16539175	-118.167642	P, M	31.2	50	11	16	17	21	13	16	12	13	B	B	B	B	cart path cut part of buttress roots, small cavities thought mid trunk, golfball damage	pavement over roots
115	California bay laurel	*Umbellularia californica*	34.165444	-118.1676746	P, N, M	26.8	45	12	14	17	20	16	7	8	17	B	B	B	A	large burl at base, buttress roots cut off for cart path, mechanical damage at base	pavement over roots
116	California bay laurel	*Umbellularia californica*	34.16556045	-118.1677838	P, N, M	41.2	45	14	16	17	18	16	18	19	18	A	A	A	A	large burl at base, damaged buttress roots, cavity in main trunk with 4-6" of decay	normal
127	holly oak	*Quercus ilex*	34.16536036	-118.1682581	P, M	24.1	45	19	23	22	10	6	11	19	22	B	B	A	A	epicormic shoots along trunk, golfball damage, mechanical damage at base, soil deeply saturated	saturated
134	holly oak	*Quercus ilex*	34.16547632	-118.1684952	P, M	25.7	40	17	19	21	18	12	14	14	17	B	C	B	B	epicormic shooting in upper canopy, mechanical damage at base, exposed damaged roots, basal sprouting, golfball damage	saturated
148	carob	*Ceratonia siliqua*	34.16632124	-118.1687484	P, M	23.0	35	17	14	15	12	15	13	13	15	C	B	B	B	golfball damage, large exposed damaged roots, laege cavities in trunk with decay and planted growing,	normal
150	red ironbark	*Eucalyptus sideroxylon*	34.16646765	-118.1687582	P	17.3	35	7	5	10	12	13	16	12	13	B	B	C	B	poor structure, basal sprouting	normal
152	carob	*Ceratonia siliqua*	34.16627251	-118.1687672	P	16.0	25	10	11	12	12	12	11	8	5	C	B	B	B	basal sprouting, exposed damaged roots, poor structure, sapsucker damage	normal
156	red ironbark	*Eucalyptus sideroxylon*	34.16640767	-118.1688308	P	16.0	35	3	4	4	18	23	17	12	6	C	C	C	C	large amounts of exudate, fissures in bark, poor structure, lean, dead hangers on south side of canopy	normal
157	red ironbark	*Eucalyptus sideroxylon*	34.1663857	-118.1688827	P	18.3	37	8	7	12	15	19	15	12	6	B	B	C	B	large amounts of exudate, lean, basal sprouting, large exposed damaged roots	normal
158	red ironbark	*Eucalyptus sideroxylon*	34.16640099	-118.1689186	P	16.2	35	3	6	6	12	14	16	6	4	B	C	D	B	large exposed damaged roots, basal sprouting, poor structure, large limbs removed, lean	normal
159	white paperbark tree	*Melaleuca quinquinervia*	34.16579962	-118.1691422	P, M	24.9	38	15	17	15	13	14	15	16	15	B	B	B	C	golfball damage, damaged buttress roots, included bark	normal
160	California bay laurel	*Umbellularia californica*	34.16578085	-118.1692414	P, N, M	19.8	35	22	15	10	15	14	16	12	10	C	B		B	large burl at base with root decay present, exposed damaged roots, golfball damage, basal sprouting	saturated
161	holly oak	*Quercus ilex*	34.16584171	-118.1692638	P, M	27.6	40	21	22	19	25	24	19	16	15	B	B	A	B	golfball damage, basal sprouting, exfoliating bark on large limbs	saturated
162	holly oak	*Quercus ilex*	34.16588395	-118.1694883	P, M	22.2	45	17	16	21	16	12	15	19	17	A	B	A	B	epicormic sprouting in mid canopy, golfball damage, damaged exposed roots	saturated
163	western sycamore	*Platanus racemosa*	34.16598456	-118.1697542	P, N, M	28.9	49	23	26	22	20	19	17	19	22	C	C	C	C	ISHB-FD likely, Arborjet tag suggests insecticide/fungicide injections and/or soil drench, golfball damage, woodpecker holes, poor structure (topped, poor attachment)	normal
164	American sweetgum	*Liquidambar styraciflua*	34.16618527	-118.1700547	P, M	21.1	40	12	11	10	8	13	15	10	11	C	B	B	B	minor dieback in crown, leaf scorch, golfball damage	pavement over roots
167	Italian stone pine	*Pinus pinea*	34.16674606	-118.1702519	P, S, M	30.1	40	25	40	32	12	10	7	18	15	A	B	C	A	strong lean, exposed damaged roots	normal
168	Canary Island pine	*Pinus canariensis*	34.16649608	-118.1702985	P, M	23.2	45	17	24	20	17	12	14	18	15	A	A	A	A		normal

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Tree Number[1]	Common Name	Latin Name	Latitude	Longitude	Protected Tree Classification[2]	DBH[3]	Height[5]	Canopy North[6]	Canopy NorthWest	Canopy West	Canopy SouthWest	Canopy South	Canopy SouthEast	Canopy East	Canopy NorthEast	Health	Aesthetics	Balance	Vigor	Comments	Soil Condition
169	Canary Island pine	*Pinus canariensis*	34.16645168	-118.170296	P, M	19.8	40	12	13	10	12	10	11	14	13	B	B	A	B	exposed, damaged roots	normal
170	Canary Island pine	*Pinus canariensis*	34.16653639	-118.1702995	P, M	25.2	45	13	15	16	17	13	10	10	12	A	A	A	A	slight lean	normal
171	Italian stone pine	*Pinus pinea*	34.16638824	-118.1703019	P, M	17.1, 14.2 (22.2)	40	12	27	30	22	17	19	20	14	B	C	C	B	slight lean, sparse canopy, exposed roots	pavement over roots
172	Canary Island pine	*Pinus canariensis*	34.16656722	-118.1702999	P	15.0	43	14	13	15	13	13	10	15	16	B	B	B	B	slight lean, sparse canopy	normal
173	shamel ash	*Fraxinus uhdei*	34.1666734	-118.170298	P	6.3, 5.2 (8.2)	35	8	9	11	12	12	13	15	15	A	B	B	A	multiple trunks, rubbing against pine	normal
174	Peruvian pepper	*Schinus molle*	34.16668904	-118.1702951	P	9.3, 8.2 (12.4)	30	15	18	13	12	13	14	15	19	B	B	C	B	multiple trunks with included bark	normal
175	Canary Island pine	*Pinus canariensis*	34.16647073	-118.1702944	P	17.2	40	18	20	19	15	17	13	18	15	A	B	A	A	minor dieback in canopy	normal
177	Italian stone pine	*Pinus pinea*	34.16671919	-118.1702833	P, S, M	36.2	38	5	10	38	35	33	3	1	1	C	C	D	C	lean, exposed, damaged roots, damp pocket in trunk growing grass, column of decay possibly present	normal
178	Canary Island pine	*Pinus canariensis*	34.16641794	-118.1702989	P	14.2	38	10	12	13	15	12	8	8	12	A	B	B	B	exposed, damaged roots	normal
179	coast live oak	*Quercus agrifolia*	34.166267	-118.1703074	P, N, M	38.8	40	25	35	33	37	33	21	19	25	B	A	B	B	Arroyo Seco concrete banks burying roots, minor dieback in crown, self corrected lean	pavement over roots
1051	shamel ash	*Fraxinus uhdei*	34.16498135	-118.1702949	P	6.3, 5.4, 3.8 (9.1)	25	12	6	5	7	11	10	11	14	C	C	B	C	Roots growing over concrete, girdling roots, multiple trunks, golfball damage, fence girdling stem	normal
1064	western sycamore	*Platanus racemosa*	34.16491637	-118.1697157	P, N, M	10.1, 22.5, 17.0 (29.9)	50	18	19	16	20	18	21	20	18	D	C	C	D	large dead hangers in upper canopy, woodpecker holes, ISHB-FD likely, golfball damage, large cavities in trunk with decay, basal sprouting, investigate decay in trunk, extent of fusarium dieback	normal
1556	Chinese elm	*Ulmus parvifollia*	34.16646706	-118.16913	P, M	20.6	30	11	10	12	14	16	23	20	18	C	C	B	C	large damaged buttress roots with decay present, compaction In root zone, large cavity in trunk with decay, golfball damage	compacted

1: Existing Davey Tree Tag/Tree numbers utilized

2: P=Public, N=Native, S=Specimen M=Mature

3: Diameter at Breast Height or 4.5 feet above ground. Diameter measured in inches

4: Measurements in parentheses are the trees combined diameter as a function of the combined area measurements for each individual trunk as defined in Ordinance 8.52.020

5: Height measured in feet

6: Canopy measured in feet

7: ISHB-FD: Invasive shot-hole borers - Fusarium Dieback

Appendix B
Tree Photographs

Tree 55 - Peruvian pepper

Tree 56 - Peruvian pepper

Tree 57 - Peruvian pepper

Tree 58 - white paperbark tree

Tree 59 - Peruvian pepper

Tree 60 - Peruvian pepper

D202000261.00

SOURCE: ESA, 2020

Brookside Golf Course Improvements Project

Appendix B
Tree Photographs

ESA

Tree 61 - Peruvian pepper

Tree 62 - Peruvian pepper

Tree 63 - Peruvian pepper

Tree 64 - Peruvian pepper

Tree 65 - Peruvian pepper

Tree 66 - holly oak

Tree 67 - Peruvian pepper

Tree 68 - Peruvian pepper

D202000261.00

SOURCE: ESA, 2020

Brookside Golf Course Improvements Project

Appendix B
Tree Photographs

ESA

Tree 69 - American sweetgum

Tree 70 - Peruvian pepper

Tree 71 - Japanese yew

Tree 72 - Peruvian pepper

Tree 73 - Peruvian pepper

Tree 74 - Peruvian pepper

Tree 75 - Peruvian pepper

D202000261.00

SOURCE: ESA, 2020

Brookside Golf Course Improvements Project

Appendix B
Tree Photographs

ESA

Tree 76 - Peruvian pepper

Tree 77 - Peruvian pepper

Tree 78 - Peruvian pepper

Tree 79 - Peruvian pepper

Tree 80 - Peruvian pepper

Tree 81 - Peruvian pepper

Tree 82 - Peruvian pepper

Tree 83 - Peruvian pepper

D2020002611.00

SOURCE: ESA, 2020

Brookside Golf Course Improvements Project

Appendix B
Tree Photographs

ESA

Tree 84 - red ironbark

Tree 85 - western sycamore

Tree 86 - Peruvian pepper

Tree 87 - western sycamore

Tree 88 - western sycamore

Tree 89 - western sycamore

Tree 90 - western sycamore

D202000261.00

SOURCE: ESA, 2020

Brookside Golf Course Improvements Project

Appendix B
Tree Photographs

ESA

Tree 91 - coast live oak

Tree 102 - Mexican fan palm

Tree 103 - western sycamore

Tree 104 - Chinese privet

Tree 105 - Sydney red gum

Tree 106 - shamel ash

Tree 107 - shamel ash

Tree 108 - shamel ash

D202000261.00

SOURCE: ESA, 2020

Brookside Golf Course Improvements Project

Appendix B
Tree Photographs

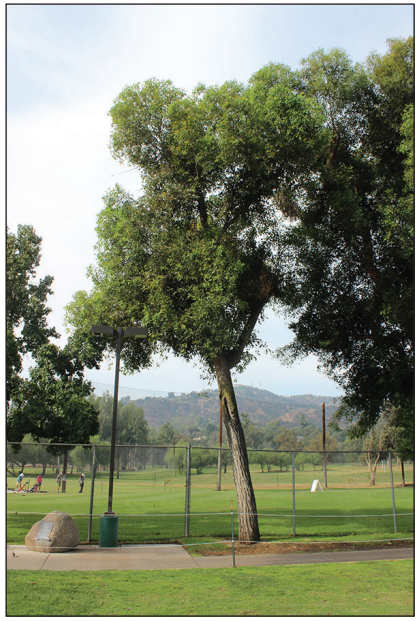
ESA

Tree 109 - coast live oak

Tree 110 - Sydney red gum

Tree 111 - white alder

Tree 112 - American sweetgum



Tree 113 - swamp mahogany

Tree 114 - swamp mahogany

Tree 115 - California bay laurel

Tree 116 - California bay laurel

D202000261.00

SOURCE: ESA, 2020

Brookside Golf Course Improvements Project

Appendix B
Tree Photographs

ESA

Tree 127 - holly oak

Tree 134 - holly oak

Tree 148 - carob

Tree 150 - red ironbark

Tree 152 - carob

Tree 156 - red ironbark

Tree 157 - red ironbark

Tree 158 - red ironbark

D202000261.00

SOURCE: ESA, 2020

Brookside Golf Course Improvements Project

Appendix B
Tree Photographs

ESA

Tree 159 - white paperbark tree

Tree 160 - California bay laurel

Tree 161 - holly oak

Tree 162 - holly oak

Tree 163 - western sycamore

Tree 164 - American sweetgum

Tree 167 - Italian stone pine

Tree 168 - Canary Island pine

D202000261.00

SOURCE: ESA, 2020

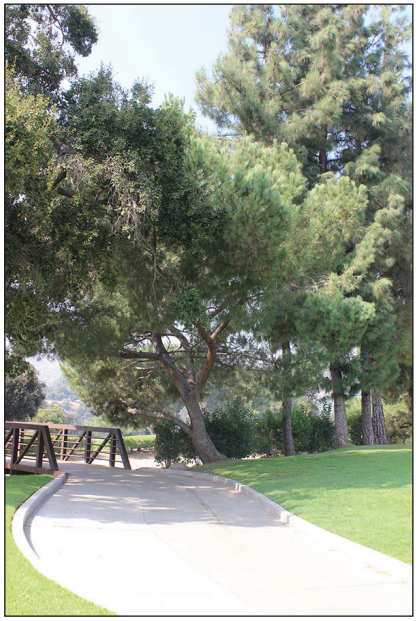
Brookside Golf Course Improvements Project

Appendix B
Tree Photographs

ESA

Tree 169 - Canary Island pine

Tree 170 - Canary Island pine



Tree 171 - Italian stone pine

Tree 172 - Canary Island pine

Tree 173 - shamel ash

Tree 174 - Peruvian pepper

Tree 175 - Canary Island pine

Tree 177 - Italian stone pine

D202000261.00

SOURCE: ESA, 2020

Brookside Golf Course Improvements Project

Appendix B
Tree Photographs

ESA

Tree 178 - Canary Island pine

Tree 179 - coast live oak

Tree 1051 - shamel ash

Tree 1064 - western sycamore

Tree 1556 - Chinese elm

D202000261.00

SOURCE: ESA, 2020

Brookside Golf Course Improvements Project

Appendix B
Tree Photographs

ESA

Appendix C
Resumes

Douglas Gordon-Blackwood

Biologist III

EDUCATION

BS, Botany, California State Polytechnic University, Pomona

14 YEARS OF EXPERIENCE

CERTIFICATIONS/ REGISTRATION

American Society of Consulting Arborists Registered Consulting Arborist #689

International Society of Arboriculture, Certified Arborist/Utility Specialist - #WE-11726-AU

International Society of Arboriculture, Tree Risk Assessment Qualified (TRAQ)

Wetland Training Institute 40-hour Wetland Delineator Certification Program 2018

Helicopter Flight/Safety Training, Burns & McDonnell

CDFW Rare Plant Voucher Collecting Permit 2081(a)-17-021-V

University of California Cooperative Extension 2018 Gold-spotted Oak Borer / Invasive Shot Hole Borer Workshop

PROFESSIONAL AFFILIATIONS

California Native Plant Society

California Invasive Plant Council

American Society of Consulting Arborists

Douglas is a consulting biologist with 9 years of experience in biological resources and habitat restoration, and 14 years with arboriculture. During his career he has conducted or supervised biological surveys and mapping of plant communities, jurisdictional areas and wildlife throughout Southern California. He has acted as lead biologist on several large utility, development, and transportation projects throughout Southern California.

His experience includes extensive survey experience for biological resource assessments, habitat and vegetation mapping, nesting bird surveys, restoration site assessments, arboricultural assessments, invasive species eradication, and biological compliance monitoring.

Experience Themes

Botany. As a botanist, Douglas has over 9 years' experience conducting rare plant surveys throughout Southern and Central California. He has extensive vegetation classification and mapping experience utilizing CNPS-CDFW combined vegetation rapid assessment and Relevé methods. Douglas has overseen field efforts for clients like Southern California Edison (SCE), California High Speed Rail Authority, Caltrans, LADPW, OCPW, IRWD, and Southern California Gas.

Arboriculture Douglas is certified by the American Society of Consulting Arborists (ACSCA) as a Registered Consulting Arborist (RCA). He is certified by the International Society of Arboriculture (ISA) as a Certified Arborist, Utility Specialist, and is Tree Risk Assessment Qualified. He is also a member of the ASCA, ISA, Western chapter of the ISA, and the Utility Arborist Association. Douglas has over 14 years' experience working with native and ornamental trees throughout California. Douglas is currently pursuing his ISA Board Certified Master Arborist (BCMA).

Habitat Restoration Ecologist Douglas has over 8 years of habitat restoration experience throughout various habitat types in Southern California. He has extensive experience conducting restoration site assessments, through qualitative and quantitative monitoring. Douglas has overseen invasive and nonnative plant species inventory, control and monitoring for restoration sites throughout the Angeles, Los Padres, San Bernardino and Cleveland National Forests. He is also skilled in preparation of various mitigation documents including Habitat Mitigation and Monitoring Plans, Long Term Management Plans, project work plans, and annual reporting.

CERTIFICATIONS/ REGISTRATION (CONTINUED)

International Society of Arboriculture – Western Chapter

Utility Arborist Association

Department of Water Resources OP-2 Awareness Training

Union Pacific Railroad Orientation and safety Training

BNSF Contractor Safety Orientation
TPZP Safety Training

Utility Transmission Projects. Working in various roles with Southern California Edison, Douglas has acted as a lead biological monitor, lead botanist, lead weed abatement monitor, arborist, nesting bird support and restoration ecologist throughout Kern, Los Angeles, San Bernardino, Ventura, Riverside, and Orange Counties. He also assisted with preparation of SCE GO-131 memorandum, habitat resource assessments, Biological Opinion, habitat restoration and weed management planning.

Relevant Experience

Transportation

Los Angeles County Department of Public Works Creek Fire Restoration Projects, Sylmar, CA. *Biologist*. Douglas conducted rare plant and oak tree surveys, conducted vegetation mapping, and weed abatement monitoring for four sites (MM 15.12, 15.62, MM15.67, and MM 16.92) along Little Tujunga Road within the Angeles National Forest. 4 days; January 2019 – November 2020.

Dillon Road Bridge over Coachella Valley Stormwater Channel (aka Whitewater River Channel) Project, Dillon Road Joint Powers Authority, City of Coachella, CA. *Botanist.* Douglas acted as botanist for habitat mapping, rare plant survey, and general biological surveys for the Dillon Road Bridge project. 3 Days; November 2019

San Bernardino County Transportation Authority I-215 Bi-County Landscape Project, Colton/Grand Terrace, CA. *Botanist/Arborist.* Douglas acted as botanist and arborist for habitat mapping, tree inventory, and biological surveys along Interstate 215 for a highway landscape renovation project in San Bernardino and Riverside Counties. Observed sensitive species include *Juglans californica.* 1 day; June 2019.

Los Angeles World Airport LAX Landside Access Modernization Program Tree Survey, **Los Angeles, CA.** *Arborist.* Douglas acted as project manager and arborist for the 127-acre Manchester Square property adjacent to the Los Angeles World Airport. Douglas provided arboricultural, mapping and reporting services for approximately 1100 ornamental trees within the Los Angeles World Airport property. 2.5 Weeks; January 2019.

Metro Purple Line Extension, Beverly Hills, CA. *Independent Compliance Monitor.* Douglas conducted noise and compliance monitoring for the Metropolitan Transportation Authority Purple Line Extension Project. 20-30 days; July 2017-September 2018.

California High Speed Rail Project, Angeles National Forest, CA. *Lead Botanist.* Douglas performed rare plant and invasive plant surveys for the Palmdale – Burbank & Fresno to Merced spans of the California High Speed Project. He also assisted with habitat restoration, weed management, Daily EMMA reporting and agency interaction with National Forest Service botanists and various other agencies. 15 Days; August 2015 – Present.

Development

Mammoth Mountain Resorts Woolly Tube Park/Proposed Snowmaking Facilities Botanical Survey, Mammoth Mountain, CA. *Botanist.* Douglas acted as the lead botanist (subcontracted through Ascent Environmental) for botanical surveys at Woolly's tube park and various snowmaking facilities throughout Mammoth Mountain Ski Area within Inyo/Mono National Forests. 5 Days; July 2020.

Wiley Canyon (Smiser Ranch) Mixed Use Development, Santa Clarita, CA. *Biologist/Arborist*. Douglas conducted biological and arboricultural inventory and report for a mixed use development in the City of Santa Clarita. 2 Weeks; December 2019

Scripps College Science Center Preconstruction Nesting Bird Surveys, Claremont, CA. *Biologist*. Douglas conducted preconstruction nesting bird surveys and nest monitoring for the construction of a science building on the campus of Scripps College in the City of Claremont. 1 Week; April 2020

Trails at Santiago Creek Development, Orange, CA. *Biologist/Botanist.* Douglas conducted rare plant, vegetation mapping, Jurisdictional delineations, and Burrowing owl surveys of a 11-acre parcel of Rio Santiago, a large development located in the City of Orange. 1 week; April 2020

Calamigos Tennis Ranch Biological Support, Calabasas, CA. *Biologist/Arborist.* Douglas conducted oak and native tree inventory, biological survey, mapped sensitive environmental resource areas, and provided reporting for an 8-acre mixed-use facility in support of the Santa Monica Mountains LCP Biological Assessment requirements. 7 days; October 2019 – Present

4700 Avenida Del Mar Biological Assessment, Malibu, CA. *Botanist/Biologist.* Douglas conducted and wrote a general biological assessment in accordance with the City of Malibu Local Coastal Program, and including vegetation mapping, jurisdictional delineations, biological inventory and mapping of Environmentally Sensitive Habitat Areas (ESHA's). 6 Days; November 2019

25860 Dark Creek Road Biological Assessment, Monte Nido, CA. *Botanist/Biologist.* Douglas conducted a general biological assessment in accordance with the Santa Monica Mountains Local Coastal Program, and including vegetation mapping, jurisdictional delineations, biological inventory and tree mapping. Douglas also wrote the biological assessment. 5 Days; December 2019

Oaks at Monte Nido/Monte Nido Estates Residences Project, Monte Nido, CA. *Biologist.* Douglas conducted biological and arboricultural surveys and documentation in support of a coastal development permit application in the rural community of Monte Nido. 4 Days; November 2019

EF International Language Campus Project, Costa Mesa, CA. *Biologist.* Douglas conducted a biological and landscape assessment of the former Trinity Broadcasting Network facility for a proposed college campus in support of CEQA documents. 2 Days; September 2019

Legado Properties Playa Del Rey Beachfront Properties Project, Playa Del Rey, CA. *Biologist.* Douglas conducted a vegetation mapping, post impact analysis, and a historical site assessment for beachfront properties located within Environmentally Sensitive Habitat Areas. 2 Days; August 2019

Rutter Santiago Saddle Crest Development, Trabuco Canyon, CA. *Habitat Restoration Monitor.* Douglas gathered transect and field data for qualitative and quantitative site assessments and annual reporting for mitigation sites within the Cleveland National Forest. Douglas also helped produce annual reporting for Special-status plant, Sensitive Natural Communities, and Regional Water Quality Control Board annual reporting. Observed sensitive species include *Nolina cismontana* and *Calochortus weedii* var. *intermedius.* 20 Days; January 2019 - Present.

March Joint Powers Authority Heacock Street Truck Terminal Facility, March Inland Port Airport (Unincorporated Riverside County, CA). *Habitat Restoration Ecologist.* Douglas prepared the Habitat Mitigation and Monitoring Plan (HMMP) for the Heacock Street Truck Terminal project located within the March Joint Powers Authority. 5 Days; December 2018.

Trumark Homes Henry Avocado Ranch Tree Survey, Escondido, CA. *Arborist.* Douglas conducted a tree survey of 300 trees within a 34-acre proposed development in Escondido, CA. 1 Day; April 2019

Netflix Triunfo Canyon Corporate Retreat, Agoura Hills, CA. *Botanist/Arborist.* Douglas conducted rare plants, wildlife and habitat mapping of the Oak Canyon Ranch property within Triunfo Canyon. Douglas also conducted tree inventories and hazardous tree assessments. Observed sensitive species included *Lilium humboldtii* ssp. *ocellatum*, *Calochortus catalinae,* and *Juglans californica.* 2 days; May 2019 – June 2019

Stephens Ranch Cemetery Project, La Verne, CA. *Botanist.* Douglas conducted habitat mapping, wildlife surveys and rare plant surveys of the 187-acre Stephens Ranch Cemetery project located within the San Dimas Canyon/San Antonio Wash Significant Ecological Areas of Los Angeles County. Observed sensitive species included *Romneya coulteri*, *Berberis nevinii*, and *Quercus durata* var. *gabrielensis.* 3 Days; April 2019 – June 2019.

Hidden Oaks Ranch Country Club Project, Chino Hills, CA. *Botanist.* Douglas conducted habitat mapping and rare plant surveys for a 537-acre site located within the City of Chino Hills. Observed sensitive species included *Calochortus catalinae*. 2 days; May 2019 - Present

Boy Scouts of America Camp Cherry Valley Biological Constraints Survey and Reporting, Two Harbors - Santa Catalina Island, CA. *Botanist*. Douglas conducted rare plant and habitat mapping of Camp Cherry Valley property adjacent to Two Harbors. Observed sensitive species included *Constancea nevinii, Crossosoma californicum, Calochortus catalinae, Piperia cooperi, Ribes viburnifolium, Quercus pacifica, Galium catalinense* ssp. *catalinense, Eriogonum giganteum* var. *giganteum, Deinandra clementina, Arctostaphylos catalinae,* and *Acmispon dendroideus* var. *dendroideus.* 1 Day, June 4th, 2019

Under Canvas Joshua Tree Recreational Facility Project, Yucca Valley, CA. *Botanist.* Douglas conducted rare plant surveys, desert native plant inventory and habitat assessments of a 640-acre property within the town of Yucca Valley, CA. Observed sensitive species included *Saltugilia latimeri.* 3 Days; April 2019 – May 2019

Christopher Homes (CD/CFG Lake Ranch LLP) Lake Ranch Project, Lake Mathews (Unincorporated Riverside County), CA. *Biologist.* Douglas helped prepare various habitat restoration documents for the Lake Ranch project including the Habitat Mitigation and Monitoring Plan, the Fencing Plan, and the Long-term Monitoring Plan for a 110-acre land development site located within the Western Riverside Multiple Species Habitat Conservation Plan. September 2018.

Berkeley Tuolumne Family Campground, Tuolumne Meadows, CA. *Lead Arborist.* Douglas conducted an arboricultural inventory for 2000+ trees burned during the 2013 Rim Fire within the City of Berkeley Family Campground. Douglas conducted tree risk assessments for each tree, mapped each location using sub-meter GPS, and tagged trees with appropriate tagging. Douglas also conducted vegetation mapping of portions of the site. 2 Weeks; January – February 2018

Seefried Industrial Properties Project, Fontana, CA *Lead Arborist.* Douglas conducted an arboricultural survey and reporting for A 17.6-acre proposed industrial site within Fontana, CA. Reporting was prepared in accordance with the City of Fontana Tree Policy Manual. 2 days; February 2018

Chevron West Coyote Hills, Fullerton, CA *Lead Botanist* Douglas conducted rare plant surveys, Calochortus spp. mapping, and habitat site assessments of the West Coyote Hills development. 2 Days; June 2017

Moreno Rose Retirement Village, Moreno Valley, CA *Burrowing Owl Support.* Douglas conducted a habitat and resources assessment, and prepared reporting for a proposed retirement community within Moreno Valley, CA. 1 Day; February 2018

Pardee Homes Butterfield DBESP, Beaumont, CA *Burrowing Owl Support.* Douglas served as burrowing owl support for protocol burrowing owl surveys of the proposed Butterfield property within the City of Beaumont, CA. 2 Days; May 2017

William Lyon Homes Avery Place, Menifee, CA. *Burrowing Owl Support.* Douglas served as burrowing owl support for MSHCP 30-day Preconstruction survey of a housing development within Menifee, CA. 1 Day; January 2019

Utility

AT&T Communications Clock Tower Project, Newhall, CA. *Biologist.* Douglas conducted biological inventory, vegetation mapping and site assessment for a proposed cell tower located within the Santa Susana Mountains/Simi Hills Significant Ecological Area and prepared the corresponding Biological Constraints Analysis and Biota Report. Observed sensitive species includes *Juglans californica.* 1 Week; February 2020

Inland Empire Utilities Agency Groundwater Recharge Basins Burrowing Owl Presence/Absence Surveys, Inland Empire, CA. *Burrowing Owl Support.* Douglas acted as a burrowing owl support for burrowing owl presence/absence surveys within groundwater recharge basins throughout the Inland Empire. 10 days; May 2019 to Present.

Department of Water Resources Cedar Springs Spillway Repair Project, Hesperia, CA. *Biological Monitor.* Douglas provided biological monitoring and nesting bird surveys for the Cedar Springs spillway repair project located within the Silverwood Lake State Recreation Area. May 20, 2019 - Present

Department of Water Resources San Joaquin Field Division Subsidence Surveys, Kern County, CA *Burrowing Owl.* Douglas conducted burrowing owl habitat assessments, burrow inventory, and protocol surveys along the California Aqueduct within Kern County. 2 Days: June 2019.

Department of Water Resources Lake Perris Geological Instrumentation Installation Monitoring, Perris, CA. *Biological Monitor.* Douglas provided biological monitoring for the installation of geological testing equipment installations throughout the Lake Perris State Recreation Area. July 1st and 2nd, 2019

SCE Deteriorated Pole Replacement, Southern California, CA. *Biologist*. Douglas conducted Habitat Resource Assessments for multiple deteriorated SCE utility poles throughout Southern California. Douglas conducted habitat and vegetation mapping, prepared project evaluation memos and conducted desktop analysis and monitored pole replacement in a wide range of sensitive species habitats. 10-20 Days; June 2017 - March 2018.

SCE HTRP/DRHTP Hazardous Tree Removal Program & Drought Related Hazardous Tree Program, Southern California, CA. *Biologist/Arborist.* Douglas acted as an arborist for SCE's hazardous tree program. Douglas conducted tree surveys, habitat assessment, jurisdictional assessments, and tree removal monitoring for hazardous trees throughout Southern California. 20-30 Days; June 2017 - March 2018.

Metropolitan Water District (MWD) Foothill Blow-off Feeder, Santa Clarita, CA. *Biological Monitor.* Douglas served as a biological monitor overseeing vegetation removal and site clearing for foothill feeder blow-off stations located within Santa Clarita, CA. Douglas also prepared site resource assessments for work at the feeders. 1 day; March 2018

SCE/Plains Kinsey 12 kV Restoration Site, Gorman, CA. *Restoration Ecologist* Douglas oversaw seed collection, seeding, planting, BMP maintenance, and weed abatement of a SCE and Plains Pipeline restoration site within the Angeles National Forest. Observed sensitive species included *Calochortus clavatus* var. *gracilis* and *Delphinium parryi* ssp. *purpureum.* 10 days; December 2017- March 2018

SCE Tahquitz Substation Replacement Project, Mountain Center, CA *Botanist.* Douglas conducted rare plant surveys and Special Status plant focused construction monitoring for the Tahquitz Substation wreck out and replacement. Observed sensitive species include *Deinandra mohavensis*, *Calochortus palmeri* var. *munzii*, and *Galium angustifolium* ssp. *jacinticum.* June 2018 to August 2018.

SCE McGrath Beach Substation and Peaker Station, Oxnard, CA. *Lead Botanist /Restoration Ecologist.* Douglas conducted Daubenmire cover class vegetation sampling and rare plant surveys for the SCE McGrath Beach Peaker Station. Douglas also oversaw site restoration, weed abatement, and irrigation maintenance of a 37-acre site associated with SCE's McGrath Beach Substation. Observed sensitive species observed included *Astragalus pycnostachyus* var. *lanosissimus* and *Juncus acutus* ssp. *leopoldii.* 2-3 weeks; April 2017 – August 2018.

EDF Energy Valentine Wind Farm and Gen-Tie, Antelope Valley, CA. *Lead Botanist.* Douglas oversaw rare plant surveys and Desert Native Plant Act (DNPA) inventory of the Valentine Wind Farm and Gen-Tie alignment. Douglas also assisted with jurisdictional delineations and reporting for the site. 5 days; June 2017

SCE Mira Loma-Serrano Alignment Project, Yorba Linda, CA. *Restoration Ecologist.* Douglas conducted annual restoration site monitoring, willow stake planting, and reporting for a disturbed riparian site adjacent to SCE's Mira Loma-Serrano Alignment. 5 Days; April 2017 – June 2017.

SCE Serrano Valley Restoration Site, Corona, CA. *Restoration Ecologist.* Douglas conducted quarterly restoration site assessments and invasive species mapping for a riparian restoration site along SCE's Serrano Valley transmission line. Douglas also oversaw weed abatement and BMP installation and maintenance for the site. 5-6 days; April 2017 - June 2017

SCE Santa Catalina Pole Replacement Surveys, Santa Catalina, CA. *Lead Botanist.* Douglas oversaw and lead botanical, wildlife and habitat assessment surveys of pole replacement impact areas for SCE distribution lines throughout Santa Catalina Island. Douglas also conducted detailed reporting and impact assessment. *Observed sensitive species Arctostaphylos catalinae, Atriplex coulteri, Calochortus catalinae, Ceanothus megacarpus* var. *insularis, Cercocarpus betuloides* var. *blancheae, Cistanthe maritima, Crossosoma californicum, Dendromecon harfordii* var. *rhamnoides, Dichondra occidentalis, Dudleya virens* ssp. *hassei, Eriogonum giganteum* var. *giganteum, Galium catalinense ssp. catalinense, Galium nuttallii ssp. insulare, Harpagonella palmeri, Lyonothamnus floribundus* ssp. *floribundus, Malacothamnus fasciculatus* var. *catalinensis, Microseris douglasii* ssp. *platycarpha, Piperia cooperi, Quercus pacifica, Quercus tomentella, Rhamnus pirifolia,* and *Scrophularia villosa.* 1 week; April 2017.

EDF Renewable Energy Tropico Solar Project, Rosamond, CA. *JD Support.* Douglas served as a jurisdictional delineation support for a 215-acre proposed solar site. Douglas also conducted rare plant and special status wildlife general survey of the site. 3 Days; December 2018.

SCE Vista-Colton Deteriorated Pole Replacement Project, Colton, CA. *Lead Botanist.* Douglas conducted rare plant, vegetation and habitat mapping within the floodplain of the Santa Ana River. Observed sensitive species included *Eriastrum densifolium* ssp. *sanctorumi.* 2 days; April 2018

SCE Arrowhead Subtransmission Line Realignment Project, Hesperia, CA *Lead Botanist.* Douglas conducted rare plant and habitat assessments of a 115 kV transmission line. 1 Day; September 2018.

SCE Garnet Substation Project, North Palm Springs, CA *Lead Botanist.* Douglas conducted botanical and wildlife surveys of the Garnet substation and alignment near North Palm Springs, CA. Observed sensitive species include *Astragalus lentiginosus* var. *coachellae*. 2 Days; August 2017

SCE Cottonwood-Permanente Deteriorated Pole Replacement Project, Cushenbury Springs, CA *Lead Botanist.* Douglas conducted rare plant, vegetation and habitat surveys for a pole replacement project within the unique carbonate habitat of Cushenbury Springs, CA. Observed sensitive species included *Rosa woodsii* var. *glabrata* and *Calochortus striatus.* 2 days; June 2017

SCE El Casco Substation Restoration Project, El Casco, CA *Restoration Ecologist.* Douglas conducted weed abatement and restoration site assessments for a smooth tarplant (*Centromadia pungens* ssp. *laevis*) restoration site adjacent to SCE's El Casco Substation. Observed sensitive species included *Centromadia pungens* ssp. *laevis*, and *Juglans californica.* 5 days; June 2017

SCE Calcite Substation Project, Lucerne Valley, CA *Lead Botanist.* Douglas conducted botanical, wildlife, and habitat assessment surveys of the Calcite substation and alignment. Observed sensitive species *Cryptantha clokeyi*, *Eriogonum ovalifolium* var. *vineum*, *Calochortus striatus*, *Erigeron parishii*, and *Muilla coronata.* 2 Days; May 2017

SCE Alberhill – Valley Ivy Glen Alignment, Temescal Valley, CA *Lead Botanist. BUOW support.* Douglas conducted MSHCP Botanical, Vernal Pool, and Burrowing owl surveys of the Alberhill and Valley Ivy Glen alignment. Observed sensitive species included *Abronia maritima* var. *aurita, Ambrosia pumila, Atriplex coronata* var. *notatior, Centromadia pungens* ssp. *laevis, Chorizanthe polygonoides* var. *longispina, Chorizanthe xanti* var. *leucotheca, Chorizanthe leptotheca, Deinandra paniculata, Dodecahema leptoceras, Dudleya multicaulis, Harpagonella palmeri, Juglans californica, Lasthenia glabrata* ssp. *coulterti, Lepidium virginicum* var. *robinsonii, Pseudognaphalium leucocephalum,* and *Romneya coulteri. 10-15 Days;* April 2017 – June 2018

SCE Gale-Pisgah Alignment Project, Daggett, CA *Lead Botanist.* Douglas conducted botanical and wildlife surveys of SCE Gale-Pisgah alignment and Substation. Observed sensitive species *Menodora spinescens* var. *mohavensis* and *Funastrum utahense*. 3 days; April 2017.

SCE Eldorado-Lugo-Mohave Upgrade Project (LVRAS) Baker, CA *Lead Botanist.* Douglas conducted botanical and desert tortoise surveys of a SCE line replacement within the Mojave National Preserve between Barstow and the Nevada Border. Douglas also acted as a support for jurisdictional delineations throughout the survey area. Observed sensitive species included *Astragalus bernardinus*, *Astragalus layneae*, *Astragalus tidestromii, Castela emoryi, Cymopterus multinervatus*, *Grusonia parishii*, and *Sphaeralcea rusbyi* var. *eremicola.* 3.5 Weeks; April 2017 – May 2017.

SCE La Fresa Substation, Torrance, CA *Biological Monitor.* Douglas served as a biological monitor and nesting bird biologist. Douglas conducted nest monitoring of red-tailed hawk and common raven nests within SCE's La Fresa substation. 2 days; April 2017.

SCE Lake Success Project, Porterville, CA *Lead Botanist.* Douglas conducted botanical and vegetation mapping of the Option 2 SCE alignment surrounding Lake Success. Observed sensitive species included *Clarkia springvillensis*, *Convolvulus simulans*, *Eryngium spinosepalum*, *Navarretia nigelliformis* ssp. *nigelliformis*, and *Pseudobahia perisonii.* 9 days; April 2017 – May 2017.

EDF Catalina Solar/Pacific Wind Farm, Antelope Valley, CA *Botanist.* Douglas conducted Daubenmire cover class mapping and botanical surveys throughout Catalina Solar and Pacific Wind farms in the Antelope Valley.5 days; March 2017.

Avangrid Renewables Tule Wind Project, Boulevard, CA. *Designated Biologist.* Douglas acted as a designated biologist for 200 megawatt wind turbine project within the McCain Valley on BLM and Ewiiaapaayp Tribal lands. As a restoration ecologist, Douglas oversaw large scale cactus and succulent salvage and storage. Douglas also acted as a biological monitor during the site clearing, civil work and turbine construction. 15-20 Days; October 2016 – March 2017

SCE Tehachapi Renewable Transmission Project (TRTP) – Kern, Los Angeles, and San Bernardino Counties, CA. *Lead Botanist/ Lead Biological Monitor.* Douglas served as lead botanist, lead biological monitor, lead weed abatement monitor, nesting bird surveyor, and restoration ecologist for the Southern California Edison's (SCE) TRTP project spanning a 173-mile transmission line corridor, including construction of 500 kV overhead and underground high-voltage electric transmission lines. Douglas conducted rare plant surveys throughout Kern, Los Angeles, and San Bernardino counties. Douglas oversaw invasive species mapping and removal throughout the Angeles National Forest, Puente Hills habitat preserve, and Tonner Canyon preserves. He acted as a support for riparian bird and nesting bird surveys throughout the project area for species including Coastal California gnatcatcher, least Bell's vireo, southwestern willow flycatcher, and burrowing owls. He also provided oversight for plant salvage activities within the Angeles National Forest. Observed sensitive plant species included *Heuchera caespitosa, Berberis nevinii, Dudleya cymosa* ssp. *crebrifolia, Dudleya densiflora, Opuntia basilaris* var. *brachyclada, Centromadia parryi* ssp. *australis, Hulsea vestita* ssp. *gabrielensis, Galium grande, Orobanche valida* ssp. *valida, Lilium humboldtii* ssp. *ocellatum, Arctostaphylos glandulosa* ssp. *gabrielensis, Lepechinia fragrans, Calystegia felix, Syntrichopappus lemmonii, Calochortus catalinae, Calochortus plummerae, Calochortus palmeri* var. *palmeri, Castilleja gleasoni, Malacothamnus davidsonii, Quercus durata* var. *gabrielensis* and *Juglans californica.* 6 Years; March 2011 – March 2017.

Southern California Gas North/South Project, San Bernardino and Riverside Counties, California. *Lead Botanist.* Douglas conducted botanical and wildlife surveys of the Southern California Gas North/South alignment. 2 Days; March 2014

Municipal

Newport Bay Conservancy Big Canyon Phase 2A Restoration Project, Newport Beach, CA. *Restoration Ecologist/Arborist.* Douglas conducted habitat restoration monitoring, arboricultural assessments, and invasive Shot-hole borer assessments of Newport Bay Phase 2A big canyon site. 2 Days; August 2020

Orange County Public Works Caspers Wilderness Park Entry Road Repair Project, San Juan Capistrano, CA. *Biologist.* Douglas provided biological monitoring and reporting for an Arizona Crossing Repair project. 4 Days; July 2020 – Present

Orange County Public Works Peters Canyon Bikeway Extension Project, Orange/Tustin, CA. *Biologist.* Douglas conducted a biological assessment and composed the Natural Environment Study (Minimal Impact) for the project located within portions of the Orange County HCP. June 2020 – Present.

Los Angeles Department of Public Works Los Angeles River Bike Path (Willowcrest Ave to Barham Blvd), Universal City, CA. *Arborist.* Douglas conducted a tree inventory and reporting for the LA River bike path between Willowcrest Avenue and Barham Boulevard, and within the Universal Studios Specific Plan Area. 6 days; June 2020

Orange County Public Works Villa Park Biological Monitoring, Orange, CA. *Biologist.* Douglas provided biological and restoration monitoring and reporting for a brush clearance project at the Villa Park Dam facility and within fuel modification areas adjacent to the dam. 5 days; December 2019 – Present.

Palos Verdes Peninsula Water Reliability Project Environmental Compliance Monitoring, Palos Verdes, CA. *Compliance Monitor.* Douglas conducted daily compliance monitoring of a pipeline replacement project within Palos Verdes and Rolling Hills Estates. September 2018 – Present.

Orange County Public Works Countywide Long Term Routine Maintenance Program Channel Categorizations 2019 & 2020, Orange County, CA. *Biologist.* Douglas conducted channel categorizations, biological surveys, jurisdictional delineations, vegetation mapping and reporting for various channels and basins throughout Orange County, CA. 45 days; April 2019 – Present.

Orange County Public Works San Diego Creek Sediment Removal Project, Irvine, CA *Biologist.* Douglas conducted daily site spot checks and nesting bird surveys of a sediment removal project within the San Diego Creek. 15-20 Days; September 2018 to May 2019.

San Manuel Band of Mission Indians Hot Springs Lake Dam Project, Highland, CA. *Biologist.* Douglas conducted biological and vegetation mapping surveys of the Hot Springs Lake Dam area on the San Manuel reservation and provided technical memorandum for the project. 2 Days; September 2019

Los Angeles County Department of Public Works Santa Anita Canyon Road Improvement Project, Sierra Madre, CA. *Biologist.* Douglas conducted biological site assessment and vegetation mapping for a road repair project along Santa Anita Canyon Road. 6 Days; October 2019

Los Angeles County Department of Public Works Vasquez Canyon Road at Bouquet Bridge Project, Santa Clarita, CA. *Biological Monitor.* Douglas provided biological monitoring for a sediment removal project beneath the Vasquez Canyon bridge. 2 days; September 2019.

Los Angeles County Department of Public Works San Francisquito Canyon Creek Bridge Project, Santa Clarita, CA. *Botanist.* Douglas conducted vegetation mapping of proposed bridge replacement and road improvement project in the Angeles National Forest. Observed sensitive species included least Bell's vireo and *Berberis nevinii.* 1 Day; August 2019.

Los Angeles County Department of Public Works Santa Monica Mountains/Mulholland Highway Storm Repair Project, Malibu, CA. *Biological Monitor.* Douglas provided biological monitoring and biological assessments for various road repair sites along Mulholland Highway. 7 Days; December 2019 – Present.

City of Los Angeles Department of Recreation and Parks Peck Park Annual Brush Clearance Monitoring, San Pedro, CA. *Biologist.* Douglas provided nesting bird surveys and biological monitoring for annual brush clearance activities for Lake Machado, Peck Park, and Harbor Park Golf Course within the city of San Pedro, CA. 4 days; June 2019 – September 2019.

Los Angeles Unified School District Elizabeth Learning Center Habitat Gardens Assessment, Cudahy, CA. *Botanist.* Douglas provided a botanical and biological inventory for specialized chaparral, vernal pool, and desert habitat gardens at Elizabeth Learning Center. September 2019.

Cali Lake RV Park Project, Santa Clarita, CA. *Botanist.* Douglas conducted a rare plant survey and vegetation mapping of recreational campground and RV park within the Santa Clara River Significant Ecological Area. 1 Day; July 2019

County of San Diego Department of Parks and Recreation Hellhole Canyon Preserve Additions Biodiversity Survey and Habitat Maps, Valley Center, CA. *Botanist.* Douglas conducted habitat mapping, rare plant, and invasive plant surveys of 5 large parcel additions to the Hellhole Canyon Preserve totaling 692 Acres. Observed sensitive species included *Harpagonella palmeri, Xanthisma junceum, Quercus engelmanii,* and *Allium marvinii.* 9 Days; March 2019 – April 2019

County of San Diego Department of Parks and Recreation Ramona Sheriff Station Vernal Pool Survey and Vegetation Mapping, Ramona, CA. *Botanist.* Douglas conducted vegetation mapping, rare plant mapping, and vernal pool surveys of a property adjacent to Ramona Sheriff Station. Observed sensitive species included San Diego fairy shrimp (*Branchinecta sandiegonensis*). 1 Day; March 2020.

County of San Diego Management & Monitoring Rare Plant Inspect and Monitoring Program 2019, Sycamore Canyon/Goodan Ranch Preserve, CA. *Botanist.* Douglas conducted Rare Plant Inspect and Manage monitoring for San Diego Thornmint (*Acanthomintha ilicifolia*) populations located within Sycamore Canyon and Goodan Ranch Preserves. Observed sensitive species included *Acanthomintha ilicifolia, Convolvulus simulans, Harpagonella palmeri,* and *Selaginella cinerescens.* April 15th and 16th, 2019.

Los Angeles Unified School District Marshall High School Nesting Bird Surveys, Los Angeles, CA. *Nesting Bird Surveyor.* Douglas provided nesting bird surveys and monitoring for a building upgrade project at Marshall High School. June 2019 – July 2019

Irvine Ranch Water District Syphon Reservoir Improvement Project, Irvine, CA *Botanist/Arborist.* Douglas conducted habitat assessments, tree mapping, western spadefoot toad surveys and rare plant surveys within Syphon Reservoir. Observed sensitive species included *Dudleya multicaulis, Viguiera laciniata* and *Calochortus catalinae.* 10 days; December 2018 – December 2019

City of San Diego Wetland/Restoration Mitigation Opportunities Site Evaluations, San Diego, CA. *Botanist.* Douglas conducted Wetlands Mitigation Opportunities assessments and filled out site evaluation forms of Mission Valley, Sunshine-Berardini, West Bernardo, Lopez Canyon, East Black Mountain, Camino Del Sur, Upper Penasquitos Watershed, and South-56 potential mitigation sites throughout the City of San Diego. Observed sensitive species included *Viguiera laciniata, Harpagonella palmeri, Artemisia palmeri, Quercus dumosa, Adolphia californica, Ferocactus viridesecens, Selaginella cinerescens, Iva hayesiana, Adolphia californica,* and *Juncus acutus* ssp. *leopoldii.* 15 Days; March 2019 – Present.

Los Angeles County Department of Public Works Eaton Wash Reservoir, Altadena, CA. *Compliance Monitor.* Douglas conducted daily weed abatement and vegetation removal monitoring during annual maintenance activities within the Eaton Wash Flood Control Basin. 5 Days; September 2018 – October 2018.

Gregory C. Ainsworth

Senior Arborist

EDUCATION

M.C.R.P., Environmental Planning, California Polytechnic State University, San Luis Obispo

B.S., Environmental Horticulture Science, California Polytechnic State University, San Luis Obispo

18 YEARS EXPERIENCE

CERTIFICATIONS AND TRAININGS

International Society of Arboriculture Certified Arborist (Cert# WE 7473A)

International Society of Arboriculture, Tree Risk Assessor Qualified (TRAQ)

REFERENCES

Maureen Tamuri, City of Calabasas, Community Development Director.
Email: mtamuri@cityofcalabasas.com
Phone: (818) 224-1701

Doug Hooper, City of Agoura Hills, Planning Director
Email: dhooper@ci.agoura-hills.ca.us
Phone: (818) 597-7342

Kelly Kim, Los Angeles County Fire Department-Urban Forestry Division.
Email: kkim@fire.lacounty.gov
Phone: (818) 890-5719

Greg has extensive experience conducting tree assessments, health risk assessments, tree appraisals, and providing expert witness testomony to municipalities. He is an certified arborist with the International Society of Arboriculture and serves as the City Arborist for the cities of Calabasas and Agoura Hills. In adition, Greg has an on-call master service agreement for arborist services with the Los Angeles County Beaches and Harbors Department and the Ventura County Channel Islands Harbor Department, and heis a pre-approved arborist with the City of Malibu and the County of Los Angeles, and interacts regularly with the Los Angeles County Forestry Division. Greg has experience conducting tree surveys and preparing reports for several other municipalities and counties, including but not limited to, City of Pasadena, City of Thousand Oaks, City of Santa Clarita, Ventura County and San Luis Obispo County. He has assisted dozens of clients with obtaining descretionary permits involving tree impacts. Greg was a member of the Oak Woodland Habitat Conservation Alliance; a team of professional arborists, forestry personnel and planners that recently completed an Oak Woodland Conservation and Management Plan for the County of Los Angeles.

Relevant Experience

Pasadena Non-Potable Reuse Water Project, City of Pasadena, Public Works Department. The City of Pasadena Public Works Department proposes to install a non-potable recycled water line along various streets that bisect residential neighborhoods to the east and west of Brookside Golf Course. Greg led a survey of more than 200 trees that could potentially be effected and prepared a risk assessment for several mature Canary Island Pine Trees located on Laurel Street that were of concern to adjacent residents. Greg prepared a tree survey report and Canary Island Pine Risk Assessment Report, and assisted the Director of Public Works in facilitating a public workshop on the project's potential impacts to city-trees, and the potential risks associated with installing underground utilities on Laurel Street.

Historic Deodar Cedar Impact Assessment, City of Santa Monica, CA. Greg conducted a focused assessment of a Deodar Cedar tree listed as a historic resource by the City of Santa Monica. The purpose of the assessment was to verify if a proposed residential development could present short-term or long-term negative impacts on the tree. Greg's assessment included reviewing historical information on the tree's health and conducting his own detailed evaluation, including assessing potential direct and indirect impacts to the tree from a change in the site's hydrology, as well as sunlight/shade influence from the proposed project.

Boething Treeland Farm Residential Development, City of Los Angeles, CA. The Boething Treeland Farms Residential Development includes the development of a 95-small lot subdivision, a 26-lot single-family subdivision, an eldercare facility, parking lots, community pools, pet park and fitness/hiking trails. Greg conducted a focused survey of approximately 500 trees on the project site, including city rights-of-ways and prepared a tree report in accordance with the City of Los Angeles Tree Protection Ordinance. This proposed project is still under review by the City of Los Angeles.

City of Calabasas, City Arborist, Los Angeles County, CA. Greg is the City of Calabasas' arborist. His services include verification of tree survey reports, tree damage assessments, tree appraisals, tree risk assessments, expert witness testimony, review of Healthy Tree Permit Applications, and overall implementation of the City's Oak Tree Preservation Guidelines (Ordinance) for the City's Planning Department and Code Enforcement Division. Greg works closely with planning staff, code enforcement personnel, and legal counsel, providing recommendations for preserving and mitigating the city's oak tree population, as well as support in determining retribution for oak tree violation cases.

City of Agoura Hills, City Oak Tree Consultant, Los Angeles County, CA. Greg is the City of Agoura Hills' consulting arborist. His services include verification of tree survey reports, tree damage assessments, tree appraisals, tree risk assessments, review of Oak Tree Permit Applications, and overall implementation of the City's Oak Tree Ordinance. Greg works closely with planning staff in determining project effects on native oak trees and in determining appropriate replacement mitigation and/or in-lieu fees.

Los Angeles County Department of Public Works, Flood Maintenance Division, Los Angeles County, CA. Greg has conducted several tree inventories and focused surveys and reports for various flood maintenance projects in support of permitting and/or environmental review. Surveys have included county-protected oak trees, as well as inventories of riparian tree species in support of regulatory permit applications to determine impacts and mitigation. Greg has prepared restoration plans and implemented restoration for channel maintenance projects that have impacted riparian trees.

City of Commerce Sidewalks Improvement Project, City of Commerce, CA. *Lead Biologist/Arborist***.** ESA prepared an Initial Study/Mitigated Negative declaration for the Sidewalk Improvement and Tree Reforestation Project for the City of Commerce. The purpose of the project is to repair the severe displacement of sidewalk and other hardscape along Slauson Avenue caused by City tree roots. Greg conducted a tree survey and prepared a biological assessment report in support of the CEQA analysis, and prepared a plant palette that included drought tolerant trees with suitable form and root structure to be planted along Slauson Avenue.

City of Los Angeles, Brentwood School Tree Survey, Los Angeles, CA. *Consulting Arborist.* Greg conducted a protected tree survey per the City of Los Angeles Protected Tree Ordinance and prepared a technical tree report for the Brentwood School Master Plan Project in Los Angeles, California. This project required an inventory appraisal and evaluation of over 300 ornamental and native trees located on the school's east and west campuses.

City of Los Angeles, Mountain Gate Development, Los Angeles, CA. *Consulting Arborist.* Greg surveyed over 1000 trees on the Mountain Gate Development project and submitted a detailed tree inventory report for project permitting. The project is located on Mountain Gate Drive, just west of the San Diego Freeway (405) in the City of Los Angeles.

Oak Woodland Habitat Conservation Strategic Alliance, Los Angeles County, CA. *Consulting Arborist*. Greg was a member of group or arborists and academic professors that developed an Oak Woodlands Conservation Management Plan for Los Angeles County that provides a pragmatic, economically equitable and defensible framework to guide the protection and restoration of Oak Woodlands. The plan serves as a blueprint for community outreach and identify economic, social and ecological benefits associated with functional Oak Woodlands.

County of Los Angeles, Newhall Land and Farming, Los Angeles, CA. Consulting Arborist/Biologist. Greg managed and performed annual biological surveys for a 13,000-acre Specific Plan area located in northwestern Los Angeles County, California. Surveys conducted include over 4,000 oak trees in accordance with the County of Los Angeles Oak Tree Ordinance and identification of suitable trees for relocation.

California Department of Water Resources, Pyramid Lake Maintenance Projects, Angeles National Forest, Los Angeles County, CA. Greg conducted a focused tree survey in support of two separate maintenance projects located within the Angeles National Forest (ANF) at Pyramid Lake. Native oak trees were surveyed in accordance with the ANFs survey and reporting requirements, and results were included in a federal Biological Assessment/Biological Evaluation Report and associated regulatory permits for the Army Corps of Engineers, Regional Water Quality Control Board, and California Department of Fish and Wildlife.

Ventura County Harbor Department Channel Island Harbor. *Consulting Arborist/Biologist.* Since 2005, Mr. Ainsworth has provided the Harbor Department with on-call arborist and biologist services that have included conducting an inventory of all trees within the Harbor and identification of trees that should be removed or replaced with better specimens based on environmental factors such as placement, wind, salt exposure, and aesthetics. Greg conducted a study that evaluated effects of Myoporum thrips on Myoporum trees and provided recommendations for control. He also provides on-call monitoring services that include assessment and monitoring of the breeding and roosting heron population at the harbor.

Sunshine Canyon Landfill, Arborist Support, Los Angeles County, CA. *On-call Arborist.* Greg conducted annual monitoring for several mitigation requirements that include City of Los Angeles oak tree mitigation, PM10 tree buffer mitigation, big cone Douglas fir mitigation, coastal sage scrub restoration, coastal sage scrub and chaparral revegetation required by the Air Quality Control Management District. Greg assessed fire damage of coast live oak, valley oak, and canyon live oak on mature stands of oaks, as well as planted groves for mitigation. Greg

determined which trees had potential to survive, which survived based on indicators such as basal growth and healthy tissue, and those that would need to be removed. He prepared a restoration and revegetation plan introducing oak woodland, native coastal sage scrub and chaparral vegetation between the landfill and adjacent neighborhoods. Greg provided on-call services that also included: preconstruction bird surveys, protected tree surveys for proposed grading activities, and identification of suitable native revegetation sites throughout the landfill property.

City of Commerce Sidewalks Improvement Project, City of Commerce, CA. *Lead Biologist/Arborist.* ESA prepared an Initial Study/Mitigated Negative declaration for the Sidewalk Improvement and Tree Reforestation Project located on Slauson Avenue, from I-710 FWY to Telegraph Road. The purpose of the project is to repair the severe displacement of sidewalk and other hardscape along Slauson Avenue caused by City tree roots, while striving for a balance between the urban forest and pedestrian/motorist safety on this heavily travelled corridor. Greg conducted a tree survey and prepared a biological assessment report in support of the CEQA analysis, and prepared a plant palette that included drought tolerant trees with suitable form and root structure to be planted along Slauson Avenue. Greg supported the planning department with a public scoping meeting where he answered questions on the project pertaining to street tree impacts and mitigation.

Corporate Ridge Development Project, City of Agoura Hills, CA. *Lead Arborist.* Greg served as the lead arborist in providing construction monitoring support for the development of the Corporate Ridge Development Project. Job duties that were performed included monitoring of work conducted near oak trees, spontaneous development of methods to avoid construction impacts to protected oak trees, monitoring of the health of oak trees following construction, preparation of daily monitoring reports, and coordination with the construction manager and the City of Agoura Hills' Arborist, Anne Burroughs.

County of Los Angeles, Newhall Land and Farming, Los Angeles, CA. *Consulting Arborist/Biologist.* Greg managed and performed annual biological surveys for a 13,000-acre Specific Plan area located in northwestern Los Angeles County, California. Surveys conducted include over 4,000 oak trees in accordance with the County of Los Angeles Oak Tree Ordinance and identification of suitable trees for relocation. Greg assessed the health and risk of oak trees that had been burned by various fire and provided assessments based on variables, such as percent fire scare, broken/dead limbs, exfoliating bark, basal growth, scorched crown.

Grossmont Union High School District, Grossmont High School Tree Survey, San Diego, CA. *Arborist*. Greg conducted a tree survey on over 200 oak trees for a proposed high school alternative location for the Grossmont Union High School District. The locations of oak trees and mature riparian woodland species located on the alternative high school site were assessed and mapped by Greg, our certified arborist. A subsequent tree report was prepared and all attribute data (e.g., tree number, size, health, balance) collected were provided in the report. The report identified the number of trees that were removed, encroached, and preserved by the proposed alternative high school location.

Las Virgenes Municipal Water District, April Road Reservoir Environmental Constraints Analysis, Agoura Hills, CA. *Senior Arborist/Biologist.* Greg prepared a Biological Constraints Analysis for the proposed April Road Recycled Water Reservoir Site for the Las Virgenes Municipal Water District. The purpose of the assessment is to identify fatal flaws of the site and to characterize key biological resource hurdles. His analysis includes an assessment of potential incompatibilities with Los Angeles County's Sensitive Ecological Areas, impacts to wildlife migration corridors and sensitive plants and wildlife, and potential mitigation options. Greg prepared a draft oak tree appraisal to assessment the potential cost of impacting approximately 200 coast live oak trees and conducted a rare plant survey of the proposed project site.

Young Nak Retreat Center, Tree Surveying, County of Los Angeles, CA. *Consulting Arborist.* Greg conducted an oak tree survey and health assessment on over 300 oaks trees in accordance with the Los Angeles County Oak Tree Ordinance and prepared an oak tree report for the expansion of the Young Nak Retreat Center.

Greystar Real Estate Partners, Channel Islands Harbor, Ventura County, CA. *Senior Biologist/Arborist.* Mr. Ainsworth conducted an assessment of all trees within the Paz Mar Select and Paz Mar Reserve condominium complexes for presence of bird nests and active heron roost sites prior to annual tree trimming activities. All trees with sign of heron presence were flagged and specific tree trimming procedures were applies based on recommendations provided by Mr. Ainsworth.

Newhall Land and Farming, Mission Village Oak Tree Report, County of Los Angeles, CA. *Consulting Arborist.* Greg prepared an oak tree report in accordance with the County of Los Angeles Oak Tree Ordinance for Mission Village development project. He met with County forestry personnel to discuss proposed impacts to oak trees and feasible mitigation measures were developed through negotiations.

E. Rojas Landscape Inc., Channel Islands Harbor, Ventura County, CA. *Senior Biologist/Arborist.* Mr. Ainsworth conducted an assessment of all trees within the Paz Mar Select and Paz Mar Reserve condominium complexes for presence of bird nests and active heron roost sites prior to annual tree trimming activities. All trees with sign of heron presence were flagged and specific tree trimming procedures were applies based on recommendations provided by Mr. Ainsworth.

Newhall Land and Farming, Landmark Village Oak Tree Report, County of Los Angeles, CA. *Consulting Arborist.* Greg prepared an oak tree report in accordance with the County of Los Angeles Oak Tree Ordinance for the Landmark Village development project. He met with County forestry personnel to discuss proposed impacts to oak trees and feasible mitigation measures were developed through negotiations.

Marine Emporium Landing, LLC, Channel Islands Harbor, Ventura County, CA. *Lead Biologist.* Conducted biological assessments and prepared technical reports for two separate development projects at the Channel Islands Harbor. Conducted construction monitoring for potential impacts to great blue herons and black-crowned night heron during the construction phases.

Newhall Land and Farming, The Old Road Oak Tree Report, Los Angeles County, CA. *Consulting Arborist.* Greg prepared an oak tree report in accordance with the County of Los Angeles Oak Tree Ordinance for the widening of the Old Road near Magic Mountain Theme Park. Greg met with County forestry personnel to discuss proposed impacts to oak trees and feasible mitigation measures were developed through negotiations.

Vintage Marina, Channel Islands Harbor, Ventura County, CA. *Project Manager/Senior Biologist.* Managed and conducted construction monitoring for potential impacts to great blue herons and black-crowned night herons at the Channel Islands Harbor, Oxnard, California. Monitor efforts includes an assessment of short- and long-term construction related impacts on breeding and foraging herons. Provided on-call biological resource-related services for various projects within the Harbor.

City of Los Angeles, Scrub Television Set Tree Inventory, Los Angeles, CA. *Consulting Arborist.* Greg conducted an inventory of all ornamental and native trees located on the Scrub television set located in Los Angeles in accordance with the City of Los Angeles Tree Survey Guidelines. The inventory included the identification of species, tree measurements (height, canopy distances, trunk diameter), evaluation of physical characteristics, maintenance measures, and recommendations for preserving or relocating trees.

City of Santa Clarita, KOAR Real Estate Advisors, Santa Clarita, CA. *Consulting Arborist/Biologist*. Greg prepared a biological impact assessment, mapped plant communities, and conducted an oak tree survey, health assessment and tree appraisal in accordance with the City of Santa Clarita's Oak Tree Ordinance on the proposed Robinson Ranch Residential Development Project.

City of Agoura Hills, Corporate Ridge Development Project, Agoura Hills, CA. *Consulting Arborist.* Greg provided on-call arborist and construction monitoring support for the development of the Corporate Ridge Development Project. Job duties that were performed included construction monitoring of work conducted near oak trees, spontaneous development of methods to avoid construction impacts to protected oak trees, monitored the health of oak trees following construction, prepared daily monitoring reports, and coordinated with the construction manager and the Agoura Hills' Arborist, Anne Burroughs.

City of San Dimas, Arborist Support, San Dimas, CA. *Consulting Arborist.* Greg provided construction monitoring of work activities conducted near protected oak tree in accordance to development permit conditions for a 15 parcel residential development. He provided avoidance measures to protect saved trees such as requiring the use of hand tools for work conducted within the dripline of the trees, identification of roots that could be cut, verification of fencing to protect trees, and methods to pour concrete for retaining walls without removing large roots.

Metropolitan Water District, Tree Ordinance Compliance and Breeding Bird Surveys, La Verne, CA. *Senior Biologist*. Greg conducted a significant tree survey, prepared a tree report, and submitted a tree permit to the City of La Verne for the Metropolitan Water District Weymouth Treatment Plan Main Line Project. Greg conducted a preconstruction breeding bird and nest survey for the proposed project and identified appropriate buffers to avoid impacts to breeding birds.

Channel Islands Development Partners, Arborist Support, Ventura County, CA. *Biologist/ Consulting Arborist.* Greg conducted focused surveys for arroyo chub, southwestern pond turtle, two-striped garter snake, and special-status plants, and a protected tree survey in accordance with the Ventura County Protected Tree Ordinance on the proposed Wildwood Stable Estates development site. He prepared a protected tree report and technical biological assessment report, and identified unknown populations of the Federally-Threatened Conejo Dudleya plant on the project site.

City of Lompoc, Arborist Support, Lompoc, CA. *Consulting Arborist/ Biologist*. Greg conducted an oak tree survey in accordance to the City of Lompoc Tree Ordinance, a habitat assessment, and a biological resource section of a draft EIR for the Santa Rita Winery project.

Rockwell Scientific, Arborist Support, Ventura County, CA. *Consulting Arborist.* Greg conducted a protected tree survey and health assessment, and prepared a tree report per the City of Thousand Oaks Protected Tree Ordinance and the County of Ventura Tree Ordinance for a proposed residential development.

WRA Engineering, Technical Tree Report, Los Angeles County, CA. *Consulting Arborist.* Greg conducted a protected tree survey and impact assessment per the Los Angeles County Oak Tree Ordinance and prepared a technical tree report for a proposed 300-acre residential development project known as Quest Ranch in Los Angeles County, California. He conducted jurisdictional delineation of protected streams and prepared a draft EIR for the proposed project.

Apollo Real Estate Group and Big Rock Partners, Biological Resources Impact Study, Los Angeles County, CA. *Lead Biologist.* Greg prepared the biological resource impact study for a two separate development projects known in Malibu, California. Responsibilities also include focused botanical surveys, raptor surveys, and wildlife surveys, and a tree survey and report in accordance with the City of Malibu's Protected Tree Ordinance.

Salem Communications, Biological Assessment Report and Biota Report, Los Angeles County, CA. *Lead Biologist/Arborist.* Greg managed and conducted oak tree surveys and health assessments on approximately 600 oak trees for the proposed KRLA AM Radio Tower site in unincorporated Los Angeles County, California. He prepared an oak tree report in accordance with the requirements of the Los Angeles County Oak Tree Ordinance, a Biological Assessment Report and Biota Report per the guidelines of the Los Angeles County Sensitive Ecological Area Technical Advisory Committee, and a biological resource section of a draft EIR for the County of Los Angeles.

Eric Lloyd Wright & Associates, Arborist Support, Los Angeles County, CA. *Consulting Arborist.* Conducted a protected tree survey for two separate residential project sites located in unincorporated Los Angeles County, near the City of Malibu, California.

Civil Design & Drafting, BC Land Group, and DR Horton, Tree Surveys, Palmdale, CA. *Biologist/Consulting Arborist*. Greg managed and conducted Joshua tree surveys and health assessments and focused surveys on the desert tortoise, Mohave ground squirrel, burrowing owl, coast horned lizard, arroyo toad, and special-status plants on a 600-acre site proposed for the College Park Specific Plan development in Palmdale, California. He prepared several technical reports based on focused survey results, including a Joshua Tree Preservation and Relocation Plan, a Landscape Concept Plan, and an Invasive Species Removal Program. Greg identified mitigation areas for affected biological resources located on the site. He preparing Section 1602 Streambed Alteration Agreement and Section 404 permits for proposed impacts to jurisdictional drainages.

City of Ojai, Libby Bowl Reconstruction Project, Ventura County, CA. *Arborist.* Greg conducted a focused survey of all trees located at the Libby Bowl. Greg prepared a detailed tree assessment report for the City of Ojai that included data collected on the health and physical structure of each tree, as well as recommendation for preserving trees and mitigating those trees that would be removed or otherwise impacted.

Conejo Valley Development Corporation, Corporate Ridge Development Project, Ventura County, CA. *Arborist.* Greg conducted on-call monitoring of oaks to be preserved within the development project. Greg prescribed specific measures for avoiding impacts to oak trees and monitored all construction activities within 15 feet from all protected tree canopies. Greg prepared monitoring logs and communicated directly with the City of Agoura Hills Arborist on prescribed preservation and avoidance measures.

City of Santa Paula, East Area 1 Specific Plan, Santa Paula, CA. *Lead Biologist.* Mr. Ainsworth prepared a biological impact assessment, mapping and characterization of plant communities, and a migration corridor study on the proposed East Area 1 Specific Plan project site in Santa Paula, California. Conducting a protected tree survey per the requirements of the City of Santa Paula's Protected Tree Guidelines.

Helix Water District, El Monte Groundwater Recharge, Mining and Reclamation Project EIR, San Diego, CA. *Arborist.* Greg conducted a tree survey and identify trees that should be removed based on poor health conditions and which should be preserved based on overall value and aesthetics. He collected specific information during the assessment such as: type of species, trunk diameter, estimated height and radius of canopy, physical conditional and overall health rating. A subsequent tree report was prepared and all attribute data collected were provided in the report. The report identified the number of trees that were removed, encroached, and preserved.

U.S. Forest Service, Hot Shot Fire Crew, Los Padres Forest (1997 – 1998). Greg was on the Crew 3 (currently known as Crew 7) hot shot fire crew based out of San Luis Obispo. Greg was on a 21-person hand crew where he conducted vegetation clearing using a double-headed pulaski hand tool, while working under extreme fire hazard conditions. Greg and his crew either hiked into front-line fire areas or where transported via helicopter. During Greg's tenure, he gained experience cutting fire lines, working under extreme weather and high hazard conditions, and effective communication with fellow firefighters. Greg and his crew responded to many different fire situations ranging from single-tree lightning strikes in oak savannah to large-scale wildland fires that burned over 80,000 acres in San Luis Obispo and Santa Barbara counties. Because of Greg's education in horticulture and arboriculture, he was responsible for helping to assess fire scar on mature oak and conifer trees to determine which trees should be removed or pruned.

Appendix D
City of Pasadena Tree Protection Guidelines

City of Pasadena
Tree Protection Guidelines

Revised 5/13/19

Purpose:

The City's Tree Protection Guidelines are established for projects subject to Chapter 8.52 'City Trees and Tree Protection' and for projects for which compliance with the Tree Protection Guidelines is a condition of approval. Specifically, the guidelines seek to avoid negative impacts to protected trees that may occur during construction such as:

- Mechanical injury to roots, trunks or branches
- Compaction of soil
- Changes to existing grade, which may expose or suffocate roots

Definitions for standardized terms and diagrams are included in the guidelines.

A. General Requirements:

1. Applicants may be required to place a security deposit in the amount of the assessed value of the tree as determined using the most recent version of the International Society of Arboriculture guide to plant appraisal. The security deposit will be returned to the applicant upon successful completion of the project and upon verification that the tree has not sustained significant damage during construction. If significant damage has been sustained, and the subject tree requires further monitoring post-construction, the City Manager or designee may hold the security deposit for an additional period of time. If the subject tree has fallen into irreversible decline and must be removed based on its condition, the applicant may forfeit the deposit to the City in order to cover removal and replacement costs.

2. Violations of the City Trees and Tree Protection Ordinance may result in administrative fines in an amount up to the Tree Replacement Value of the subject tree(s).

3. Compliance Orders issued respective to violations of the City Trees and Tree Protection Ordinance may include corrective action to replace the tree canopy loss that resulted from tree removal or catastrophic damage to a protected tree.

4. Violations to the Tree Protection Guidelines may result in fines assessed per day and imposed per violation, and the potential generation of a stop work order on the construction project.

5. When a tree protection plan is required, the plan may include written recommendations for the health and long-term welfare of the protected trees during the pre-construction, demolition, construction, and post-construction development phases. Notes on the plans would include specifics on avoiding injury, damage treatment and inspections of protected trees.

6. If an applicant finds that the implementation of the following guidelines is impracticable due to the unique site, landscaping, or other characteristics of the project, the applicant may submit a request to deviate from the guidelines to the Department reviewing the permit application. The Department of Public Works and the Department of Planning and Community Development will review the applicant's tree protection measures for public trees and private trees, respectively. The Director of Public Works and the Director of Planning and Community Development (or their designees) may approve requests to deviate from these guidelines.

Such requests may be submitted by the applicant on a tree protection plan; consulting arborist report; or other manner that articulates how the tree protection measures cannot be reasonably implemented.

B. Tree Protection Zone:

The Tree Protection Zone (TPZ) shall be established to the extent of the tree's dripline plus four (4) radial feet. The guidelines herein shall be applied to the TPZ to safeguard the health of protected trees. Tree roots are generally located in the top 12–24 inches of soil and can extend to a distance exceeding the trees height and/or width.

1. Refer to Standard Plan S-642 'Tree Protection Standard' for full details.
2. Protective (6-foot high minimum) chain-link fencing with an access gate of minimal width should be installed around the TPZ to the extent practicable subject to approval by staff prior to the commencement of any grading, construction, or demolition. Fencing must also include 8 ½" x 11" (minimum) signage that includes the following information: Tree Protection Zone; name and contact information of project owner or authorized representative; and "Please contact the Pasadena Citizen Service Center to report any concerns (626) 744-7311."
3. The TPZ shall be irrigated sufficiently with clean water to keep the tree in good health and vigor before, during, and after construction. This may mean deeply soaking the ground periodically.
4. No construction staging or disposal of construction materials or byproducts including but not limited to paint, plaster, or chemical solutions is allowed in the TPZ.
5. The TPZ should not be subjected to flooding incidental to the construction work.
6. All work conducted in the ground within the TPZ of any protected tree should be accomplished with hand tools, unless an air spade is utilized. Trenches in the TPZ should be tunneled, or completed with an air spade to avoid damage to roots within the TPZ. Information regarding air spades is available from staff.
7. Where structural footings are required and major roots (over 3" in diameter) will be impacted, the engineer of record should submit acceptable footing design alternatives and or location alternatives to staff before proceeding with further plan review.
8. Where more than 50% of the TPZ is impacted or roots greater than 3 inches in diameter are to be removed within the TPZ, the engineer of record should submit acceptable design alternatives to staff for review.
9. Any required trenching should be routed in such a manner as to minimize root damage. Radial trenching (radial to the tree trunk) is preferred as it is less harmful than tangential trenching. Construction activity should be diverted from the TPZ. Cutting of roots should be avoided (i.e. place pipes and cables below uncut roots). Wherever possible and in accordance with applicable code requirements, the same trench should be used for multiple utilities.
10. "Natural" or pre-construction grade should be maintained in the TPZ. At no time during or after construction should soil be in contact with the trunk of the tree above the basal flair.
11. In areas where the grade around the protected tree will be lowered, some root cutting may be unavoidable. Cuts should be clean and made at right angles to the roots. When practical, cut roots back to a branching lateral root.

12. When removing existing pavement in the TPZ, avoid the use of heavy equipment, which will compact and damage the root system.

13. If staff requires mulch in the TPZ, the mulch materials and location should be shown on the plan. Larger projects will require construction staging plans to indicate where materials will be stored and how the equipment will move in and around the property to minimize damage to the TPZ. Root damage and soil compaction may be mitigated in some cases by using trench covers or mulch in the TPZ.

C. Pruning:

* Pruning guidelines are for private trees only. Contact the Department of Public Works for public tree service requests 626-744-7311.

1. Pruning of all trees should be in accordance with industry standards (International Society of Arboriculture or ANZI 133.1).

2. Pruning of oaks should be limited to the removal of dead wood and the correction of potentially hazardous conditions, as evaluated by a qualified arborist. Excessive pruning is harmful to oaks. Removal or reduction of major structural limbs should be done only as required for actual building clearance or safety. If limbs must be removed, cuts should be made perpendicular to the branch, to limit the size of the cut face. The branch bark collar should be preserved (i. e. no "flush cuts"), and cuts should be made in such a way as to prevent the tearing of bark from the tree.

3. Pruning of trees other than oaks should be limited to the removal or reduction of major structural limbs and should be done only as required for actual building clearance or safety. If limbs must be removed, cuts should be made perpendicular to the branch, to limit the size of the cut face. The branch bark collar should be preserved (i. e. no "flush cuts"), and cuts should be made in such a way as to prevent the tearing of bark from the tree.

4. Landmark Trees must be pruned by or under the direction of a qualified arborist.

D. Inspections:

1. Inspection of Protective Fencing: City staff may require inspection of fencing to verify placement and approval of materials prior to the commencement of construction.

2. Pre-construction meeting. City staff may require an on-site pre-construction meeting with the contractor and or applicant to discuss tree protection with the site supervisor, grading equipment contractors, and demolition crew.

3. Inspection of rough grading. City staff my require inspection to ensure protected trees will not be injured by compaction, cut or fill, drainage and trenching activities.

4. Special Activity in the Tree Protection Zone: City staff may require the direct on-site supervision of work in the tree protection zone.

5. Periodic Inspections: City staff may require inspections verifying adherence to tree protection measures during the on-going construction process. The cost for inspections by City staff or a contract Certified Arborist may be invoiced to the property owner.

E. Definitions:

1. *Basal flair* or *root crown* means the tree trunk where it emerges from the root system and flairs out

to create the base of the tree.

2. *Canopy* means the area of a tree that consists primarily of branches and leaves.

3. *Dripline* means the outermost area of the tree canopy (leafy area of tree).

4. *Certified Arborist* means an individual who has demonstrated knowledge and competency through obtainment of the current International Society of Arboriculture arborist certification, or who is a member of the American Society of Consulting Arborists.

5. *Tree Protection Zone (TPZ)* means the area within a circle with a radius equal to the greatest distance from the trunk to any overhanging foliage in the tree canopy plus four (4) radial feet.

6. *Tree Replacement Value/Cost:* the value or cost of the injured or removed tree determined utilizing the most recent edition of the Guide for Plant Appraisal, published by the International Society of Arboriculture ("ISA").

APPROVED BY:

Steve Mermell, City Manager

Appendix

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Appendix D Historic Report

Brookside Golf Complex Improvements Historical Resources Technical Report

January 2023

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Brookside Golf Complex Improvements Historical Resources Technical Report

HISTORIC RESOURCES GROUP

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Brookside Golf Complex Improvements Historical Resources Technical Report

HISTORIC RESOURCES GROUP

The Rose Bowl Operating Company (RBOC) proposes to reorient and expand the existing driving range and construct a new miniature golf facility (Project) on an approximately 9-acre portion of the Brookside Golf Complex (Project Site). The purpose of this report is to determine if historical resources as defined by the California Environmental Quality Act (CEQA)[1] are present on or in the immediate vicinity of the Project Site and, if so, to identify potential impacts to historical resources as a result of the proposed Project. This report is intended to inform environmental review of the proposed Project.

The Brookside Golf Course and Clubhouse (Brookside Golf Complex) is considered a contributing site to the Pasadena Arroyo Park and Recreation District which was listed in the National Register of Historic Places in 2008. Because it is listed in the National Register, the District is also listed in the California Register of Historical Resources and is considered a historical resource for the purposes of CEQA.

The proposed Project consists of two main components: (1) reorient and expand the existing driving range; and (2) develop a new 36-hole miniature golf course adjacent to the proposed driving range. Changes to the driving range proposed by the project will be relatively minor. The area will continue to be used as a driving range as it has since at least 1930 and it will contain the wide expanse of fairway, tee line driving bays, safety netting, and support poles that have characterized the driving range for decades.

The miniature golf course would construct a new design element at the Brookside Golf Complex. Because the miniature golf course will occupy less than 0.5% of the Brookside Golf Complex, the overall impact of the miniature golf course to the Golf Complex will also be relatively minor.

The total Project Site represents less than 10% of the total area occupied by the Brookside Golf Complex. The golf courses themselves, with the exception of the C.W. Koiner (Course #1) Hole #10, and E.O. Nay (Course #2) Hole #6 and Hole #7would remain unchanged by the Project. The Project will not destroy or materially alter physical characteristics that convey historic significance and justify the historic listing of the Brookside Golf Complex as a contributing feature of the Pasadena Arroyo Park and Recreation District. The overwhelming majority of the site elements that characterize the Brookside Golf Complex would continue to retain their original location, general overall boundaries, and routing, and the Brookside Golf Complex would continue to maintain a substantial amount of integrity.

However, because the Project has not been completely designed, this study recognizes the potential for the loss of integrity due to alterations associated with the Project out of an abundance of caution. The potential loss of integrity is considered herein a significant

impact for the purposes of CEQA, therefore a mitigation measure is proposed to include the retention of a qualified historic preservation professional to ensure that alterations to the driving range, design of the miniature golf course, and overall modifications to the Golf Course are compatible with the existing Brookside Golf Complex landscape and the Pasadena Arroyo Park and Recreational District so that the historic integrity of the Pasadena Arroyo Park and Recreational District is maintained.

With mitigation to ensure that the integrity of the Pasadena Arroyo Park and Recreational District is maintained , the Project will not result in a substantial adverse change to the Pasadena Arroyo Park and Recreation District and will not, therefore, result in significant impacts to historical resources as defined by CEQA.

For these reasons, the Project will not result in a substantial adverse change to the Pasadena Arroyo Park and Recreation District and will not, therefore, result in significant impacts to historical resources as defined by CEQA.

Introduction

The Rose Bowl Operating Company (RBOC) proposes to reorient and expand the existing driving range and construct a new miniature golf facility (Project) on approximately 9 acres of the southernmost part the Brookside Golf Course (Project Site or Brookside Golf Complex). The RBOC will be considering the Project as the Lead Agency under the California Environmental Quality Act (CEQA).

The expanded driving range and new miniature golf course would be located in the same area as the existing driving range, which is currently located between the concrete-channeled Arroyo Seco to the west, the Brookside Clubhouse to the east, the C.W. Koiner Course to the north and south, and the E.O. Nay Course also located to the north.

The proposed expansion of the driving ranges from 20 hitting bays to approximately 60 hitting bays and the addition of a 36-hole miniature golf course would reduce the E.O. Nay course from par-70 to par-69. However, it would remain a championship layout and the course reduction would be designed to improve the pace of play. In order to accommodate the expanded driving range and new miniature golf course, tree removal and relocation and surficial grading would be required. Details of the Project description are provided below.

Project Location and Surrounding Uses

As shown in Figure 1, the City of Pasadena (City) is approximately 10 miles northeast of downtown Los Angeles in the County of Los Angeles. Regional access to Pasadena is provided by State Route (SR) 134, Interstate 210 (I-210), State Route 110 (SR-110), and Interstate-710 (I-710). Located at 1133 Rosemont Avenue, the Project Site is just west of I-210 and north of SR-134. Local access to the Project Site is provided from Rosemont Avenue, Seco Street, Salvia Canyon Road, West Washington Drive, and Rose Bowl Drive, as shown in Figure 2.

The Project Site is located within Arroyo Seco Canyon in the western portion of Pasadena. The Arroyo Seco, a major tributary of the Los Angeles River, flows out of the San Gabriel Mountains in the northwestern portion of Pasadena, through Arroyo Seco Canyon, and ultimately to the Los Angeles River in downtown Los Angeles. As it flows through Pasadena, the Arroyo Seco passes three major areas that comprise Arroyo Seco Canyon: The Upper Arroyo Seco (Hahamonga Watershed Park); the Central Arroyo Seco (the Brookside Golf Complex, Rose Bowl, and associated facilities); and the Lower Arroyo Seco. Central Arroyo Seco, which contains the Project Site, is generally bounded by the Colorado Street Bridge to the south, Arroyo Boulevard and Arroyo Terrace to the east, I 210 to the north/east, and Linda Vista Avenue to the west.

The Project Site is situated entirely within the interior of the existing Brookside Golf Course. Single-family residential neighborhoods bound the Central Arroyo Seco to the east and west of the Project Site along the slopes of Arroyo Seco Canyon. The southeast portion of the Central Arroyo Seco also contains the Chandler School along Seco Street and some small areas developed with multi-family residential uses along Arroyo Terrace. Other surrounding land uses in the Central Arroyo Seco include the Rose Bowl, the Recreation Loop, Brookside Park, Kidspace Children's Museum, the Rose Bowl Aquatic Center, the Rosemont Pavilion, the Jackie Robinson baseball and softball diamonds, tennis courts, an amphitheater, recreation and equestrian trails, multipurpose fields, and parks. The Central Arroyo comprises approximately 409 acres and is the most developed and active section of Arroyo Seco Canyon (City of Pasadena, 2003).

Brookside Golf Complex Background and Existing Condition

The Brookside Golf Complex is managed by RBOC, a California non-profit, public benefit corporation, founded in 1995 by an act of the Pasadena City Council. Board members are appointed by the City Council, the City Manager, the Tournament of Roses, and the Chancellor of the University of California, Los Angeles (UCLA). The purpose of the RBOC is to enhance the economic and civic value of the Rose Bowl as a world-class stadium and the Brookside Golf Course as a professional-quality course.

First opened in 1928, the Brookside Golf Complex is a public 36-hole complex originally designed by famed golf course architect William P. Bell. Owned by the City of Pasadena, Brookside Golf Course features two 18-hole tracks: The C.W. Koiner Course, a par 72 course, and the E.O. Nay Course, a par 70 course. The Brookside Golf Complex includes an approximately 25,000 square foot Brookside Clubhouse, which contains a full-service restaurant, lounge, banquet facilities, meeting rooms, and a retail golf shop. The Brookside Clubhouse contains a restaurant and a retail golf shop that are open to the public daily.

The Brookside Golf Complex is part of a historic district, the Pasadena Arroyo Park and Recreation District, which contains 27 contributing historic features (including the Brookside Golf Course) and was listed in 2009 on the National Register of Historic Places (#08000579) at the local level of significance under Criterion A in the areas of entertainment and recreation for its association with the development of Pasadena as a recreational mecca. The parks and recreation facilities and the public open spaces in the District were nominated in the Cultural Landscapes category. A cultural landscape is a geographic area that includes both man-made and natural resources that are important in history.

Description of Project

The Project consists of two main components: (1) reorient and expand the existing driving range; and (2) develop a new miniature golf course adjacent to the proposed

driving range. These elements, including operational and construction details, are described in detail below. No changes to the Brookside Clubhouse are proposed.

Driving Range Improvements

The existing 9-acre driving range is situated from a generally east to west hitting experience and consists of 20 bays at the east end. It is surrounded by golf course netting on 64 poles between 20 to 50 feet high with lighting and a row of perimeter trees on the southern side. It is an open grassy range with no ground features other than four trees. The Project would remove existing netting, which are nearing the expected end of their lifespan, and reorient and expand the driving range in the same general location of the existing driving range (to maintain proximity to parking and the Brookside Clubhouse). A new safety net feature would be reinstalled. The reoriented driving range would be situated in approximately 8 acres in the same general location of the existing driving range, to maintain proximity to parking and the Brookside Clubhouse. The proposed driving range would be bounded by the by Hole 10 and Hole 18 of the C.W. Koiner Course to the north and south, respectively; the proposed miniature golf course and the Arroyo Seco Channel to the west; and the existing putting greens and the Brookside Clubhouse to the east. A 10-foot golf cart path would be designated around the perimeter of the driving range. The proposed driving range would include 60 hitting bays at the southern end and would be reoriented to face north rather than west, as shown in Figure 3. Orientation to a south to north layout would limit disruption from sunrise/sunset. "Toptracer" technology, which provides instant shot replays and statistical feedback, would be installed within all or a portion of driving range bays to enhance the golfer experience.

A total of 36 poles would be installed to support new netting, with pole height ranging from 38 feet to 130 feet above ground level (increasing height with distance from the hitting bays) with an average pole height of 90.67 feet. An estimated 14 of the 36 poles would be light-mounted (at 60 feet in height) surrounding the perimeter of the driving range on the east and west sides. Poles and netting are shown in Figure 4. LED lighting would be individually adjustable to ensure proper direction and avoidance of light spill into surrounding neighborhoods.

New turf and modified irrigation system would be installed. Other minor landscape modifications would be installed. Site furniture, signage and markers would be updated. A new electrical service line with generator would be provided. The existing hitting bays would remain as a concrete pad, and no changes would occur to the existing practice putting greens.

Expansion and reorientation of the driving range would result in the shortening of Hole #6 and Hole #7 of the Course #2, which is located approximately 60 yards north of the existing driving range. Approximately 220 yards on the golf course would be removed from play. Even though Course #2 would be reduced from a par-70 to par-69 with

shortening of the two holes, the Course #2 would still cater to the less difficult experience. It is estimated that the pace of play on the golf course would be improved by five minutes (less than one golf shot). In addition, the Proposed Project would result in alterations to Hole #10 of Course #1, however Hole #10 would maintain similar distance and shape. The hole would be relocated approximately 20 yards to the north; thus shortening two holes of the Course #2 that it would encroach upon (Hole #6 and Hole #7).

The existing golf courses, with the exception of Hole #10 of Course #1, and Hole #6 and Hole #7 of Course #2, would remain unchanged by the Project, and no changes to the Brookside Clubhouse are proposed.

Miniature Golf Course

The Project includes development of a 36-hole miniature golf course, to be developed on approximately one acre within the footprint of the existing driving range (relatively flat grassy area). The proposed miniature golf course would be located directly west of the proposed driving range, and would be bounded by the Arroyo Seco Channel to the west, the proposed driving range to the east and north, and Hole #18 of Course #1 to the south.(Figure 4). The location of the miniature golf course is designed to minimize impacts to the remainder of the golf course, and to maintain necessary proximity to the Brookside Clubhouse and parking areas. The miniature golf course would be designed for family-friendly use and include topographic variation, low-level themed design, educational information, and low-level lighting to accentuate the player experience. The miniature golf course would include an 18-hole ADA-accessible course with play options for 9 holes. Landscaping would include drought tolerate desert species between artificial turf.

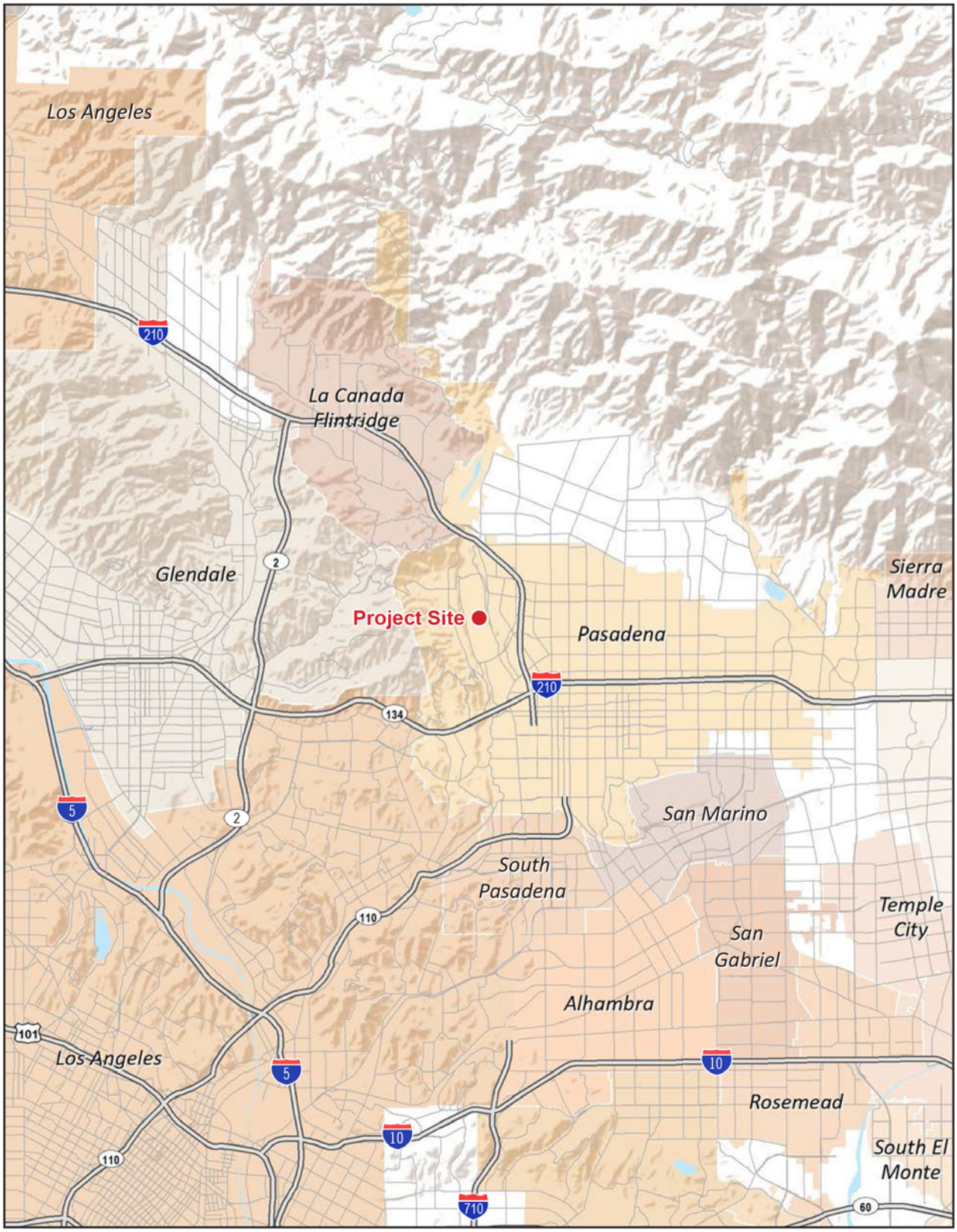
Project Design

As described above the Proposed Project is in the conceptual phase and the ultimate design and architect/designer would be selected when funding is secured. While the location and size of the relocated driving range and proposed miniature golf course are identified and evaluated in this document, the final plans would come at a later time.

The RBOC would ensure that the design of the relocated driving range and miniature golf course are compatible with existing design elements of the Brookside Golf Course Complex and are sensitive to the location within the Historic District, the Arroyo Seco, and the adjacent Rose Bowl. The Proposed Project would be subject to the City's Design Review process as defined in the Pasadena Municipal Code. The purpose of this process is to implement urban design goals and policies and Citywide design principles into project designs and ensure that future development reflect the values of the community, enhance the surrounding environment, visually harmonize with surroundings avoid nostalgic misrepresentations that may confuse the relationships among structures over time. This process would promote the protection and retainment

retention of landmark, native, and specimen trees and other significant landscaping of aesthetic and environmental value. Design review would also promote the conservation, enhancement, preservation, and protection of historic resources. The process would also specifically ensure that the policies and objectives of the Arroyo Seco Design Guidelines (City of Pasadena, 2003) are reflected in the design.

Figure 1: Project Location Map



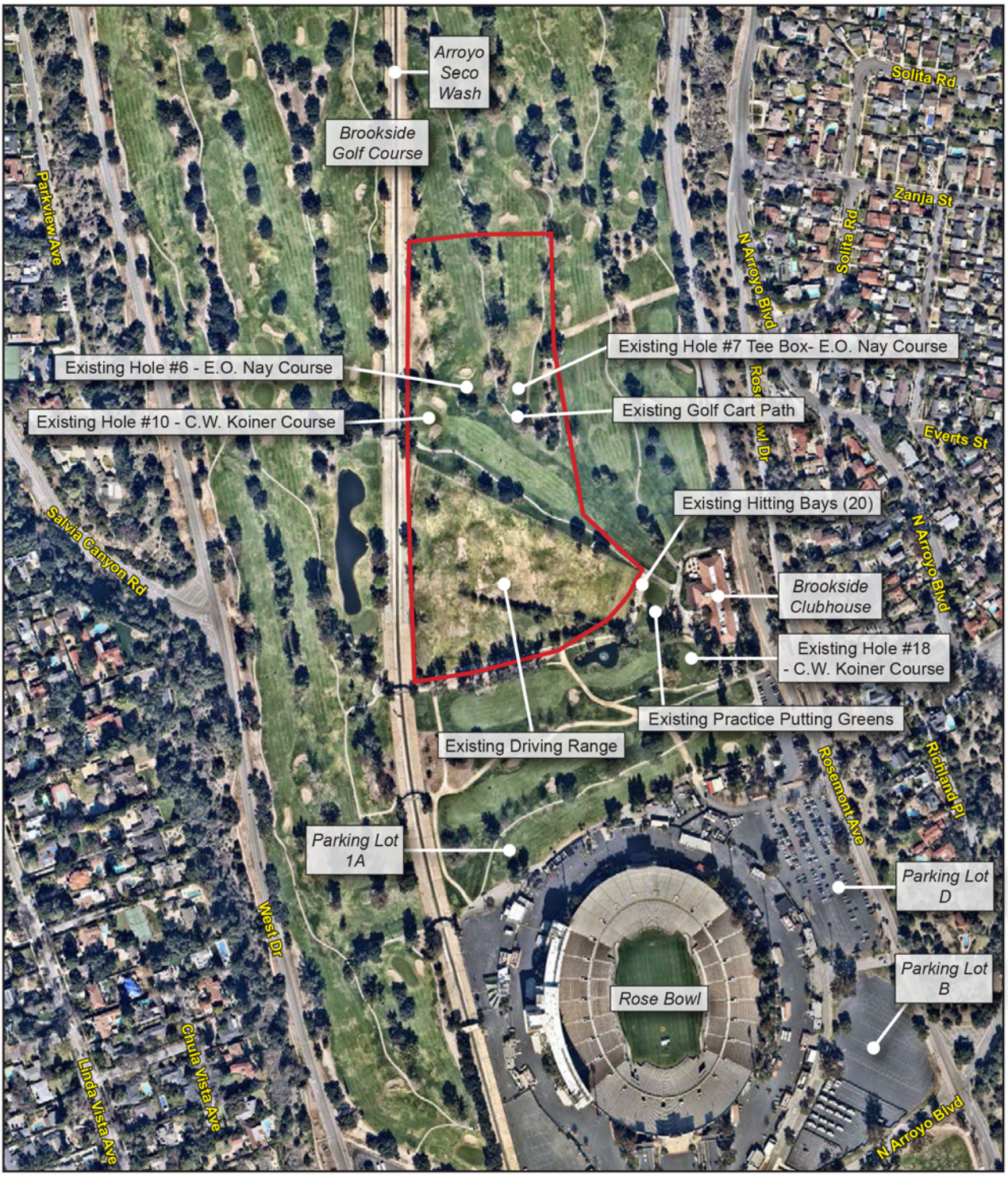
Note: Unincorporated county areas are shown in white.

Source: ESRI, 2021

0 2

Scale (Miles)

Figure 2: Project Location and Site Boundaries



Source: Nearmap, 2021

Figure 3: Conceptual Site Design

Source: Tanner Consulting, 2022

Figure 4: Driving Range and Pole Netting

Source: Tanner Consulting, 2020

PlaceWorks

The Project Site was evaluated using eligibility criteria and integrity thresholds for listing in the National Register of Historic Places and the California Register of Historical Resources, and for designation as a City of Pasadena Historic Monument or Landmark. Research, field inspection, and analysis are based upon guidance from the National Park Service, the California Office of Historic Preservation, and the City of Pasadena for evaluating potential historic resources.

This report was prepared using sources related to the history and development of the Project Site and surrounding area. The following sources were consulted:

- Building permits
- Historical golf course maps
- Historical photographs and aerial photographs
- Historical newspapers and other periodicals
- Other primary and secondary sources relevant to the history of the Brookside Golf Complex and surrounding area
- California Historical Resources Inventory Database (CHRID) for the City of Pasadena
- Built Environment Resource Directory (BERD) for Los Angeles County
- California Historical Resources Inventory (HRI) for Los Angeles County
- Conceptual drawings of the proposed Project

In general, previous findings of eligibility for historic listing or designation have been carried forward and those properties treated herein as historical resources for the purposes of CEQA. Field examinations were conducted to review and confirm previous findings and to identify previously unevaluated properties that may be potentially eligible. A site visit was conducted on April 28, 2021, to examine and photograph the existing conditions of the Project Site and vicinity.

Research, field inspection, and analysis were performed by Paul Travis, AICP, Managing Principal, Laura Jannsen, Senior Architectural Historian, and Robby Aranguren, Planning Associate/GIS Specialist, all of whom are qualified professionals who meet or exceed the *Secretary of the Interior's Professional Qualification Standards*.

Historical Resources under CEQA

CEQA requires that environmental protection be given significant consideration in the decision-making process. Historical resources are included under environmental protection. Thus, any project or action which constitutes a substantial adverse change to a historical resource also has a significant effect on the environment pursuant to the State CEQA Guidelines.

When the California Register of Historical Resources was established in 1992, the Legislature amended CEQA to clarify which cultural resources are significant, as well as which project impacts are considered to be significantly adverse. A "substantial adverse change" means "demolition, destruction, relocation, or alteration such that the significance of a historical resource would be impaired."

CEQA defines a historical resource as a resource listed in, or determined eligible for listing, in the California Register of Historical Resources. All properties on the California Register are to be considered historical under CEQA. However, because a property does not appear on the California Register does not mean it is not significant and therefore exempt from CEQA consideration. All resources determined eligible for the California Register are also to be considered under CEQA.

The courts have interpreted CEQA to create three categories of historical resources:

- *Mandatory historical resources* are resources "listed in, or determined to be eligible for listing in, the California Register of Historical Resources."
- *Presumptive historical resources* are resources "included in a local register of historical resources, as defined in subdivision (k) of Section 5020.1, or deemed significant pursuant to criteria set forth in subdivision (g) of Section 5024.1" of the Public Resources Code, unless the preponderance of the evidence demonstrates that the resource is not historically or culturally significant.
- *Discretionary historical resources* are those resources that are not listed but determined to be eligible under the criteria for the California Register of Historical Resources.[2]

To simplify the first three definitions provided in the CEQA statute, a historical resource is a resource that is:

- Listed in the California Register of Historical Resources (California Register);

[2] *League for the Protection of Oakland's Architectural and Historic Resources vs. City of Oakland,* 52 Cal. App. 4th 896, 906-7 (1997).

- Determined eligible for the California Register by the State Historical Resources Commission; or
- Included in a local register of historical resources.

Section 15064.5 of the CEQA Guidelines (California Code of Regulations, Title 14, Chapter 3) supplements the statute by providing two additional definitions of historical resources, which may be simplified in the following manner. A historical resource is a resource that is:

- Identified as significant in a historical resource survey meeting the requirements of Public Resources Code 5024.1(g);
- Determined by a Lead Agency to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California, provided the Lead Agency's determination is supported by substantial evidence. Generally, this category includes resources that meet the criteria for listing on the California Register (Pub. Res. Code SS5024.1, Title 14 CCR, Section 4852).

The fact that a resource is not listed in, or determined eligible for listing in, the California Register, not included in a local register of historical resources, or not deemed significant pursuant to criteria set forth in subdivision (g) of Section 5024.1, does not preclude a lead agency from determining that the resource may be an "historical resource" for purposes of CEQA.

Properties formally determined eligible for listing in the National Register of Historic Places are automatically listed in the California Register. Properties designated by local municipalities can also be considered historical resources. A review of properties that are potentially affected by a project for historic eligibility is also required under CEQA.

Historic Designations

Historic resources may be designated at the federal, state, and local levels. Properties located in the City of Pasadena can be listed in the National Register of Historic Places, listed in the California Register of Historical Resources, and/or designated as a City of Pasadena Historic Monument or Landmark. In order for a property to qualify for historic listing or designation, it must meet one or more identified criteria for evaluation. The property must also retain sufficient historic integrity to evoke the sense of place and time with which it is historically associated.

National Register of Historic Places

The National Register of Historic Places was authorized by the National Historic Preservation Act of 1966 to serve as an authoritative guide to the nation's historic places

worthy of preservation.[3] The National Register Program is administered by the National Park Service, U.S. Department of the Interior.

To be eligible for listing and/or listed in the National Register, a resource must possess significance in American history and culture, architecture, or archaeology. Listing in the National Register is primarily honorary and does not in and of itself provide protection of a historic resource. The primary effect of listing in the National Register on private owners of historic buildings is the availability of financial and tax incentives. In addition, for projects that receive Federal funding, a clearance process must be completed in accordance with Section 106 of the National Historic Preservation Act. Furthermore, state and local regulations may apply to properties listed in the National Register.

The criteria for listing in the National Register follow established guidelines for determining the significance of properties. The quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects:

A. That are associated with events that have made a significant contribution to the broad patterns of our history; or

B. That are associated with the lives of persons significant in our past; or

C. That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

D. That have yielded, or may be likely to yield, information important in prehistory or history.[4]

Historic Significance

As defined by the National Park Service, *historic significance* is "the importance of a property to the history, architecture, archaeology, engineering, or culture of a community, state, or the nation."[5] It is achieved in several ways:

- Association with important events, activities or patterns
- Association with important persons
- Distinctive physical characteristics of design, construction, or form

[3] 36CFR60 § 60.2.
[4] 36CFR60 § 60.3. Criterion D addresses potential archaeological resources, which is outside the scope of this assessment.
[5] U.S. Department of the Interior, *National Register Bulletin 16A: How to Complete the National Register Registration Form* (Washington D.C.: National Park Service, 1997), 3.

- Potential to yield important information

A property may be significant individually or as part of a grouping of properties.

Integrity

In addition to meeting any or all of the designation criteria, eligible properties must also possess historic *integrity*. Historic integrity is the ability of a property to convey its significance and is defined as "the authenticity of a property's historic identity, evidenced by the survival of physical characteristics that existed during the property's historic period."[6]

The National Register recognizes seven aspects or qualities that comprise integrity: location, design, setting, materials, workmanship, feeling, and association. These qualities are defined as follows:

- *Location* is the place where the historic property was constructed or the place where the historic event took place.
- *Design* is the combination of elements that create the form, plan, space, structure, and style of a property.
- *Setting* is the physical environment of a historic property.
- *Materials* are the physical elements that were combined or deposited during a particular period of time and in a particular pattern or configuration to form a historic property.
- *Workmanship* is the physical evidence of the crafts of a particular culture or people during any given period in history or prehistory.
- *Feeling* is a property's expression of the aesthetic or historic sense of a particular period of time.
- *Association* is the direct link between an important historic event or person and a historic property.[7]

California Register of Historical Resources

The California Register of Historical Resources is an authoritative guide to the state's significant historical resources. For a property to be considered eligible for listing in the California Register, it must be found to be significant under at least one of the following four criteria:

[6] *National Register Bulletin 16A*, 4.
[7] U.S. Department of the Interior, *National Register Bulletin 15: How to Apply the National Register Criteria for Evaluation* (Washington D.C.: National Park Service, 1995), 44-45.

1. It is associated with events that have made a significant contribution to the broad patterns of local or regional history or the cultural heritage of California or the United States; or
2. It is associated with the lives of persons important to local, California or national history; or
3. It embodies the distinctive characteristics of a type, period, region or method of construction or represents the work of a master or possesses high artistic values; or
4. It has yielded, or has the potential to yield, information important to the prehistory or history of the local area, California or the nation.[8]

For integrity purposes, a resource eligible for listing in the California Register must retain enough of its historic character or appearance to be recognizable as a historical resource and to convey the reason(s) for its significance. It is possible that a resource lacking sufficient integrity for listing in the National Register may still be eligible for the California Register.[9]

City of Pasadena Designation Programs

The City of Pasadena has established a historic preservation program in order to promote "the identification, evaluation, rehabilitation, adaptive use, and restoration of historic structures." The criteria for the designation of historic monuments, landmarks, historic signs, landmark trees, or landmark districts are applied "according to applicable National Register of Historic Places Bulletins for evaluating historic properties." These criteria are excerpted below from Section 17.62.40 of the Pasadena Zoning Code.[10]

Historic Monuments

A historic monument shall include all historic resources previously designated as historic treasures before adoption of this Chapter, historic resources that are listed in the National Register at the State-wide or Federal level of significance (including National Historic Landmarks) and any historic resource that is significant at a regional, State, or Federal level, and is an exemplary representation of a particular type of historic resource and meets one or more of the following criteria:

[8] Criterion 4 addresses potential archaeological resources, which is outside the scope of this assessment.
[9] State of California Department of Parks and Recreation, "California Office of Historic Preservation Technical Assistance Series #6: California Register and National Register: A Comparison" (Sacramento, CA: Office of Historic Preservation, 2011).
[10] City of Pasadena Zoning Code, Title 17, Chapter 17.62 (November 6, 2020).

a) It is associated with events that have made a significant contribution to the broad patterns of the history of the region, State, or nation.

b) It is associated with the lives of persons who are significant in the history of the region, State, or nation.

c) It is exceptional in the embodiment of the distinctive characteristics of a historic resource property type, period, architectural style, or method of construction, or that is an exceptional representation of the work of an architect, designer, engineer, or builder whose work is significant to the region, State, or nation, or that possesses high artistic values that are of regional, State-wide or national significance.

d) It has yielded, or may be likely to yield, information important in prehistory or history of the region, State, or nation.

A historic monument designation may include significant public or semi-public interior spaces and features.

Landmarks

A landmark shall include all properties previously designated a landmark before adoption of this Chapter and any historic resource that is of a local level of significance and meets one or more of the criteria listed below.

A landmark may be the best representation in the City of a type of historic resource or it may be one of several historic resources in the City that have common architectural attributes that represent a particular type of historic resource. A landmark shall meet one or more of the following criteria:

a) It is associated with events that have made a significant contribution to the broad patterns of the history of the City, region, or State.

b) It is associated with the lives of persons who are significant in the history of the City, region, or State.

c) It embodies the distinctive characteristics of a type, architectural style, period, or method of construction, or represents the work of an architect, designer, engineer, or builder whose work is of significance to the City or, to the region or possesses artistic values of significance to the City or to the region.

d) It has yielded, or may be likely to yield, information important locally in prehistory or history.

Historic Signs

A historic sign shall include all signs in the sign inventory as of the date of adoption of this Zoning Code and any sign subsequently designated historically significant by the Historic Preservation Commission that possesses high artistic values. A historic sign shall meet one or more or the following criteria:

a) The sign is exemplary of technology, craftsmanship or design of the period when it was constructed, uses historic sign materials and means of illumination, and is not significantly altered from its historic period. Historic sign materials shall include metal or wood facings, or paint directly on the façade of a building. Historic means of illumination shall include incandescent light fixtures or neon tubing on the exterior of the sign. If the sign has been altered, it must be restorable to its historic function and appearance.

b) The sign is integrated with the architecture of the building.

c) A sign not meeting criteria a or b above may be considered for inclusion in the inventory if it demonstrates extraordinary aesthetic quality, creativity, or innovation.

All other regulations relating to signs shall comply with Chapter 17.48 (Signs).

Landmark Trees

A tree shall qualify to be of historic or cultural significance and of importance to the community if it meets any one of the following criteria:

1) It is one of the largest or oldest trees of the species located in the City;

2) It has historical significance due to an association with a historic event, person, site, street, or structure; or

3) It is a defining landmark or significant outstanding feature of a neighborhood.

Landmark Districts

A landmark district shall include all landmark districts previously designated… and any grouping of contiguous properties that also meet the following criteria:

a) Within its boundaries, a minimum of 60 percent of the properties qualify as contributing; and

b) The grouping represents a significant and distinguishable entity of Citywide importance and one or more of a defined historic, cultural, development and/or architectural context(s) (e.g., 1991 Citywide historic context, as amended, historic context prepared in an intensive-level survey or historic context prepared specifically for the nominated landmark district).

When considering applications to designate a landmark district, the Historic Preservation Commission shall use the National Register of Historic Places Bulletin #21: "Defining Boundaries for National Register Properties".

The Project Site is located in the southern portion of the Brookside Golf Complex is located at the north end of the District between Foothill Freeway and the Rose Bowl Stadium. West Drive and Rosemont Avenue generally bound it on the east and west, respectively. Eight holes are located north of Washington Boulevard, which has an east-west orientation. The golf course features two 18-hole courses (referred to as the "C.W. Coiner Course #1" and the "E.O. Nay Course #2"), the Brookside Clubhouse building, and several small accessory buildings. Course #1 has large greens that are elevated and well bunkered. The rough bordering the fairways is thick and heavy. Four ponds on a barranca come into play on ten holes. The signature hole is #17, a 199-yard, par 3, which requires a tee shot over water. The Arroyo Seco flood control channel generally divides Course #1 from Course #2. Course #2 is shorter, well bunkered and tighter than Course #1. Overall, the terrain has been subtly graded and sculpted. Numerous bunkers are positioned around the greens and fairways.

Located at the southeastern portion of the golf course fronting Rosemont Avenue, the Brookside Clubhouse is the largest building on the golf course. Designed by William Randolph in 1967, the current Brookside Clubhouse replaced an original clubhouse designed by architects Myron Hunt & Harold C. Chambers. There is a small building from which both courses begin, a maintenance area, a restroom building, one concession stand, one combined restroom and concession stand, and drinking fountains. The entire area is surrounded by a fence mounted on a low stonewall.

The Project Site occupies an area immediately north and west of the Brookside Clubhouse. The majority of this area contains the existing driving range which, although altered and expanded since its original construction, has always been in this location. The area also includes the putting greens just west of the Clubhouse and a portion of the Hole #10 fairway and green on Course #1.

[11] Site description per the Applicant.

The following site development history has been compiled from various sources, including previous historic studies, building permits, historic photographs, aerial photographs, and newspaper articles.

Pasadena and the Arroyo Seco

Pasadena's beginning dates to 1873 when a group of settlers from Indiana formed the San Gabriel Orange Grove Association and purchased land in the area of the old Rancho San Pasqual. The earliest settlers came to the new colony to enjoy the climate and develop the land. Many saw the potential for farming enterprises; others came to speculate in land. By 1875, the colony was named Pasadena, more than forty houses were built, and a commercial center was developing along Fair Oaks and Colorado Avenues.

With the coming of the railroad and the real estate boom of the 1880s, the new community attracted the attention of wealthy easterners and mid-westerners who began vacationing in the area to escape harsh winters. By 1890, Pasadena had grown from a sparsely populated agricultural village into a major resort town with a well-established reputation as a center of wealth and culture. Grand hotels were built to accommodate the seasonal visitors, and mansions were built along South Orange Grove Boulevard, which became known as "Millionaires Row."

By this time, Pasadena was considered a recreational mecca; however, it did not possess a single public park. This can be attributed to the fact that the Arroyo informally functioned as a public park, having become part of a trail system. During this period, the Arroyo was used for a variety of recreational activities such as hunting, fishing, hiking, and picnicking, although it was privately owned. The Valley Hunt Complex hunted fox and rabbits in the Arroyo and started the world-renowned Tournament of Roses on New Year's Day in 1890.

In 1898, Charles Lummis advocated for the preservation of the Arroyo and became the first president of the Arroyo Seco Foundation. This was the first time a group banded together to promote preservation of the Arroyo. Lummis was a close friend of Theodore Roosevelt. When President Roosevelt was being driven over the Arroyo to South Pasadena on March 23, 1911, after having spoken at Occidental College, he turned to one of his companions and remarked, "The Arroyo would make one of the greatest parks in the world."

The idea of making the Arroyo a public park quickly gained steam. The Lower Arroyo became the focus of the early plans that developed around 1903. Groups such as the Arroyo Park Association formed. In 1909, Dr. Rudolph Schiffmann, who sat on the Board of City Commissioners, purchased a two and one-half acre wooded lot at the end of Bradford Street and donated it to the City for use as a public park. This was the genesis of the Lower Arroyo Seco Park.

In 1911, a bond issue was passed by the citizens of Pasadena, authorizing the purchase of private land in the Arroyo. The City bought the first parcel of thirty acres for $4,500. By 1912, the City held or had options on two hundred acres. A syndicate of wealthy citizens bought up most of the remaining options and held them until the City could purchase the parcels.

Initially, the park was referred to as "Arroyo Springs Park;" however, the name was not used for very long. In 1912, Mrs. Everett W. Brooks donated $3,000 for the construction of a municipal plunge in the park. Apparently, the cost of the plunge exceeded the donation as the City contributed another $2,000 towards the construction. The park was named Brookside Park in Brook's honor. Historically, the name "Brookside Park" was applied to the Central Arroyo and the reason why so many features, including the golf course, adopted the name. By 1918, most of the Arroyo had been acquired by the City. This was the first step in realizing the dream of creating a larger park in the Arroyo.

After World War I the park became a destination for travelers and newcomers who were looking to settle in Pasadena. The facilities in Brookside Park reflected the growth of competitive sports and the changing recreational tastes and needs of the population. In recognition of those trends, the Pasadena Garden Complex brought landscape architect, Emanuel Tillman Mische (1875-1934) to Pasadena to develop a comprehensive plan for the Arroyo. The other individual who played a key role in the design of the Arroyo was architect Myron Hunt (1868-1952). Hunt was the chairman of the local committee that oversaw the development of the plan and played a key role in surveying the Arroyo with Mische.

The 1918 Arroyo Seco Park Plan combined both passive and active recreational uses. At this time the Lower Arroyo was still densely wooded in places. As it was so narrow and deep, bridle paths were considered more appropriate than automobile roads. It was recommended that landscaping be confined to the replacement of native plants and that exotics be avoided. Two practical matters dictated using the Central Arroyo for sports and recreational facilities: Brookside Park already existed, and it was the widest, flattest land in the canyon. The notion of putting a municipal golf course in the park, as the 1918 Plan recommended, was forward thinking because at this time most golf courses were private. The first municipal golf course in the United States was created in Griffith Park in 1900.

The 1918 Arroyo Seco Park Plan was implemented to the extent that the Lower and Central Arroyo were developed with passive and active recreational uses, respectively. The present-day circulation system, landscaping, and golf course are also remnants of the plan.

The Brookside Golf Complex is one of the oldest golf courses in Los Angeles County. The first municipal golf course in the California was built in Griffith Park in 1900; however, it was a sand course built mostly by volunteers. It was converted to a grass green course in 1923 but removed in 1958 to make way for a new zoo. Additional golf courses were added to Griffith Park in 1914 (Wilson), 1933 (Harding), and 1964 (Roosevelt). Annandale Golf Complex on the west side of the Arroyo was founded in 1906. Their course was moved north of Colorado Boulevard in 1926.

The City of Pasadena had planned on the development of a golf course in the Arroyo since 1918. Funding for its construction was confirmed by the City of Pasadena in 1922.[12] While a course was staked out between Lester Avenue (now Seco Street) and Dakota Street (now Washington Boulevard), the City lacked the funds to construct it. After several false starts, the first nine holes of a golf course were constructed in 1925 and opened to the public on July 4th of that year.[13] It was designed by William P. Bell, a distinguished Southern California golf course architect active in the 1920s through the 1940s. Funding for the first nine holes came from the Pasadena Chamber of Commerce.

Completion of the course was funded by the Municipal Light and Power Department and the completed Course #1 opened to the public in 1928. Throughout its history, Course #1 has also been used for temporary parking and social events related to the Rose Bowl. In 1929 the Brookside Clubhouse, designed by celebrated architect Myron Hunt in a Spanish-Colonial influenced Ranch style, was completed and formally opened to the public.[14] At that time a second course was designed by Bell and was later constructed as an unemployment relief measure. The first half of Course #2 was completed in 1931 with money from the public employees' union. The land for the second half of Course #2 was cleared in 1932. In 1933, President Roosevelt created federally funded work programs including the Works Progress Administration (WPA). In Pasadena, the WPA put the unemployed to work on several projects in the Arroyo, including projects at the Brookside Golf Complex.

A flood damaged both courses in the spring of 1938, claiming several greens and a few fairways. At that time, Course #1 and the first nine holes of Course #2 were reconstructed and revamped. Once again, William P. Bell was responsible for the design. The second nine holes of Course #2 were presumably constructed sometime thereafter. Historic photographs indicate continued work on the course in the 1940s. A dedication plaque at Hole #1 indicates that the course was completed by 1946. Despite the modifications, the original location, boundaries, and routing were retained.

[12] "Plan Building of Best Golf Course," *Pasadena Star News*, March 21, 1922.
[13] "City's Golf Course is Opened," *Pasadena Star News*, July 4, 1929.
[14] "New Clubhouse is Formally Opened," *Pasadena Star News*, May 7, 1929.

The 1938 flood also required reengineering of the Arroyo Seco for flood control. The Arroyo Seco had previously been channelized from the Devil's Gate Dam north of the Golf Complex to the Colorado Street Bridge in 1934. In 1935 the flood control channel was extended and a gunite coat was applied to the revetments to prevent erosion and reinforce the channel walls. Despite these efforts, the 1938 flood essentially destroyed the original channel. The rebuilding of a new channel was undertaken by the WPA in April of 1938 and the first section was completed in early 1940. It was constructed as a trapezoidal type drain north of Seco Street and as a box type, rectangular drain south of Seco Street, with the sides and bottom lined with reinforced concrete. The flood channel has divided the entire Golf Complex site from north to south since its construction.

After World War II and throughout the 1950s, the Brookside Golf Complex was not substantially changed save for routine upgrades, repairs and maintenance. Large portions of the golf courses were damaged in 1955 when thousands of automobiles temporarily parked on the course during the annual Tournament of Roses festivities tore up the fairways after unusually heavy rainfall. Many cars were stranded in the mud and needed assistance. News sources reported an estimated $25,000 in damage.[15]

It wasn't until the 1960s that wholesale changes would come to the Brookside Golf Complex. It was during that decade that plans were made for substantial improvements to the facilities. Eventually, these would include a new Clubhouse to replace the original in the same location, upgrading and expansion of the driving range, construction of two new lakes, and changes to the topography of several fairways. The new Clubhouse was designed by architect William Randolph.

The 1967 upgrades to the golf courses were designed by distinguished golf course architect Desmond Muirhead.[16] On Course #1, Hole #8 was moved approximately 50 yards west to create a driving range, bunkers were reduced in size, and the lake on the #6 fairway was added. Total yardage was also increased by a total of 663 yards to accommodate new equipment technology. Hole # 15 of Course #2 was moved to the north side of Washington Boulevard.

Driving Range Area Development

The Project will upgrade and improve an area immediately west of the Clubhouse and east of the flood control channel which contains the existing driving range. This area has been subject to continuous change and alteration since the golf club was first opened. The general development history of the driving range area is discussed below.

It is unclear exactly when the area immediately west of the Clubhouse was first used for driving practice as no "driving range" is specifically mentioned in news articles from the

[15] "100 Cars Still Mired; Golf Course Damaged Severely," *The San Bernardino County Sun*, January 3, 1955.
[16] "Revamping of Links Adds New Hazard," *The Los Angeles Times*, May 23, 1967

1920s announcing the opening and expansions of the golf club; an early map of the course does not label the area as a driving range.[17] Grassy open space in front of the clubhouse, however, unencumbered by fairways or green, appears to have been the existing condition when the course was first open to the public. By 1930, photos appear to show individuals practicing their strokes from a low grassy area just west of the clubhouse, so it is assumed that the area was being used as a driving range by 1930 if not earlier. In 1941, the Pasadena Post announced a City-operated "new driving range" near the Rose Bowl.[18] The article includes reference to golf balls "littering the parking area *south* of the Rose Bowl, suggesting a different location. It is unclear if this is a misprint or if a driving range was established south of the Rose Bowl. More likely is that the area west of the Clubhouse was informally used as a driving range through the 1930s and formalized in 1941. If a driving range was established south of the Rose Bowl, it was evidently short-lived.

For the first decades of its existence, the depth of the driving range was substantially shorter with the (then) 8th hole fairway and green located between the flood control channel and the west end of the driving range. According to Brookside records, the driving range ran east to west and was approximately 200 yards long and 70 yards wide at the east tee line, widening to 125 yards at the westside. The tee line was set on grass. The only fencing was between the west end of the range and the 8th hole. There were no safety nets, lights, or target greens on the driving range. Evidence for how the area developed is fragmentary but by 1956, aerial photographs show that the tee line is delineated by a curving hardscape strip with individual bays for practicing golfers. The driving bays --- again located just west of the Clubhouse -- faced west and were surrounded on three sides by mature trees. This condition appears to have remained into the 1960s. A 1966 photograph shows safety netting at the west end of the driving range between the (then) 8th hole and the flood channel.

The late 1960s upgrading of the Brookside Golf Complex precipitated improvements to the driving range. A 1968 aerial photograph indicates that the curved tee line shown in 1956 has been replaced by a 15-foot by 200-foot curving concrete tee line located further west of the (new) Clubhouse. The mature trees encircling the tee line have been removed and the area directly west of the Clubhouse is an irregularly shaped grassy area that is used as a putting green bordered by footpaths. It is around this time too that the (then) 8th hole was moved to the west side of the flood control channel allowing for the driving range to be lengthened to 240 yards.

In addition to the day range running east to west, a lighted night range running south to north was also added according to Brookside records. The night range had a non-

[17] The December 1929 edition of "Pasadena Sportland" includes a map of the course. No driving range is delineated on the map.

[18] "Driving Range Near Bowl Opens," *Pasadena Post*, August 14, 1941.

hardscape grass tee line accommodating 30 golfers. Safety netting (approximately 40-feet tall) was installed on the south side of the range and an approximately 35-foot tall chain link fence was installed on the west side of the range adjacent to the flood channel. The night range was short-lived and was discontinued in the early 1970's.

The exact transition is again unclear but by 1994, the curving concrete tee line had been removed and a new hardscape tee line, arranged in a straight line and located further east of the previous bays appears in aerial photographs. The grassy area between the Clubhouse and the driving bays is now bisected by an additional pathway.

In the early 2000s, a concrete tee line on the south side of the driving range (hitting north) was constructed approximately 15-feet wide by 275-feet long to accommodate up to 27 golfers. A 6-foot-wide concrete walk path, approximately 150 yards long, was constructed to connect the east tee line (hitting west) to the south tee line (hitting north). The south tee line is reserved for instructional services only. Five target greens were installed in the range landing area as well as a short game (green with sand bunker) area constructed between the east and south tee lines. Thirty-five-foot safety netting was installed on the north side of the range. This condition is what exists today.

William Park Bell (1886-1953)

William Park Bell was one of the most prolific golf course architects in the West. Born in 1886 and raised on a Pennsylvania farm, he studied agriculture at Duff's Business Institute in Pittsburgh after which he moved to California in 1911. He served as greens keeper and caddie master at Annandale Golf Complex and then as greens keeper and course superintendent at the Pasadena Golf Complex. He then worked as a construction foreman for course architect Willie Watson and assisted with the design or renovation of such prominent Southern California courses as Hacienda Golf Complex and San Diego Country Complex. While working with Watson, Bell oversaw the grading and construction of new bunkers at Annandale in 1919.

Bell ventured out on his own 1920, securing projects such as Woodland Hills Country Complex and Long Beach Country Complex. But it was at Castlewood Country Complex in Pleasanton where he would catch the eye of an established architect and future partner, George C. Thomas Jr. Thomas so admired Bell's work that he asked him to be his construction foreman on upcoming projects at La Cumbre Country Complex and Ojai Valley Inn.

While he spent his first years collaborating with Thomas on his great designs of the 1920s, including Bel-Air, Riviera, and Los Angeles country Complex, Bell also designed a number of courses on his own during that period. During the 1930s Bell designed La Jolla Country Complex, San Diego County Complex, and Hacienda Country Complex. Bell employed his trademark lacey-edged bunkers with strategy and temptation in mind. These artistic, three dimensional multi-bayed bunkers were used as fairway cross hazards and naturally flowed away from greens. He favored rolling, undulating green surfaces

strategically linked to hole locations and approaches allowing the golfer to work the ball on to the green. Bell was a master at using drainage paths in his design decisions, allowing natural hazards and fairway movement to shine. Trees were used, but sparingly, mostly to accent the aesthetics of the surrounding area.

Bell was a pioneer in golf course construction, irrigation and landscaping, and an expert agronomist, who was also in charge of the turf at the Pasadena Rose Bowl and the Los Angeles Coliseum, where he was turf advisor for the 1932 Los Angeles Olympics.

After solo efforts in the 1930s, Bell partnered with prominent east coast architect A.W. Tillinghast. Together they redesigned the course at Virginia Country Complex in Long Beach. Additionally, Bell was partly responsible for the beautiful bunker work at San Francisco Golf Complex, considered one of Tillinghast's finest designs. During World War II, Bell was a turf consultant to the U.S. Army Corps of Engineers and was awarded a commendation by the Southern California chapter of the PGA, in honor of his work creating golf courses for wounded servicemen. After the war, his son, William Francis Bell joined him in business, forming William P. Bell and Son. They collaborated on a number of well-known courses including the Bakersfield and Newport Beach country Complexes. Bell was a founding member of the American Society of Golf Course Architects (ASGCA) and served as ASGCA President in 1952.

Brookside Golf Course was one of Bell's first independent commissions and was considered to be among his best courses. William Bell died in Pasadena in 1953.

1918 City of Pasadena includes a golf course as part of future recreational facilities planned for the Arroyo Seco.

1925 The first nine holes of Course #1 are constructed funded by the Pasadena Chamber of Commerce. The golf course is designed by noted golf course designer William Park Bell.

1928 Complete Course #1 is opened to the public. Funding for construction of the second half of Course #1 provided by the Municipal Light and Power Department.

1929 A one-story clubhouse with clay tile roof is constructed. William Park Bell designs a second golf course.

1930 Driving range is established west of the clubhouse.

1931 The first half of Course #2 is constructed under the auspices of unemployment relief using funding from the public employees union.

1932 Land for the second half of Course #2 is cleared.

1934 Arroyo Seco is channelized for flood control between Devil's Gate Dam and the Colorado Street Bridge.

1935 Arroyo Seco channel is extended and reinforced.

1938 Major flooding destroys Arroyo Seco flood control channel and damages much of the golf course. Course #1 and first half of Course #2 are repaired and revamped. Construction of second half of Course #2 begins.

1954 The Metropolitan Water District lays a new water pipeline along the east side of Brookside Golf Course to supply water to Altadena, La Canada, and La Crescenta. Pipeline does not result in major alteration to the golf course.

1955 An estimated 20,000 automobiles parked on Brookside Golf Complex fairways cause over $25,000 in damage after heavy rains during the annual Rose Tournament Festivities. Over half of the golf courses are reportedly rendered unusable.

1956 Brookside Golf Complex begins use of electric golf carts. Rehabilitation of selected greens on Course #1 is announced.

1967 A major rehabilitation of the Brookside Golf Complex is underway in preparation for hosting the annual Los Angeles Open. Plans include a new and larger clubhouse to replace the original, reconfiguration and regrading of select fairways, four new lake hazards, and expansion of the driving range for night use.

Historic Resource Listings

The Brookside Golf Complex is considered a contributing site to the Pasadena Arroyo Park and Recreation District which was listed in the National Register of Historic Places in 2008. Because it is listed in the National Register, the District is also listed in the California Register of Historical Resources and is considered a historical resource for the purposes of CEQA.

The District was determined eligible for listing at the local level under National Register Criterion A for its association with parks and recreation development in Pasadena. The period of significance for the District is 1909–1939. It contains 24 contributing buildings, structures and sites. On the Brookside Golf Complex property, both Course #1 and Course #2 are considered collectively as a contributing site. A restroom building at the northern portion of the Course #2 is considered a contributing building.

Character-defining Features

The National Register nomination form for the District indicates that despite alternation to the tees, bunkers, fairways, and landscaping, both courses retain their original location, general overall boundaries, and routing. The boundaries are largely defined by the historic stonewalls around the north, east, and west perimeters of the two courses. Adjacent to the Rose Bowl, however, the boundaries are not specifically defined.

CEQA Thresholds

The Brookside Golf Complex is listed in the National Register of Historic Places and the California Register of Historical Resources.as a contributor to the Arroyo Seco Recreational Historic District, and therefore is a historical resource as defined by CEQA.[19] As such, potential impacts to this historical resource as a result of the Project are analyzed herein.

The State Legislature, in enacting the California Register of Historical Resources, amended CEQA to clarify which properties are significant, as well as which project impacts are considered to be significantly adverse.[20] A project with an effect that may cause a substantial adverse change in the significance of a historical resource is a project that may have a significant effect on the environment.[21] A substantial adverse change in the significance of a historical resource means demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of a historical resource would be materially impaired.[22]

The CEQA Guidelines further state that "[t]he significance of an historical resource is materially impaired when a project… [d]emolishes or materially alters in an adverse manner those physical characteristics of an historical resource that convey its historical significance and that justify its inclusion in, or eligibility for, inclusion in the California Register of Historical Resources…local register of historical resources…or its identification in a historical resources survey."[23]

Discussion of Project Components

As described above, the proposed Project consists of two main components: (1) reorient and expand the existing driving range; and (2) develop a new miniature golf course adjacent to the proposed driving range. No changes to the Brookside Clubhouse are proposed.

Re-orient and Expand Existing Driving Range

The Project site contains the existing driving range which has been in this location historically since at least 1930. This area has gone through multiple changes since its original construction. These include various locations and configurations of tee line driving bays, planting and removal of trees, expansion of the size of the range, and the addition of fencing, safety netting, and lights.

[19] California PRC § 21084.1.
[20] *CEQA Guidelines*, CCR, Title 14, Chapter 3, section 15064.5.
[21] *CEQA Guidelines*, section 15064.5(b).
[22] *CEQA Guidelines*, section 15064.5(b)(1).
[23] *CEQA Guidelines*, section 15064.5(b)(2).

Throughout its history, the driving range has primarily been oriented east-west with tee line bays located at the east end of the range and shots aimed to the west. A secondary, south-north orientation was added in the late 1960s as a night range. The night range was discontinued in the early 1970s but the south-to-north orientation, with a more permanent tee line along the south edge of the driving range was later established for instructional purposes and continues to be used as such today.

The Project would re-orient the primary driving range north-south with tee line bays located along the southern portions of the range and shots aimed to the northeast.

In addition, the Proposed Project would result in alteration to Course #1 Hole #10, including relocating the hole approximately 20 yards to the north. This will require shortening Hole #6 and Hole #7 of Course #2. Finally, the Project will install 14 light poles and 36 poles to support protective netting. Of the 36 poles, 14 would be light-mounted (at 60 feet in height) surrounding the perimeter of the driving range on the east and west sides. The driving range currently has 64 poles of which 22 will remain. Existing poles range from 20 to 50 feet in height. The new poles will range from 38 to 130 feet in height.

Miniature Golf Course

The Project would also construct a miniature golf course directly west of the proposed driving range. This area has been reconfigured several times over the life of the Golf Complex. It was originally incorporated as part of the fairway for the C.W. Koiner Course 8th Hole and later incorporated into the driving range. As part of the driving range, the area was further altered with the introduction of the south-north night driving range which was later incorporated as an instructional range.. Introduction of the miniature golf course would add a new design element to the Golf Complex.

Discussion of Potential Impacts

The Project would alter a portion of the Brookside Golf Complex by (1) reorienting and expanding the existing driving range and (2) constructing a new miniature golf course adjacent to and immediately west of the proposed driving range. For this alteration to be considered a substantial adverse change, however, it must be shown that the integrity and/or significance of the Brookside Golf Complex would be materially impaired by the proposed alteration. In practical terms, the significance of a historical resource can be materially impaired when a project alters in an adverse manner those physical characteristics that are critical to understanding the significance of a historical resource or substantially impairs the ability of the resource to convey its historical significance such that it would no longer be eligible for listing in the National or California Registers as a contributing element to the Pasadena Arroyo Parks and Recreation District.

Potential Impacts from Reorienting and Expanding the Driving Range

As noted above, the driving range has been in its existing location historically since at least 1930. Component parts, particularly the design, location and number of driving bays have been changed over time, but the following aspects have been largely consistent:

- The location west of the Clubhouse.
- The triangular shape widening and hitting from east to west.
- The spatial arrangement of tee line and driving bays located at the eastern end of the range and the range fairway stretching west.
- Landscape areas, putting greens and/or trees located between the Clubhouse and the driving range.
- Flanking fairways to the north and south
- Western limit defined by the flood control channel.

The driving range would generally remain in its original location west of the Clubhouse, but it would be expanded to the north and concede space for a new miniature golf use to the west. The overall size and dimensions of the driving range, however, have changed throughout its history, including during the late 1960s when the (then) 8th hole was moved to the west side of the flood control channel allowing for the driving range to be lengthened approximately 40 yards to the west. The location of tee lines and putting greens have also been changed, effectively expanding and contracting the length of the driving range.

The driving range would retain its triangular shape common to driving ranges, but the triangle would be canted so that the narrow end of the triangle is to the north. More importantly, the primary orientation of the driving range (hitting east to west) would be shifted to a south-north orientation. Spatial arrangements would also be altered with the primary tee line driving bays relocated along the southern portions of the range and the driving range fairway stretching north. A south-north orientation for the driving range, however, is not without precedent. A tee line located at the southern edge of the driving range has been in existence since the late 1960s when a secondary tee line was introduced as a night range. The southern tee line (hitting south to north) has been enhanced and expanded since that time and is currently used for instructional purposes.

The Project would install a total of36 poles to support protective netting with many of the netting support poles substantially taller than what exists today. There are currently 64 poles today of which approximately 20 will remain for a total of 70 poles. Support poles and safety netting have been part of the driving range since the 1950s; lighting poles were added in the late 1960s with the introduction of a night range. In addition,

tall poles and safety netting are present in many areas along the perimeter of the Golf Course Complex. As such, support poles and safety netting have been part of the Brookside Golf Complex landscape for decades.

Golf course fairways would continue to flank the driving range to the north and south. Course #1 Hole #10 to the north would be altered by an extended fairway and relocated green. Course #2 Hole #6 and Hole #7 would also be shortened to accommodate the change to Course #1 Hole #10. Despite these alterations, Hole #6, Hole #7, and Hole #10 would still read as a tee, fairway and green in the same locations.

When looked at in total, changes to the driving range proposed by the Project will be relatively minor. Although the primary east-west orientation of the driving range will be changed to a south-north orientation, the driving range already incorporates a southern tee line and south-to-north hitting for instruction purposes. The introduction of new and in some cases taller poles for safety netting and lighting will continue infrastructure elements that have been integral to the driving range since the 1950s. The area will continue to be used as a driving range as it has since at least 1930 and it will contain the wide expanse of fairway, tee line driving bays, safety netting, and support poles that have characterized the driving range for decades.

Potential Impacts from the Miniature Golf Course

The area west of the driving range between the driving range and the flood channel would host a new 36-hole miniature golf course. Miniature golf is largely an exercise in putting so from a use standpoint miniature golf will continue the golf-related uses that currently occupying the site. The design of the miniature golf area, however, would differ from a typical putting green, incorporating a complex arrangement of pathways and landscape elements with intermittent "themed" objects and structures. The themed structures are anticipated to be between 6 and 8-feet in height.

The Brookside Golf Complex has been characterized by a distinctive landscape comprising tees, fairways, greens, bunkers, lake hazards, mature trees and perimeter stone walls. The net effect is a naturalistic and unified landscape that is not only coherent to itself but seamlessly relates to the natural landscape of the arroyo and surrounding hillsides. The miniature golf course would introduce a new design element to the Brookside Golf Complex. Design of a miniature golf course is necessarily complex with many elements compiled into a relatively small area. The theme aspect of the design can also introduce an esthetic at odds with the historic character of the Golf Complex.

With the introduction of a new design element acknowledged, the proposed miniature golf course will be located at what is currently the far end of the driving range bordered by the concrete flood channel, an area that isn't generally traversed by golfers and hasn't been for decades. In addition, the entire miniature golf area will be approximately one

acre in size out of the approximately 230 acres total that comprise the Brookside Golf Complex. In other words, approximately 0.4% of the total Brookside Golf Complex will be affected by the construction of the miniature golf course.

Tree Removal

Depending on the ultimate design and layout of the driving range and miniature golf course, the Project could result in the removal of approximately 44 mature trees, several of which are dead or diseased. Trees located within the Project site have been added and removed throughout the history of the Brookside Golf Complex and their existence and location in and around the driving range has been altered substantially since the period of significance for the Pasadena Arroyo Park and Recreation District (1909–1939). Therefore, the specific number and location of trees in and around the driving range is not a character-defining feature of the Brookside Golf Complex or the District. For these reasons, the projected removal of trees will not reduce the integrity or significance of the Brookside Golf Complex such that it's status as a contributing site to the Pasadena Arroyo Park and Recreation District would be threatened.

Summary of Potential Impacts

As noted above, changes to the driving range proposed by the project will be relatively minor. The area will continue to be used as a driving range as it has since at least 1930 and it will contain the wide expanse of fairway, tee line driving bays, safety netting, and support poles that have characterized the driving range for decades.

The miniature golf course would construct a new design element at the Brookside Golf Complex that can potentially introduce an esthetic at odds with the historic character of the Golf Complex. The approximately 1 acre in size of the miniature golf course, however, represents only 0.4% of the approximately 230 acres total that comprise the Brookside Golf Complex.

Ultimately, any discussion of potential impacts must concede that the Project Site represents less than 10 percent of the total area occupied by the Brookside Golf Complex. The golf courses themselves, with the exception of Course #1 Hole #10, and Course #2 Hole #6 and Hole #7, would remain unchanged by the Project. All alterations proposed by the project will be in areas that have previously been altered and changed over time. The Project will not destroy or materially alter physical characteristics that convey historic significance and justify the historic listing of the Brookside Golf Complex as a contributing feature of the Pasadena Arroyo Park and Recreation District. The overwhelming majority of the site elements that characterize the Brookside Golf Complex would continue to retain their original location, general overall boundaries, and routing. The character-defining stone walls around the north, east, and west perimeters of the two courses would also remain unchanged. Despite the proposed alterations to the driving range and Hole #6, Hole #7 and Hole #10, as well as the introduction of the miniature golf course, the Brookside Golf Complex would continue

to maintain a substantial amount of integrity and continue to convey its historic significance.

However, because the Project has not been completely designed, this study recognizes the potential for the loss of integrity due to alterations associated with the Project out of an abundance of caution. The potential loss of integrity is considered herein a significant impact for the purposes of CEQA; therefore, mitigation measures are proposed. A mitigation measure described in Section 9.1 below includes the retention of a qualified historic preservation professional to ensure that alterations to the driving range, design of the miniature golf course, and overall modifications to the Golf Course are compatible with the existing Brookside Golf Complex landscape and the Pasadena Arroyo Park and Recreational District so that the historic integrity of the Pasadena Arroyo Park and Recreational District is maintained.

With mitigation to ensure that the integrity of the Pasadena Arroyo Park and Recreational District is maintained, the Project will not result in a substantial adverse change to the Pasadena Arroyo Park and Recreation District and will not, therefore, result in significant impacts to historical resources as defined by CEQA.

As discussed in Section 8 of this report, the Project will not result in a substantial adverse change to the Pasadena Arroyo Park and Recreation District and will not, therefore, result in significant impacts to historical resources as defined by CEQA.

9.1 Recommended Mitigation Measure

To ensure that the ultimate Project design is executed to achieve a maximum level of compatibility with the Pasadena Arroyo Park and Recreational District, the RBOC shall retain a qualified historic preservation professional to ensure that alterations to the driving range, design of the miniature golf course, and overall modifications to the Golf Course are compatible with the existing Brookside Golf Complex landscape and the Pasadena Arroyo Park and Recreational District.

This will include the following considerations to ensure that the Project will be executed to achieve a maximum level of compatibility with the Pasadena Arroyo Park and Recreational District.

1. A qualified historic preservation professional shall be retained to ensure that the alterations to the driving range, design of the miniature golf course, and modification of Course #1 Hole #10 and Course #2 holes #6 and #7 will be compatible with the existing Brookside Golf Complex landscape and Pasadena Arroyo Park and Recreational District.
2. Design issues to be considered for alteration of the driving range will include but are not limited to the form and materials of new circulation paths and T-line/driving bays; the placement, dimensions, and materiality of driving range netting support poles; netting color and transparency; lighting placement; the brightness and the intensity of lighting.
3. Design issues to be considered for the miniature golf course(s) will include but are not limited to grading and topographic changes; new plantings, trees and vegetation; the scale, form and materiality of theme features; perimeter fencing and security/safety elements; signage and wayfinding, lighting placement; the brightness and the intensity of lighting.

"California Built Environment Resources Directory." California Office of Historic Preservation, https://ohp.parks. ca.gov/?page_id=30338. Accessed December 2020-January 2021.

California Code of Regulations, Title 14, Chapter 3, §§ 15000-15387.

"California Historical Resources Inventory." California Office of Historic Preservation, August 15, 2011.

California Public Resources Code, §§ 21000-21177.

City of Pasadena building permits.

City of Pasadena Planning and Community Development, http://www.ci.pasadena.ca.us/planning/. Accessed December 2020-January 2021.

City of Pasadena Zoning Code, Title 17, Chapter 17.62 (November 6, 2020).

Code of Federal Regulations, Title 36, Chapter 1, Part 60.

County of Los Angeles Tax Assessor. Property Assessment Information System, http://maps.assessor.lacounty.gov/GVH_2_2/Index.html?configBase=http://maps.assessor.lacounty.gov/Geocortex/Essentials/REST/sites/PAIS/viewers/PAIS_hv/virtualdirectory/Resources/Config/Default. Accessed January 2021.

"Geo. L. Throop Mark Golden Anniversary," *Independent-Star-News*, August 20, 1967.

Historic Aerials, https://www.historicaerials.com/viewer. Accessed January 2021.

League for the Protection of Oakland's Architectural and Historic Resources vs. City of Oakland, 52 Cal. App. 4th 896, 906-7 (1997).

Los Angeles County Office of the Assessor. Parcel information, http://maps.assessor.lacounty.gov/GVH_2_2/Index.html?configBase=http://maps.assessor.lacounty.gov/Geocortex/Essentials/REST/sites/PAIS/viewers/PAIS_hv/virtualdirectory/Resources/Config/Default. Accessed January-February 2021.

Los Angeles Times. ProQuest Historical Newspapers: Los Angeles Times (1881-1990).

Pacific Coast Architecture Database (PCAD). http://pcad.lib.washington.edu/. Accessed February 2021.

Pasadena Arroyo Parks and Recreation District National Register of Historic Places Registration Form, prepared by Teresa Grimes for Pasadena Heritage, July 13, 2007.

Sanborn Map Company. Sanborn Fire Insurance Maps, Pasadena: 1931, 1951.

State of California, Department of Parks and Recreation. "California Office of Historic Preservation Technical Assistance Series #6: California Register and National Register: A Comparison." Sacramento, CA: Office of Historic Preservation, 2011.

U.S. Department of the Interior. *National Register Bulletin 15: How to Apply the National Register Criteria for Evaluation.* Washington D.C.: National Park Service, 1995.

U.S. Department of the Interior. *National Register Bulletin 16A: How to Complete the National Register Registration Form*. Washington D.C.: National Park Service, 1997.

APPENDIX A: EXISTING CONDITIONS PHOTOS

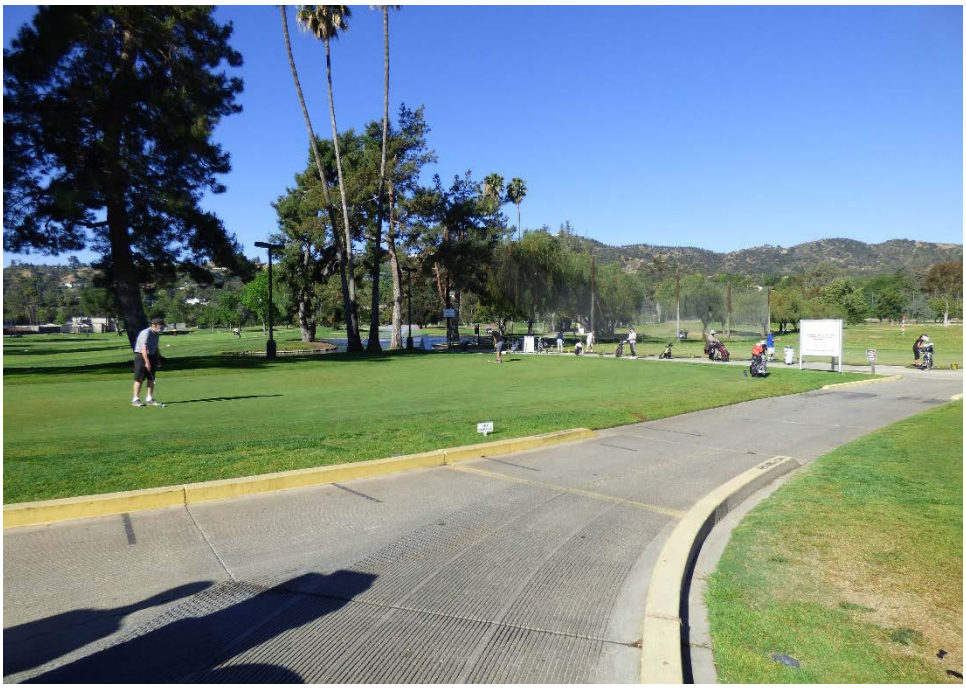
Overview of pathway to clubhouse, golf cart rental, and driving range looking northwest. Historic Resources Group, 2021.

View of the golf cart and driving range rental with clubhouse in background looking northeast. Historic Resources Group, 2021.

View of putting green with golf cart and driving range rental and clubhouse in background looking southeast. Historic Resources Group, 2021.

View of putting green and driving range looking northwest. Historic Resources Group, 2021.

View of putting green and driving range looking northwest. Historic Resources Group, 2021.



View of putting green and driving range looking southwest. Historic Resources Group, 2021.

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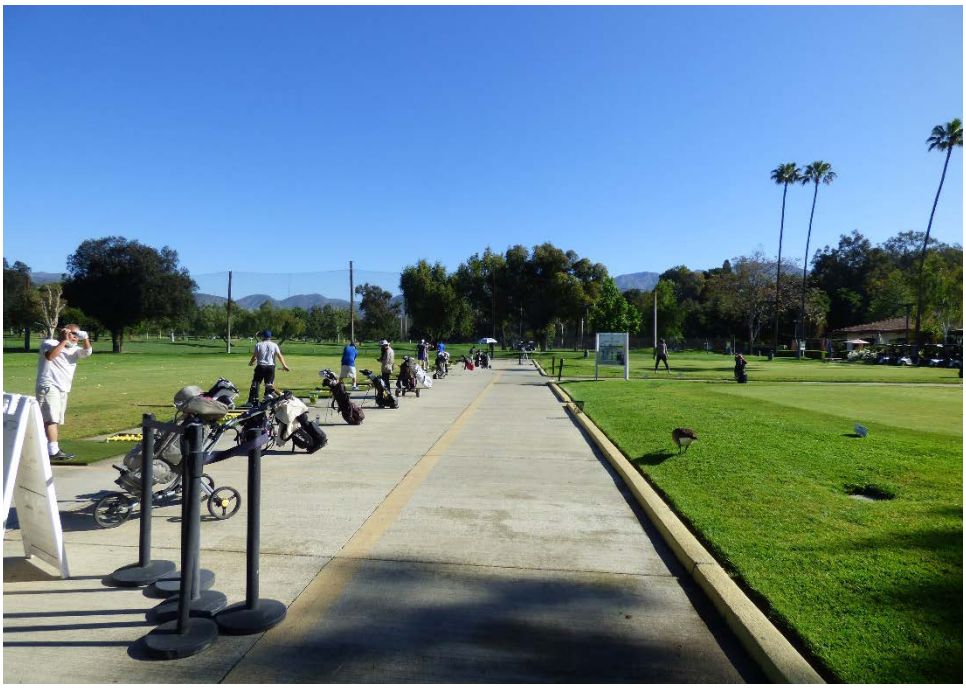
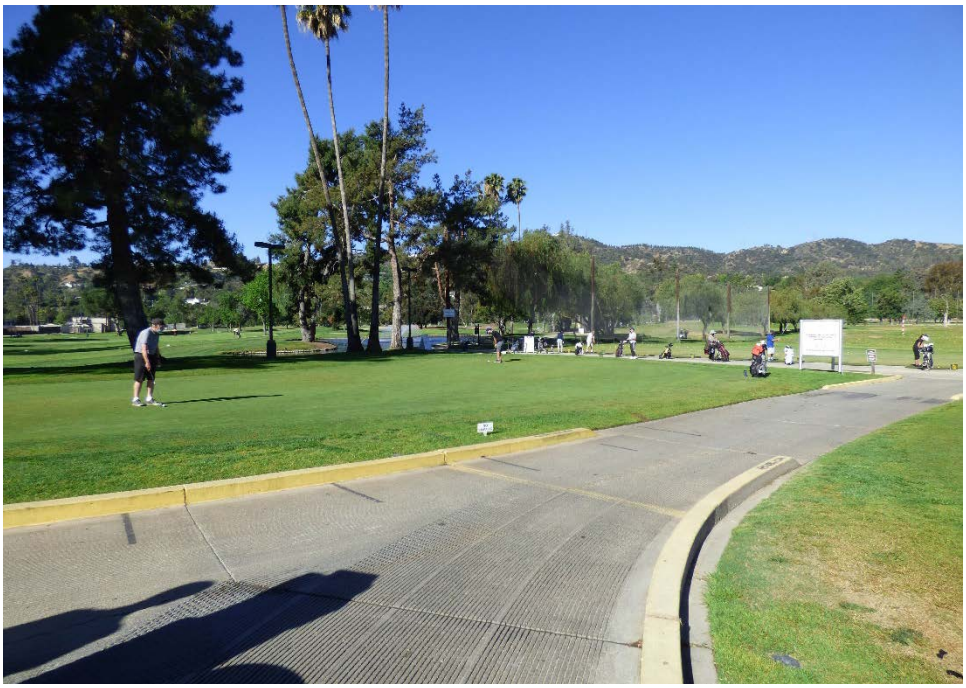
View of driving range looking northwest. Historic Resources Group, 2021.



View of pathway between driving range and putting green looking northeast. Historic Resources Group, 2021.

View of putting green and driving range looking northwest. Historic Resources Group, 2021.



View of putting green and driving range looking southwest. Historic Resources Group, 2021.

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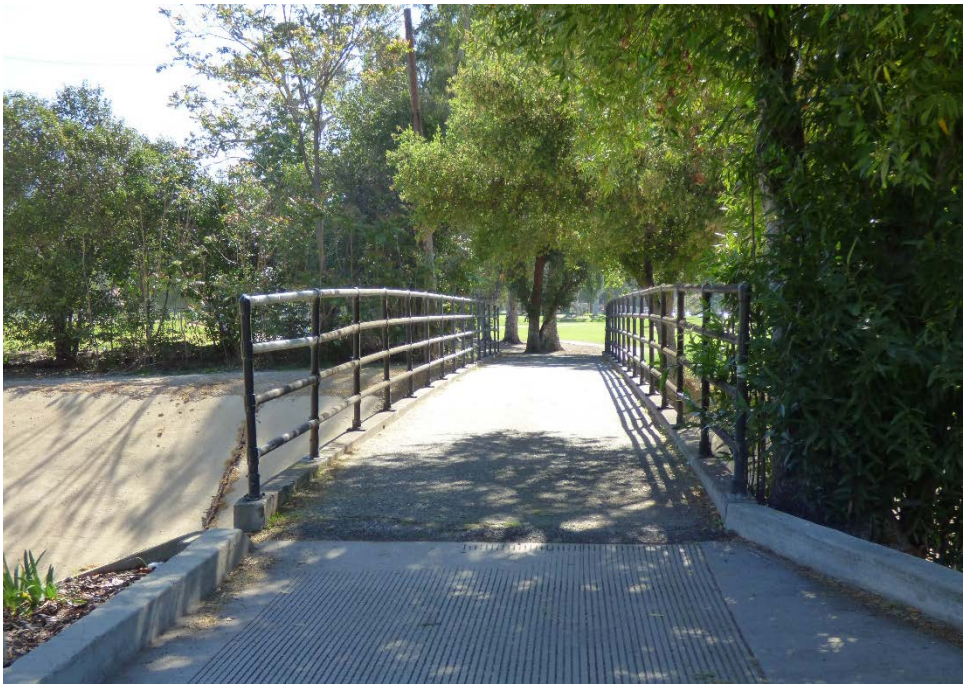
Pathway along south side of driving range with water feature looking southwest. Historic Resources Group, 2021.

View of pathway to driving range and instruction area looking northwest. Historic Resources Group, 2021.

View of additional driving range and instruction area looking north. Historic Resources Group, 2021.

View of Arroyo Seco Channel immediately west of the driving range looking north. Historic Resources Group, 2021.



Detail of concrete bridge over Arroyo Seco Channel looking east. Historic Resources Group, 2021.

View of hole and manmade lake west of the driving range and Arroyo Seco Channel looking southwest. Historic Resources Group, 2021.

View of Arroyo Seco Channel and wood cross bridge with driving range in background looking northeast. Historic Resources Group, 2021.

View of rear of driving range from across Arroyo Seco Channel looking southeast. Historic Resources Group, 2021.

View of C. W. Koiner Course #1, immediately north of the driving range looking northwest. Historic Resources Group, 2021.

View of C. W. Koiner Course #1 looking southeast. Historic Resources Group, 2021.

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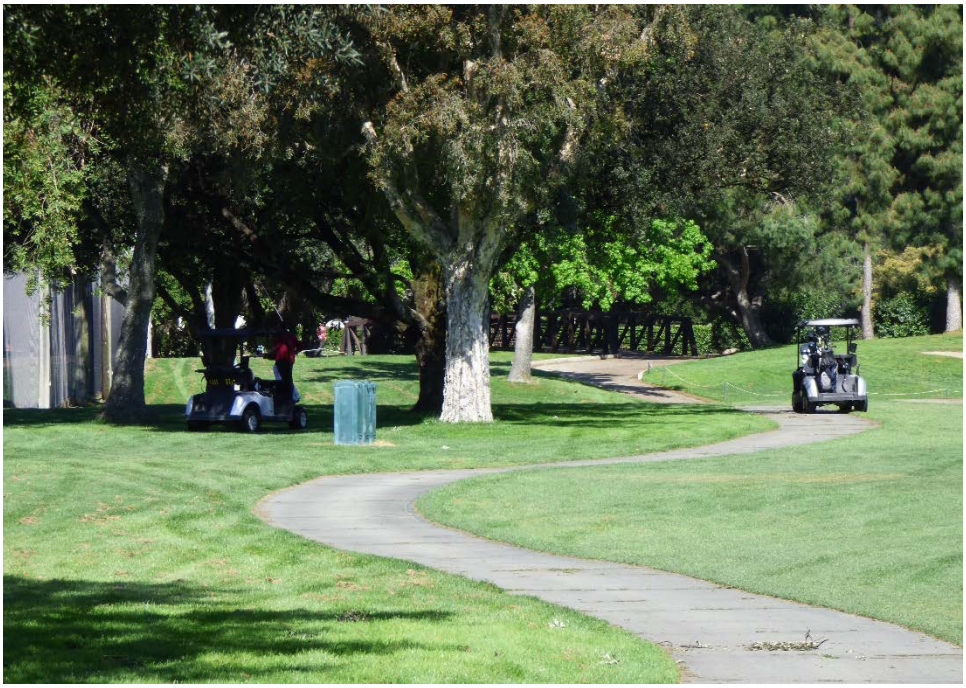
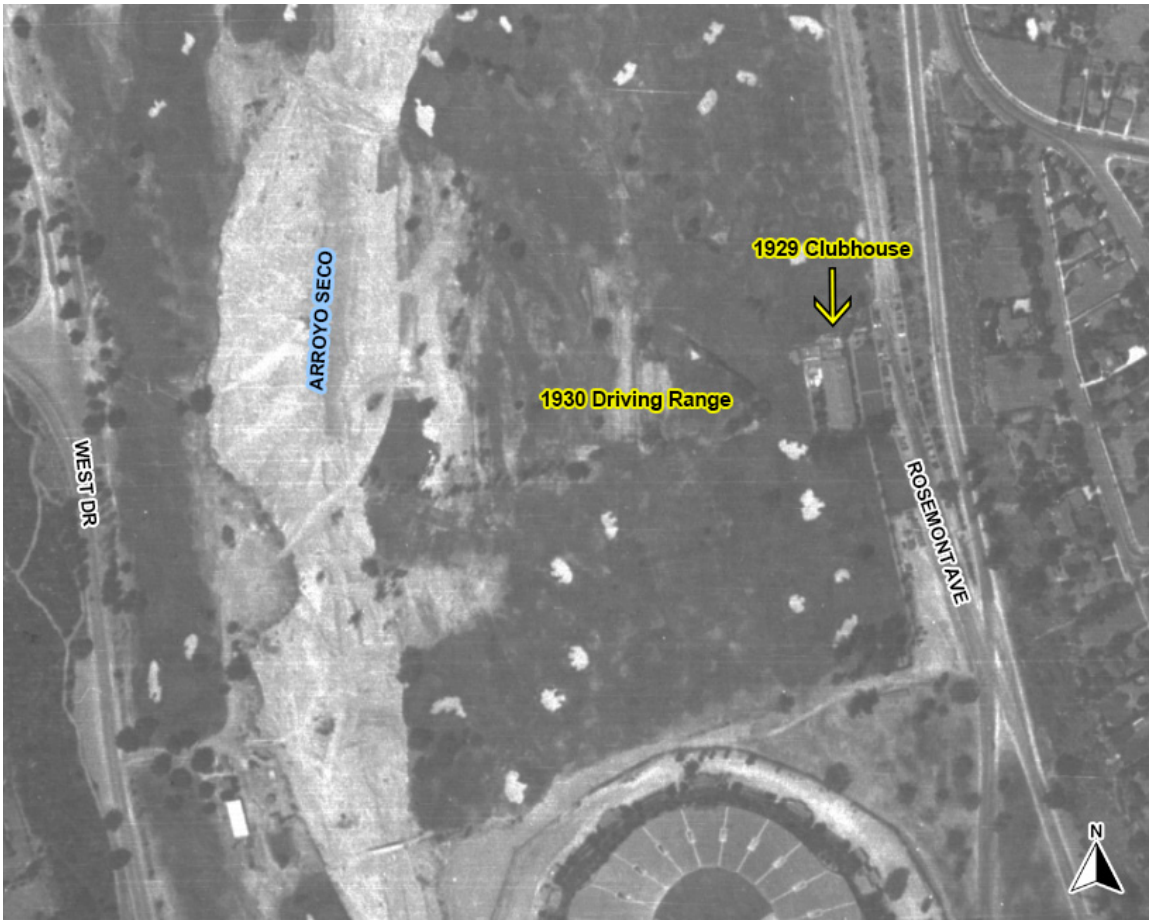


View of curvilinear path between the driving range and C. W. Koiner Course #1 looking northwest. Historic Resources Group, 2021.

View of C. W. Koiner Course #1 looking northwest. Historic Resources Group, 2021.



Aerial photograph of the Brookside Golf Course driving range area in detail, 1938. (Special Research Collections, UCSB Library, University of California Santa Barbara)

Aerial photograph of the Brookside Golf Course driving range area in detail, 1944. (Special Research Collections, UCSB Library, University of California Santa Barbara)

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Aerial photograph of the Brookside Golf Course driving range area in detail, 1956. (Special Research Collections, UCSB Library, University of California Santa Barbara)

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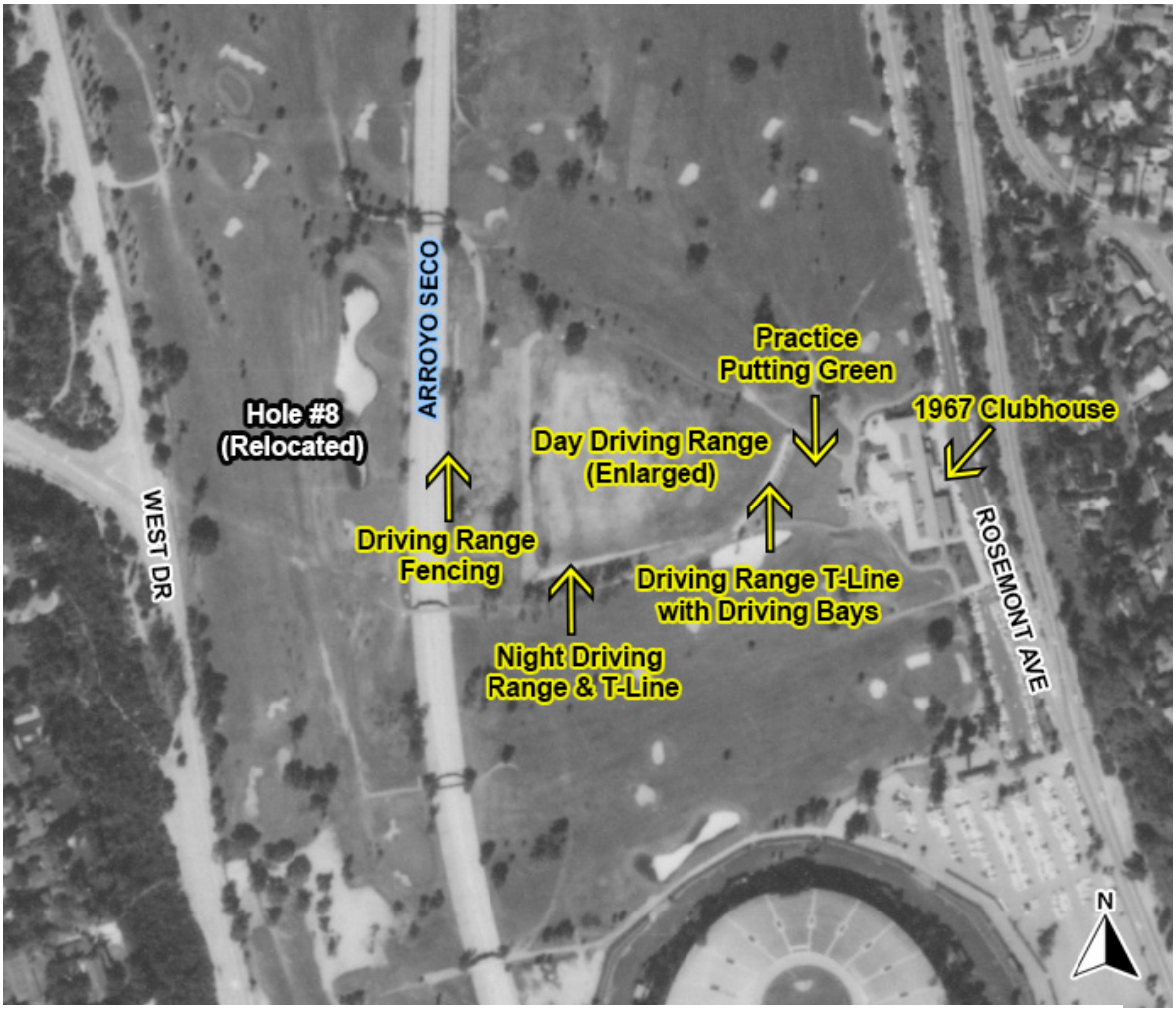

Aerial photograph of the Brookside Golf Course driving range area in detail, 1968. (Special Research Collections, UCSB Library, University of California Santa Barbara)

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Photo of clubhouse from hillside looking West, 1929.

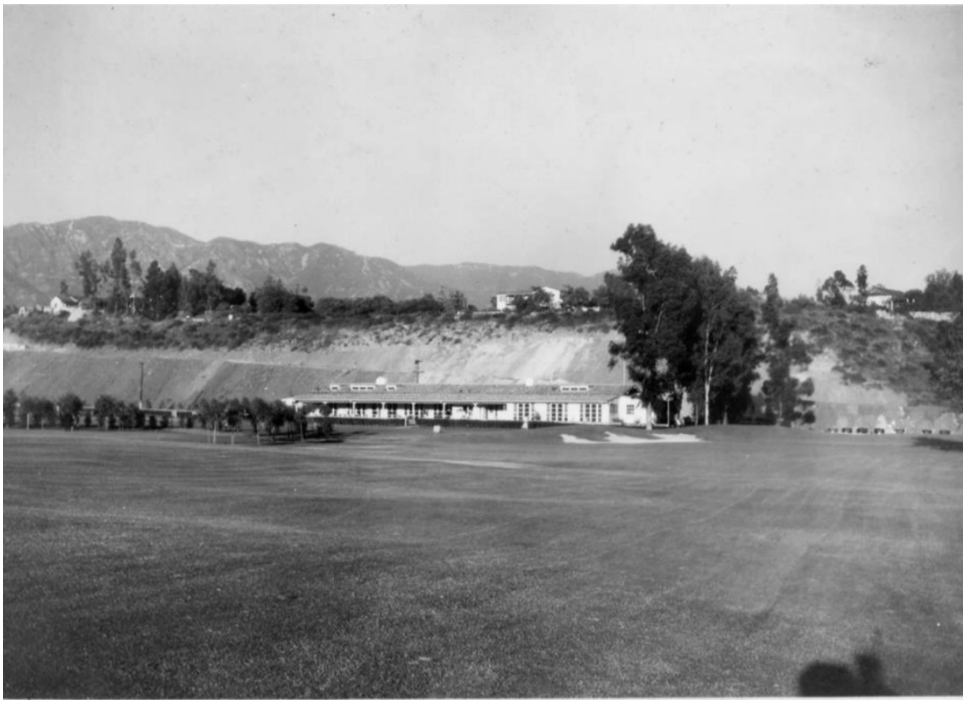

Photo of golf course and clubhouse looking northeast, 1929.

Photo of clubhouse looking southeast, 1930.

Photo of driving range and old clubhouse looking east, 1930.

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Photo of putting green and old clubhouse looking south, 1930.

Construction of Arroyo Seco Channel, 1934.

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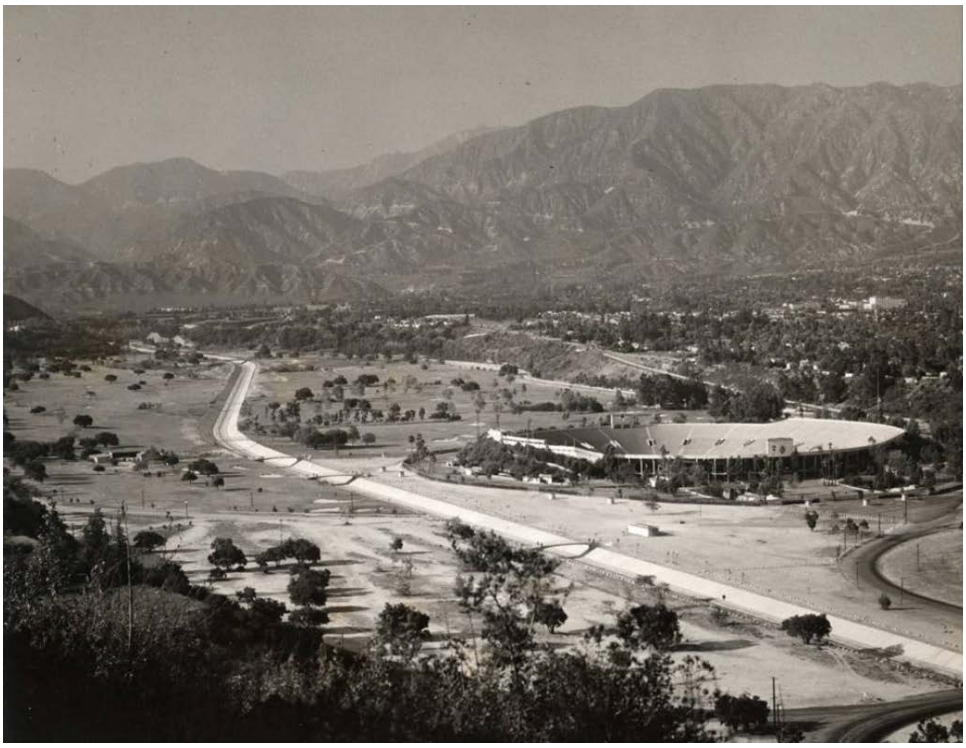
Construction of Arroyo Seco Channel near Rose Bowl, 1934.



Overview of the Brookside Golf Course with the Rose Bowl looking north, 1940.

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Overview of the new course being built looking southwest, c. 1940

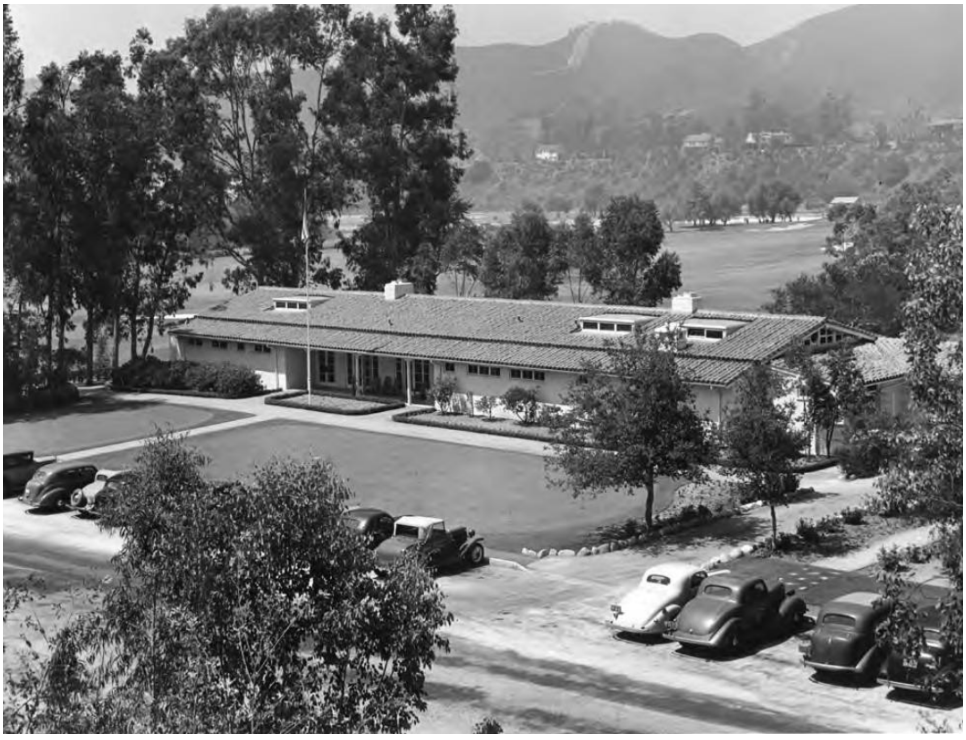

Photo of clubhouse with the golf course in the background, 1947.

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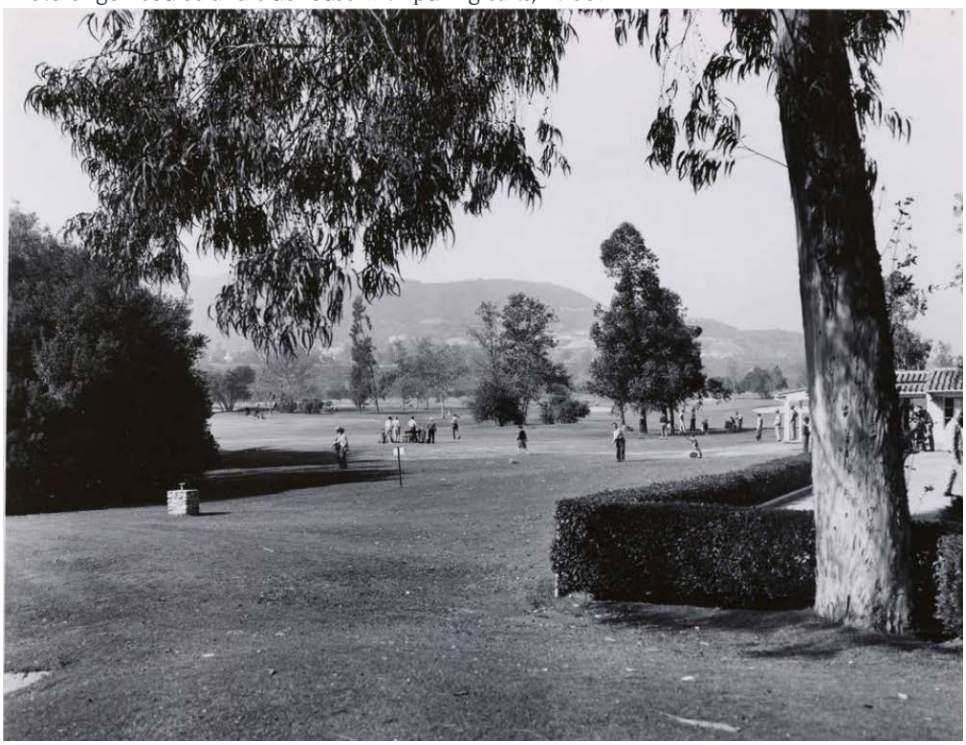
Photo of golf course and clubhouse with pulling carts, 1955.



Overview of holes, driving range and clubhouse, 1960.

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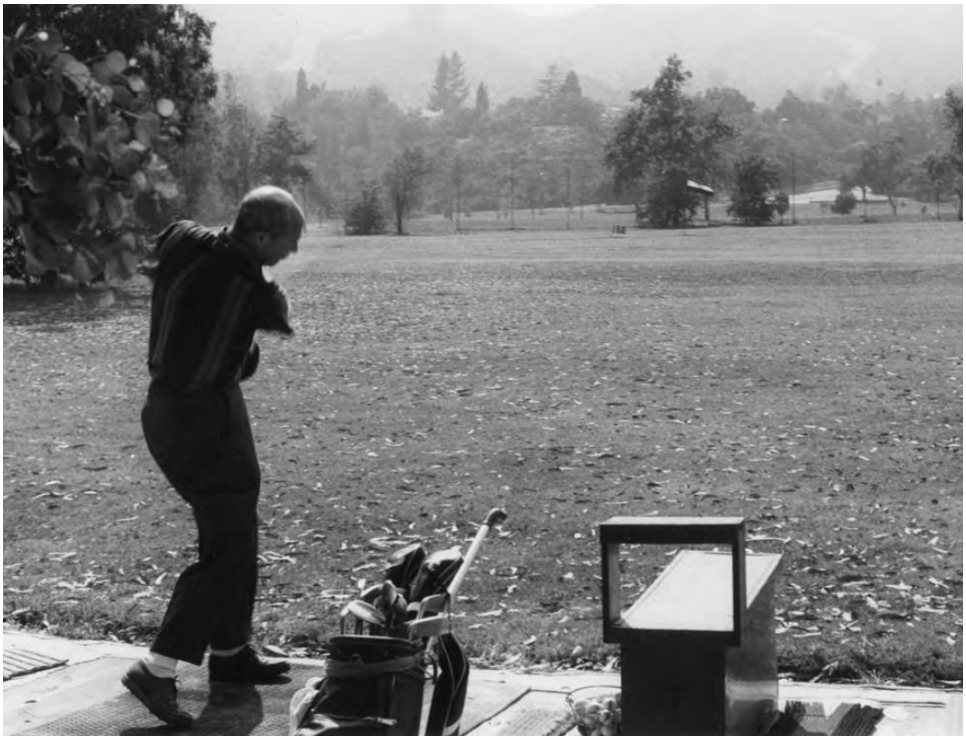

View of golfer at driving range, 1966.

Renovations underway at golf course, 1967.

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Renovation of Arroyo Seco Channel block, 1967.

Construction of new clubhouse looking north, 1967.

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Completion of new clubhouse, 1967.

Photo of the golf course driving range and holes with the Rose Bowl, 1968.

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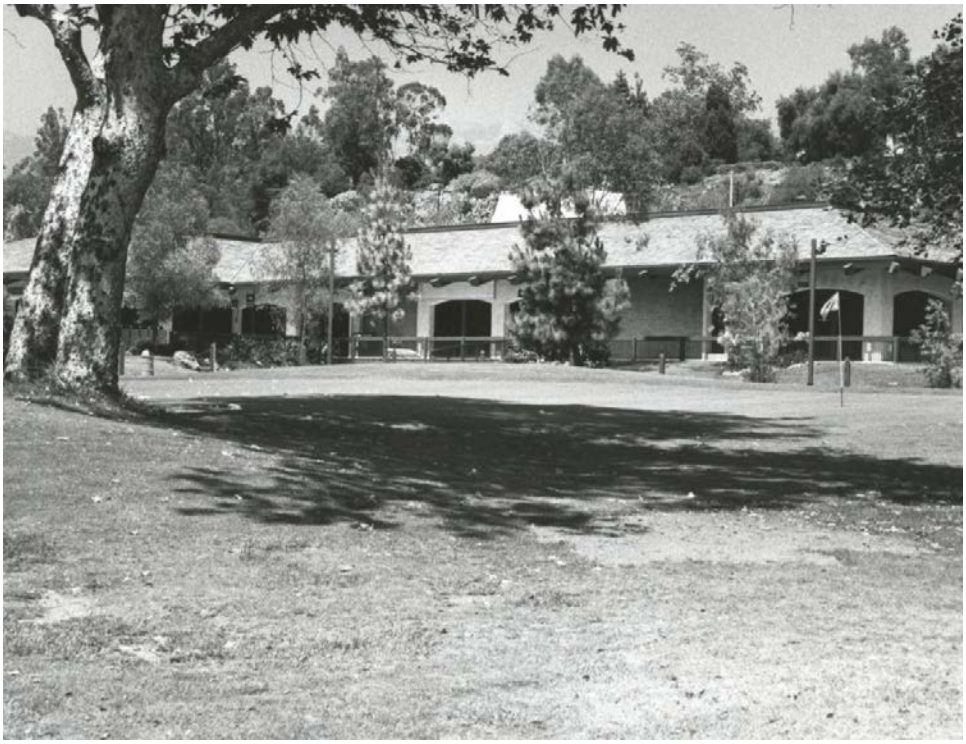
Overview of golf course looking northeast, c. 1970.



View of clubhouse and course, 1977.

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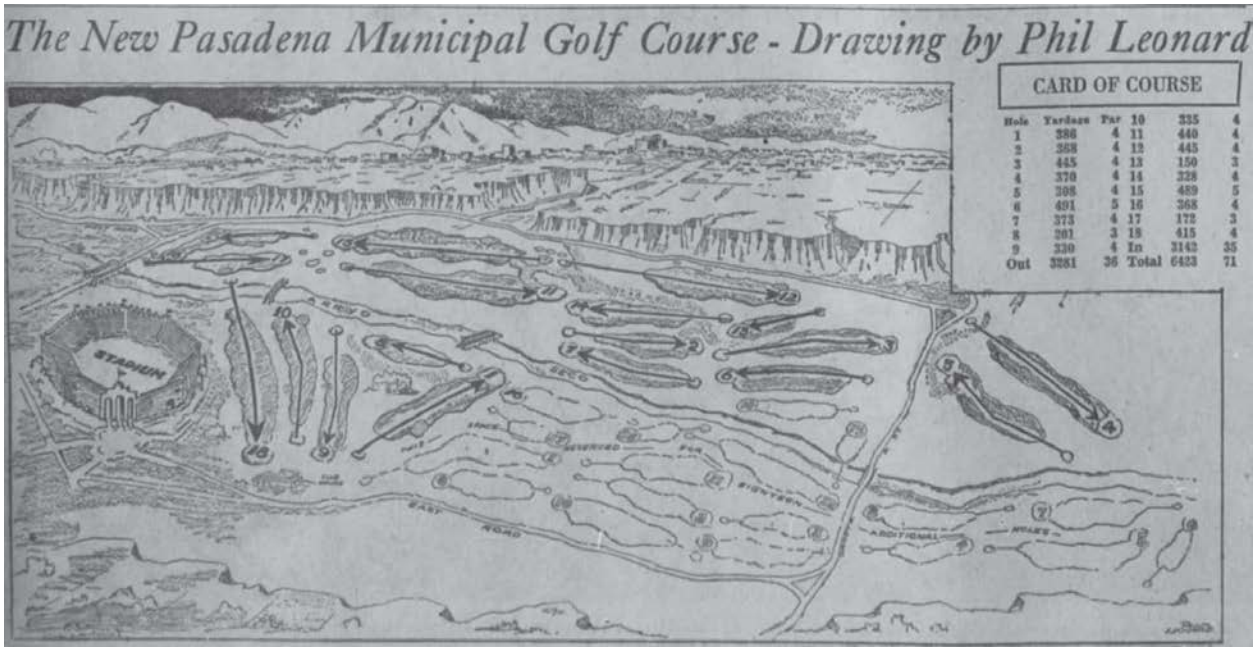
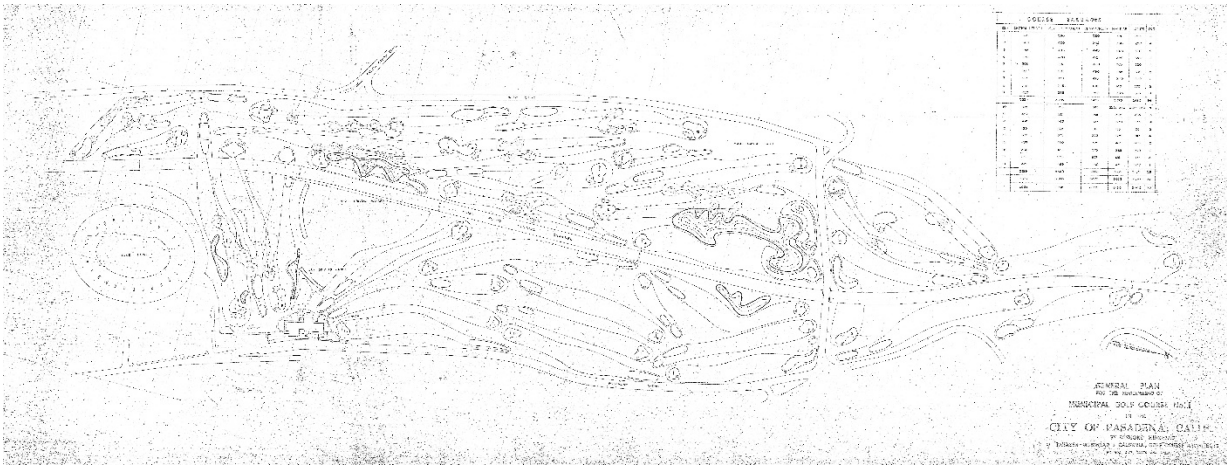


1928 golf course drawing by Phil Leonard. Source: Los Angeles Times, November 4, 1928



1967 Muirhead Plan

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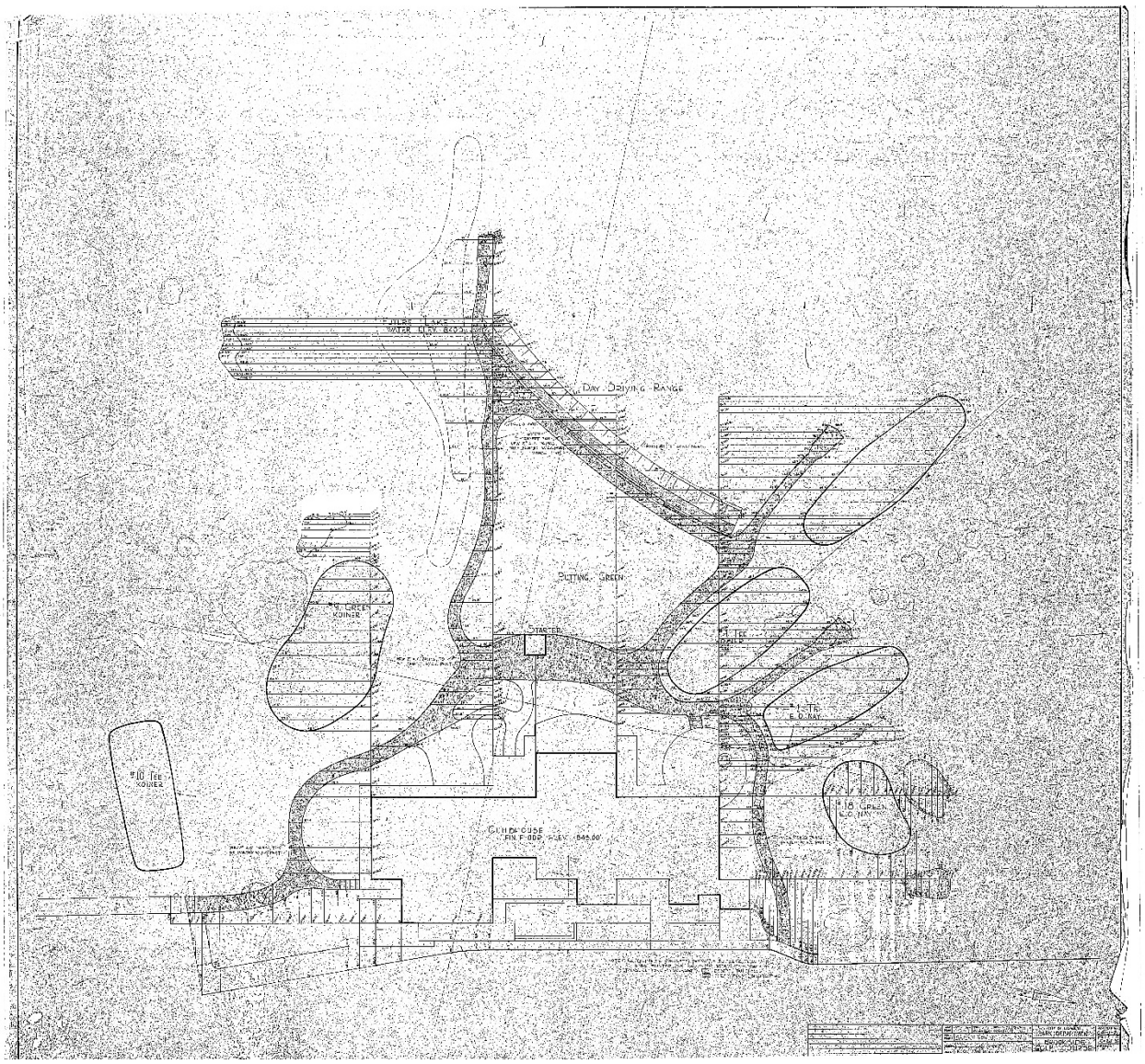

1967 Brookside Golf Course General Remodel.

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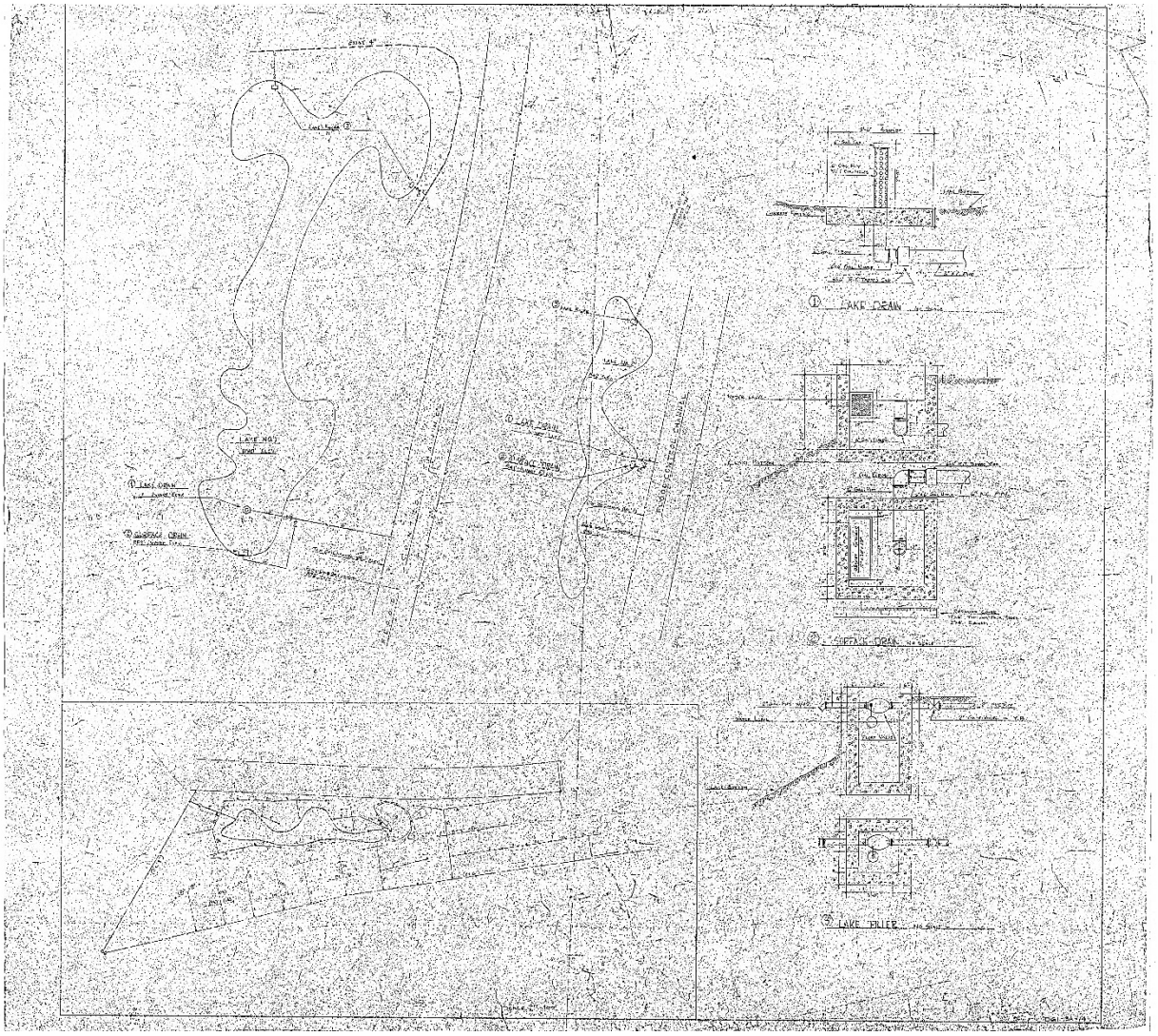

1967 Brookside Golf Course General Remodel.

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Brookside Golf Course
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PAUL D. TRAVIS, AICP
MANAGING PRINCIPAL

Years of Experience: 15

Education

Master of Arts in Urban Planning, University of California, Los Angeles, 2006

Bachelor of Fine Arts, Printmaking, San Jose State University, San Jose, 1985

Speaking Engagements

California Preservation Foundation

- Historic Resources and the California Environmental Quality Act
- Historic Resources Surveys
- Preservation Planning

American Planning Association, California Chapter

- Preservation Planning

Professional Affiliations

American Institute of Certified Planners, Member

American Planning Association, Urban Design & Preservation Division, Member

American Planning Association, Los Angeles Chapter, Member

California Preservation Foundation, Guest Speaker, Workshop Leader

National Trust for Historic Preservation, Member

Experience Profile

Paul Travis has been with HRG since 2006 and specializes in master planning, CEQA, NEPA and Section 106 environmental review, and historic resources assessment.

At HRG, Paul manages planning-related projects with a focus on large, multi-property sites including college campuses, historic downtowns, neighborhoods and districts, industrial sites, motion picture studios, and military bases.

Paul has drafted preservation plans for the University of Southern California; NBC Universal Studios, Hollywood; and Los Angeles International Airport. He has participated in the development of community plans or specific plans for Paso Robles, Fresno, and Whittier; and has been involved in the master planning process for Loyola Marymount University, Occidental College, Mount St. Mary's College, Fox Studios, the Alameda Naval Station, and the Downey NASA site. Recent survey experience includes historic resource surveys for the cities of Los Angeles, Ventura, Glendale, Paso Robles, San Diego, and Fresno.

Prior to working at HRG, Paul worked as a research assistant at the Lewis Center for Regional Policy Studies performing academic research for study of transit-oriented development along the Pasadena Gold Line light rail system. Responsibilities include gathering and analysis of ridership data and adjacent development activity, and field observation of conditions surrounding transit stops.

Paul Travis meets the *Secretary of the Interior's Professional Qualification Standards* in Historic Preservation Planning and History.

Selected Projects

Fresno Fulton Corridor Specific Plan and CEQA, Fresno
Fox Studios Master Plan, Century City
Gamble House Cultural Landscape Report, Pasadena
LAX Historic Assessments, Environmental Review, Preservation Plan
NBC Universal Evolution Plan, Universal City
Sunset Bronson Studios Master Planning, Hollywood
Sunset Gower Studios Master Planning, Hollywood
SurveyLA Citywide Survey, Los Angeles
Thacher School Campus Survey, CEQA & Historic Designation, Ojai

HISTORIC RESOURCES GROUP

LAURA JANSSEN
SENIOR ARCHITECTURAL HISTORIAN

Years of Experience: 17

Education

Master of Science, Historic Preservation, School of the Art Institute of Chicago

Courses in Graphic Design and Interior & Environmental Design, UCLA Extension

Bachelor of Fine Arts, Art History, UCLA

Honors and Awards

Los Angeles Conservancy Preservation Award

- Los Angeles County Arboretum, 2017
- 28th Street YMCA, 2013
- Hollywood Bungalow Courts, 2010
- Eastern-Columbia Building, 2008
- Ennis House, 2008
- Pasadena City Hall, 2008

California Preservation Foundation Preservation Design Award

- Rose Bowl, 2018
- Hall of Justice, 2015
- 28th Street YMCA, 2013
- Hollywood Bungalow Courts, 2010
- Ennis House, 2008
- Pasadena City Hall, 2008
- Sacramento Memorial Auditorium HSR, 2007

National Trust for Historic Preservation

- Pasadena City Hall, 2008

Professional Affiliations

Association for Preservation Technology International

Los Angeles Conservancy

National Trust for Historic Preservation

DOCOMOMO

Experience Profile

Laura has been with Historic Resources Group since 2003. At Historic Resources Group, Laura prepares historic structure reports, resource evaluations and historic assessment reports including character-defining features inventories, and conducts on-site existing conditions investigations, and reviews projects for Standards compliance. She prepares National and California Register nominations, local landmark nominations, California Mills Act historic property contract applications, federal tax credit submittals, technical reports, and assists with historic resource surveys.

During her graduate studies, Laura developed a preservation plan for Norwood Park, a suburban residential neighborhood of Chicago, and produced documentation reports for the Portuma Estate complex in County Gallway, Ireland. She received honorable mention in the 2000 Charles E. Peterson Prize for her measured drawings of Quinn Chapel in Chicago for the Historic American Building Survey. After graduation she worked for the National Park Service where she completed an architectural survey for the Historic American Engineering Record documenting Detroit's industrial riverfront.

Laura Janssen meets the *Secretary of the Interior's Professional Qualifications Standards* in Architectural History and History.

Selected Projects

Doris Duke's Shangri-La Historic Structure Report
Eastern-Columbia Building
Frank Lloyd Wright's Ennis House
Gamble House
Hollywood Bungalow Courts
Hollywood Palladium
John Lautner's Stevens House
Los Angeles Arboretum & Botanic Garden Cultural Landscape Report
Los Angeles County Hall of Justice
Los Angeles Examiner Building
Los Angeles Memorial Coliseum
Lummis House
Pasadena City Hall
Queen Anne Cottage Historic Structure Report
Rose Bowl
Sacramento Memorial Auditorium
St. Vincent de Paul Church

HISTORIC RESOURCES GROUP

ROBBY ARANGUREN
PLANNING ASSOCIATE
GIS SPECIALIST

Years of Experience: 11

Education

Bachelor of Arts in Interdisciplinary Studies: Architecture, Urban Planning, and Business (Real Estate)
University of Texas, Arlington

Honors and Awards

California Preservation Foundation

- Preservation Design Award: *Wallis Annenberg Center for the Performing Arts, 2014*
- Preservation Design Award: *Lincoln Place Apartments, 2015*

Professional Affiliations

Los Angeles Conservancy

Los Angeles GIS Data Portal

California Preservation Foundation

Experience Profile

Robby Aranguren is a Planning Associate/GIS Specialist with 11 years of experience in historic preservation in Southern California. Robby joined Historic Resources Group in 2009 as an intern and became full staff in 2010.

At HRG, Robby provides mapping, database creation and management, photography, and research for historic assessments. He also provides assistance with character-defining features inventories and paint analysis studies. He is proficient with the Microsoft Access Database, FiGSS GIS Survey System, Photoshop, Google SketchUp, ESRI ArcMap and ArcCatalog. He has worked on numerous large-scale historic resources surveys, building and manipulating large databases.

Prior to joining HRG, Robby worked at the City of Los Angeles, Office of Historic Resources, Department of Planning, preparing staff reports for Historic-Cultural Monument applications, preparing E-newsletters, assisting in the development of the Mills Act 2010 Online Application and Guide. Robby also served as acting secretary at Cultural Heritage Commission meetings and conducted building permit research.

Robby Aranguren meets the *Secretary of the Interior's Professional Qualifications Standards* in History and Architectural History.

Selected Projects

SurveyLA, Los Angeles
CBS Columbia Square Paint Sampling
Chapman University VPOA Window Survey
City of Riverside Modernism Survey
City of Palm Springs Citywide Survey
City of South Pasadena Citywide Survey Update
Glendale Central Air Terminal Paint Sampling
South Glendale Historic Context Statement & Historic Resources Survey
Jordan House Rehabilitation & Construction Monitoring, Whittier
Lincoln Place Apartments Historic Tax Credit, Los Angeles
UC Riverside Citrus Experiment Station Character-defining Features Inventory
Villa Elaine Character-defining Features Inventory
Wallace Annenberg Center for the Performing Arts Adaptive Reuse and Historic Tax Credit, Beverly Hills

Appendix

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Appendix E Noise Modeling Data

Fundamentals of Noise

NOISE

Noise is most often defined as unwanted sound; whether it is loud, unpleasant, unexpected, or otherwise undesirable. Although sound can be easily measured, the perception of noise and the physical response to sound complicate the analysis of its impact on people. People judge the relative magnitude of sound sensation in subjective terms such as "noisiness" or "loudness."

Noise Descriptors

The following are brief definitions of terminology used in this chapter:

- **Sound.** A disturbance created by a vibrating object, which, when transmitted by pressure waves through a medium such as air, is capable of being detected by a receiving mechanism, such as the human ear or a microphone.

- **Noise.** Sound that is loud, unpleasant, unexpected, or otherwise undesirable.

- **Decibel (dB).** A unitless measure of sound, expressed on a logarithmic scale and with respect to a defined reference sound pressure. The standard reference pressure is 20 micropascals (20 μPa).

- **A-Weighted Decibel (dBA).** An overall frequency-weighted sound level in decibels that approximates the frequency response of the human ear.

- **Equivalent Continuous Noise Level (L_{eq}); also called the Energy-Equivalent Noise Level.** The value of an equivalent, steady sound level which, in a stated time period (often over an hour) and at a stated location, has the same A-weighted sound energy as the time-varying sound. Thus, the L_{eq} metric is a single numerical value that represents the equivalent amount of variable sound energy received by a receptor over the specified duration.

- **Statistical Sound Level (L_n).** The sound level that is exceeded "n" percent of time during a given sample period. For example, the L_{50} level is the statistical indicator of the time-varying noise signal that is exceeded 50 percent of the time (during each sampling period); that is, half of the sampling time, the changing noise levels are above this value and half of the time they are below it. This is called the "median sound level." The L_{10} level, likewise, is the value that is exceeded 10 percent of the time (i.e., near the maximum) and this is often known as the "intrusive sound level." The L_{90} is the sound level exceeded 90 percent of the time and is often considered the "effective background level" or "residual noise level."

- **Maximum Sound Level (L_{max})**. The highest RMS sound level measured during the measurement period.
- **Root Mean Square Sound Level (RMS).** The square root of the average of the square of the sound pressure over the measurement period.

- **Day-Night Sound Level (L_{dn} or DNL).** The energy-average of the A-weighted sound levels occurring during a 24-hour period, with 10 dB added to the sound levels occurring during the period from 10:00 PM to 7:00 AM.

- **Community Noise Equivalent Level (CNEL).** The energy average of the A-weighted sound levels occurring during a 24-hour period, with 5 dB added from 7:00 PM to 10:00 PM and 10 dB from 10:00 PM to 7:00 AM. NOTE: For general community/environmental noise, CNEL and L_{dn} values rarely differ by more than 1 dB (with the CNEL being only slightly more restrictive – that is, higher than the L_{dn} value). As a matter of practice, L_{dn} and CNEL values are interchangeable and are treated as equivalent in this assessment.

- **Peak Particle Velocity (PPV).** The peak rate of speed at which soil particles move (e.g., inches per second) due to ground vibration.

- **Sensitive Receptor.** Noise- and vibration-sensitive receptors include land uses where quiet environments are necessary for enjoyment and public health and safety. Residences, schools, motels and hotels, libraries, religious institutions, hospitals, and nursing homes are examples.

Characteristics of Sound

When an object vibrates, it radiates part of its energy in the form of a pressure wave. Sound is that pressure wave transmitted through the air. Technically, airborne sound is a rapid fluctuation or oscillation of air pressure above and below atmospheric pressure that creates sound waves.

Sound can be described in terms of amplitude (loudness), frequency (pitch), or duration (time). Loudness or amplitude is measured in dB, frequency or pitch is measured in Hertz [Hz] or cycles per second, and duration or time variations is measured in seconds or minutes.

Amplitude

Unlike linear units such as inches or pounds, decibels are measured on a logarithmic scale. Because of the physical characteristics of noise transmission and perception, the relative loudness of sound does not closely match the actual amounts of sound energy. Table 1 presents the subjective effect of changes in sound pressure levels. Ambient sounds generally range from 30 dBA (very quiet) to 100 dBA (very loud). Changes of 1 to 3 dB are detectable under quiet, controlled conditions, and changes of less than 1 dB are usually not discernible (even under ideal conditions). A 3 dB change in noise levels is considered the minimum change that is detectable with human hearing in outside environments. A change of 5 dB is readily discernible to most people in an exterior environment, and a 10 dB change is perceived as a doubling (or halving) of the sound.

Table 1 Noise Perceptibility

Change in dB	Noise Level
± 3 dB	Barely perceptible increase
± 5 dB	Readily perceptible increase
± 10 dB	Twice or half as loud
± 20 dB	Four times or one-quarter as loud

Source: California Department of Transportation (Caltrans). 2013, September. Technical Noise Supplement ("TeNS").

Frequency

The human ear is not equally sensitive to all frequencies. Sound waves below 16 Hz are not heard at all, but are "felt" more as a vibration. Similarly, though people with extremely sensitive hearing can hear sounds as high as 20,000 Hz, most people cannot hear above 15,000 Hz. In all cases, hearing acuity falls off rapidly above about 10,000 Hz and below about 200 Hz.

When describing sound and its effect on a human population, A-weighted (dBA) sound levels are typically used to approximate the response of the human ear. The A-weighted noise level has been found to correlate well with people's judgments of the "noisiness" of different sounds and has been used for many years as a measure of community and industrial noise. Although the A-weighted scale and the energy-equivalent metric are commonly used to quantify the range of human response to individual events or general community sound levels, the degree of annoyance or other response also depends on several other perceptibility factors, including:

- Ambient (background) sound level
- General nature of the existing conditions (e.g., quiet rural or busy urban)
- Difference between the magnitude of the sound event level and the ambient condition
- Duration of the sound event
- Number of event occurrences and their repetitiveness
- Time of day that the event occurs

Duration

Time variation in noise exposure is typically expressed in terms of a steady-state energy level equal to the energy content of the time varying period (called L_{eq}), or alternately, as a statistical description of the sound level that is exceeded over some fraction of a given observation period. For example, the L_{50} noise level represents the noise level that is exceeded 50 percent of the time; half the time the noise level exceeds this level and half the time the noise level is less than this level. This level is also representative of the level that is exceeded 30 minutes in an hour. Similarly, the L_2, L_8 and L_{25} values represent the noise levels that are exceeded 2, 8, and 25 percent of the time or 1, 5, and 15 minutes per hour, respectively. These "n" values are typically used to demonstrate compliance for stationary noise sources with many cities' noise ordinances. Other values typically noted during a noise survey are the L_{min} and L_{max}. These values represent the minimum and maximum root-mean-square noise levels obtained over the measurement period, respectively.

Because community receptors are more sensitive to unwanted noise intrusion during the evening and at night, state law and many local jurisdictions use an adjusted 24-hour noise descriptor called the Community Noise Equivalent Level (CNEL) or Day-Night Noise Level (L_{dn}). The CNEL descriptor requires that an artificial increment (or "penalty") of 5 dBA be added to the actual noise level for the hours from 7:00 PM to 10:00 PM and 10 dBA for the hours from 10:00 PM to 7:00 AM. The L_{dn} descriptor uses the same methodology except that there is no artificial increment added to the hours between 7:00 PM and 10:00 PM. Both descriptors give roughly the same 24-hour level, with the CNEL being only slightly more restrictive (i.e., higher). The CNEL or L_{dn} metrics are commonly applied to the assessment of roadway and airport-related noise sources.

Sound Propagation

Sound dissipates exponentially with distance from the noise source. This phenomenon is known as "spreading loss." For a single-point source, sound levels decrease by approximately 6 dB for each doubling of distance from the source (conservatively neglecting ground attenuation effects, air absorption factors, and barrier shielding). For example, if a backhoe at 50 feet generates 84 dBA, at 100 feet the noise level would be 79 dBA, and at 200 feet it would be 73 dBA. This drop-off rate is appropriate for noise generated by on-site operations from stationary equipment or activity at a project site. If noise is produced by a line source, such as highway traffic, the sound decreases by 3 dB for each doubling of distance over a reflective ("hard site") surface such as concrete or asphalt. Line source noise in a relatively flat environment with ground-level absorptive vegetation decreases by an additional 1.5 dB for each doubling of distance.

Psychological and Physiological Effects of Noise

Physical damage to human hearing begins at prolonged exposure to noise levels higher than 85 dBA. Exposure to high noise levels affects the entire system, with prolonged noise exposure in excess of 75 dBA increasing body tensions, thereby affecting blood pressure and functions of the heart and the nervous system. Extended periods of noise exposure above 90 dBA results in permanent cell damage, which is the main driver for employee hearing protection regulations in the workplace. For community environments, the ambient or background noise problem is widespread, through generally worse in urban areas than in outlying, less-developed areas. Elevated ambient noise levels can result in noise interference (e.g., speech interruption/masking, sleep disturbance, disturbance of concentration) and cause annoyance. Since most people do not routinely work with decibels or A-weighted sound levels, it is often difficult to appreciate what a given sound pressure level number means. To help relate noise level values to common experience, Table 2 shows typical noise levels from familiar sources.

Table 2 Typical Noise Levels

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
Onset of physical discomfort	120+	
	110	Rock Band (near amplification system)
Jet Flyover at 1,000 feet		
	100	
Gas Lawn Mower at three feet		
	90	
Diesel Truck at 50 feet, at 50 mph		Food Blender at 3 feet
	80	Garbage Disposal at 3 feet
Noisy Urban Area, Daytime		
	70	Vacuum Cleaner at 10 feet
Commercial Area		Normal speech at 3 feet
Heavy Traffic at 300 feet	60	
		Large Business Office
Quiet Urban Daytime	50	Dishwasher Next Room
Quiet Urban Nighttime	40	Theater, Large Conference Room (background)
Quiet Suburban Nighttime		
	30	Library
Quiet Rural Nighttime		Bedroom at Night, Concert Hall (background)
	20	
		Broadcast/Recording Studio
	10	
Lowest Threshold of Human Hearing	0	Lowest Threshold of Human Hearing

Source: California Department of Transportation (Caltrans). 2013, September. Technical Noise Supplement ("TeNS").

Vibration Fundamentals

Vibration is an oscillatory motion through a solid medium in which the motion's amplitude can be described in terms of displacement, velocity, or acceleration. Vibration is normally associated with activities stemming from operations of railroads or vibration-intensive stationary sources, but can also be associated with construction equipment such as jackhammers, pile drivers, and hydraulic hammers. As with noise, vibration can be described by both its amplitude and frequency. Vibration displacement is the distance that a point on a surface moves away from its original static position; velocity is the instantaneous speed that a point on a surface moves; and acceleration is the rate of change of the speed. Each of these descriptors can be used to correlate vibration to human response, building damage, and acceptable equipment vibration levels. During construction, the operation of construction equipment can cause groundborne vibration. During the operational phase of a project, receptors may be subject to levels of vibration that can cause annoyance due to noise generated from vibration of a structure or items within a structure.

Vibration amplitudes are usually described in terms of either the peak particle velocity (PPV) or the root mean square (RMS) velocity. PPV is the maximum instantaneous peak of the vibration signal and RMS is the

square root of the average of the squared amplitude of the signal. PPV is more appropriate for evaluating potential building damage and RMS is typically more suitable for evaluating human response.

As with airborne sound, annoyance with vibrational energy is a subjective measure, depending on the level of activity and the sensitivity of the individual. To sensitive individuals, vibrations approaching the threshold of perception can be annoying. Persons accustomed to elevated ambient vibration levels, such as in an urban environment, may tolerate higher vibration levels. Table 3 displays the human response and the effects on buildings resulting from continuous vibration (in terms of various levels of PPV).

Table 3 Human Reaction to Typical Vibration Levels

Vibration Level, PPV (in/sec)	Human Reaction	Effect on Buildings
0.006–0.019	Threshold of perception, possibility of intrusion	Vibrations unlikely to cause damage of any type
0.08	Vibrations readily perceptible	Recommended upper level of vibration to which ruins and ancient monuments should be subjected
0.10	Level at which continuous vibration begins to annoy people	Virtually no risk of "architectural" (i.e. not structural) damage to normal buildings
0.20	Vibrations annoying to people in buildings	Threshold at which there is a risk to "architectural" damage to normal dwelling – houses with plastered walls and ceilings
0.4–0.6	Vibrations considered unpleasant by people subjected to continuous vibrations and unacceptable to some people walking on bridges	Vibrations at a greater level than normally expected from traffic, but would cause "architectural" damage and possibly minor structural damage

Source: California Department of Transportation (Caltrans). 2020, April. *Transportation and Construction Vibration Guidance Manual*. Prepared by ICF International.

LOCAL REGULATIONS AND STANDARDS

City of Pasadena

Revised Noise Element

of the General Plan

Objectives, Policies, and Implementation

December 2002

City of Pasadena

Revised Noise Element
of the General Plan

Objectives, Policies, and Implementation

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December 2002

City of Pasadena Revised Noise Element

Objectives, Policies, and Implementation

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Objectives, Policies, and Implementation

Introduction

The City of Pasadena is affected by several different sources of noise, including automobile traffic, Rose Bowl events, commercial activity, and periodic nuisances such as construction, loud parties, and other events. The Noise Element is intended to identify these sources and provide objectives and policies that ensure that noise from these sources does not create an unacceptable noise environment. Noise is a normal part of the urban environment. However, controlling noise sources can make a substantial improvement in the quality of life for City residents.

The major noise sources in Pasadena are listed below and are discussed in detail in the *Existing and Future Conditions* report:

Transportation-Related Noise Sources

- Traffic on Interstates 210 and 710, State Routes 134 and 110
- Street Traffic
- Future Light Rail
- Aircraft Flyovers

Other Noise Sources

- Central Arroyo
- Commercial Activity
- Nuisance Noise
- Pasadena Police Department Eaton Canyon Shooting Range

The overriding objective of the Noise Element in the General Plan is to minimize exposure of residents, workers, and visitors to excessive noise levels, while maximizing the Land Use Element's objectives to encourage mixed-use development in the Central District and other Specific Plan areas as well as to promote economic vitality. Specific objectives and policies relevant to each of the specific noise issues are listed below.

Transportation-Related Noise Sources

Interstates 210 and 710, State Routes 134 and 110

Motor vehicle noise is the most common and widely dispersed continuous source in the City of Pasadena. The roadways that generate the most noise

include the Foothill Freeway (Interstate 210) and the Ventura Freeway (State Route 134). In different parts of the City, Interstate 210 is both a north-south and east-west travel corridor. State Route 134 is an east-west travel corridor in the western portions of the City. To a lesser extent, the Long Beach Freeway is used for north-south travel. The City is also minimally affected by noise associated with the one-quarter mile segment of the Pasadena Freeway (SR110), which enters the City at the southern end of Arroyo Parkway and terminates at Glenarm Street.

Objective 1 The City will work to reduce the effects of noise from freeway traffic on residential and other sensitive land uses.

Policy 1a The City will encourage noise-compatible land uses near existing freeways.

Policy 1b The City will cooperate with Caltrans and Metropolitan Transportation Authority (MTA) to landscape or install noise attenuation along freeways adjacent to residential or noise sensitive uses.

Street Traffic

The major north-south roadways in the City include Lincoln Avenue, Fair Oaks Avenue, Los Robles Avenue, Lake Avenue, Allen Avenue, Altadena Drive, San Gabriel Boulevard, and Rosemead Boulevard. The major east-west roadways include Orange Grove Boulevard, Walnut Street, Colorado Boulevard, Sierra Madre Boulevard, and Del Mar Boulevard. Noise from these major roadways may affect sensitive receptors.

Objective 2 The City will work to reduce the effects of traffic-generated noise from major roadways on residential and other sensitive land uses.

Policy 2a The City will encourage noise-compatible land uses along major roadways.

Policy 2b The City will encourage site planning and traffic control measures that minimize the effects of traffic noise in residential zones.

Policy 2c The City will encourage the use of alternative transportation modes as stipulated in the Mobility Element (walking, bicycling, transit use, electric vehicles) to minimize traffic noise in the City.

Policy 2d The City will work with local and regional transit agencies and businesses to provide transportation services that reduce traffic and associated noise as stipulated in the Mobility Element.

Policy 2e The City will work to reduce the effects of traffic-related noise in residential neighborhoods, including but not limited to neighborhoods adjacent to South Orange Grove Boulevard, Saint John Avenue, Pasadena Avenue, California Boulevard, and other busy streets passing thorough residential neighborhoods.

Future Light Rail

The Los Angeles to Pasadena Metro Construction Authority is constructing a passenger light rail service that will connect Pasadena business centers with downtown Los Angeles. Future train traffic will generate noise that may exceed acceptable levels for noise-sensitive uses along the rail corridor.

Objective 3 The City will minimize noise from the Los Angeles to Pasadena Metro Line on residential and other sensitive land uses.

Policy 3a The City will encourage noise-compatible land uses and mitigation measures near the Los Angeles to Pasadena Metro Line rail system.

Policy 3b After commencing operations and regularly thereafter, the City will work with the Los Angeles to Pasadena Metro Blue Line Construction Authority and/or the Los Angeles County Metropolitan Transportation Authority (LACMTA) to install noise attenuation features if the Gold Line (formerly known as the Blue Line) adversely affects existing adjacent residential or other noise-sensitive uses (refer to Implementation Measure 13).

Aircraft Flyovers

Activity from commercial and private aircraft, emergency and traffic-monitoring helicopters contribute to the general noise environment. In particular, low-flying helicopters are a source of noise complaints in the City.

Objective 4 Considering the City's legal authority, the City will encourage minimizing noise from aircraft flyovers on residential and other sensitive land uses.

Policy 4a The City will work with local and regional agencies, including Los Angeles County and other agencies utilizing Fire Camp #2, to reduce excessive noise associated with aircraft flyovers.

Policy 4b The City will work with federal agencies to determine appropriate standards for helicopter noise.

Policy 4c The Pasadena Police Department will work to minimize helicopter noise throughout the City to the extent feasible, taking into account operational requirements and the need to protect public health and safety.

Policy 4d The City will work with federal agencies to reduce airplane noise to the extent feasible.

Other Noise Sources

Central Arroyo

Sports, music and other events at the Rose Bowl, Brookside Park, the Rose Bowl Aquatic Center, and the future Kids Space Museum in the Fannie Morrison Center have the potential to generate noise in the Central Arroyo. The noise levels for these activities are highly variable due to the fact that both the number of events occurring and the noise levels experienced from the events can fluctuate. However, a waiver from the Noise Restrictions Ordinance (Chapter 9.36 of the Municipal Code) has been required for some events because noise from those events exceeded permitted levels.

Objective 5 The City will balance the effects of noise associated with events held in the Central Arroyo with the benefits of events occurring at Central Arroyo facilities.

Policy 5a The City will continue to seek improvements to noise-generating equipment and activities at the Rose Bowl, Aquatics Center, Jackie Robinson Field, Brookside Park, Area H, and the future Kids Space Museum in order to minimize the effects of noise on nearby residents.

Policy 5b The City will continue to coordinate events in the Central Arroyo to minimize noise to the degree feasible.

Commercial Activity

Noise generated by commercial operations, maintenance, truck deliveries and traffic can affect adjacent residential areas and other sensitive land uses. Future industrial and commercial development should generally be located away from existing and planned residential and other sensitive zones. Day and night activities and special events in the Central District and other mixed-use areas are expected to generate urban noise throughout the year.

Objective 6 The City will minimize noise spillovers from commercial and industrial operations into adjacent residential neighborhoods and other sensitive uses, while maximizing the Land Use Element's objectives to encourage mixed-use development in

the Central District and other Specific Plan areas as well as to promote economic vitality.

Policy 6a The City will encourage automobile and truck access to industrial and commercial properties abutting residential zones to be located at the maximum practical distance from residential zones.

Policy 6b The City will limit the use of motorized landscaping equipment, parking lot sweepers, and other high-noise equipment on commercial properties if their activity will result in noise that adversely affects residential zones.

Policy 6c The City will encourage limitations on the hours of truck deliveries to industrial and commercial properties abutting residential zones unless there is no feasible alternative or there are substantial transportation benefits for scheduling deliveries at another hour.

Nuisance Noise

The City occasionally receives complaints about individual sources of nuisance noise, including loud parties, events, and gardening equipment. Construction activity is also a source of occasional temporary nuisance noise throughout the City. These and other such nuisance noises are common to cities and, because of their unpredictable nature, must be addressed on a case-by-case basis.

Objective 7 The City will minimize the effects of nuisance noise on sensitive land uses as defined in Figure 1 to the degree feasible.

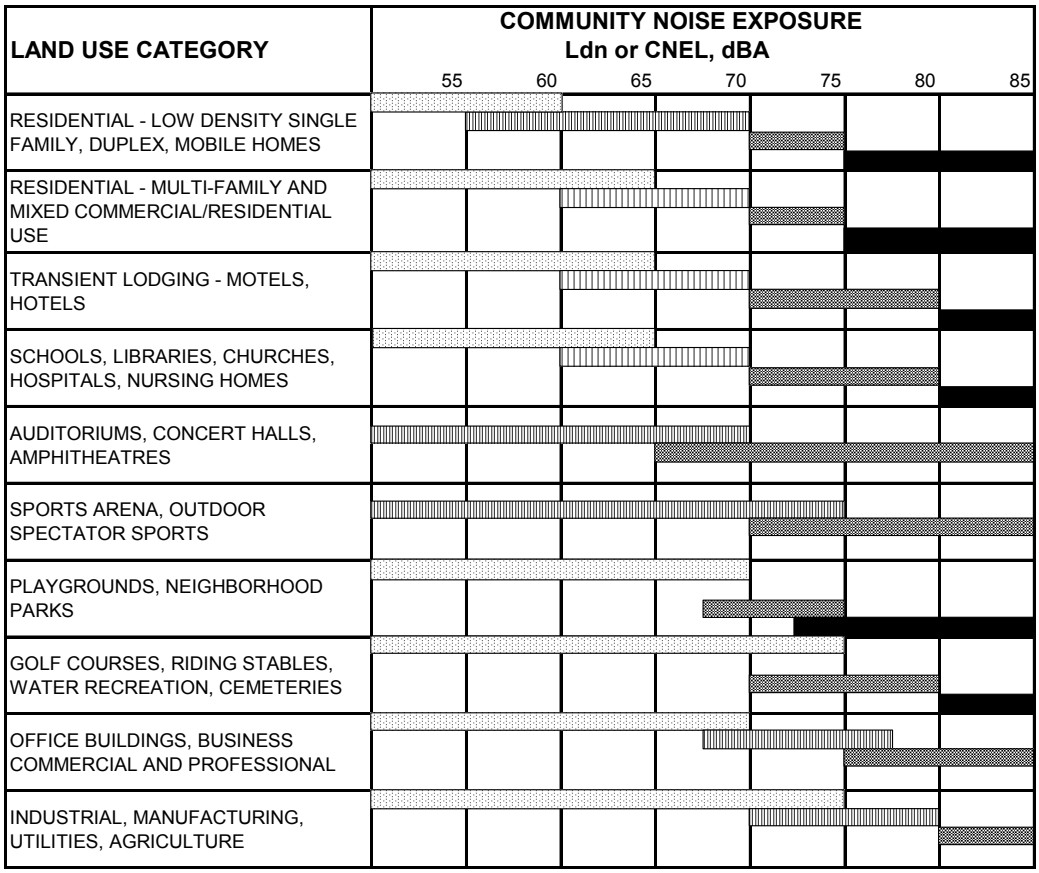
Policy 7a Whenever possible, City-sponsored events that generate noise will be scheduled during hours when effects would be minimal.

Policy 7b The City will encourage limitations on construction activities adjacent to sensitive noise receptors as defined in Figure 1.

Policy 7c The City will encourage construction and landscaping activities that employ techniques to minimize noise.

Policy 7d The City will enforce noise level restrictions contained in the City of Pasadena Noise Regulations (Chapter 9.36 of the Municipal Code), except during federal, State, or local emergencies (such as power generators required for energy emergencies).

Figure 1 Guidelines for Noise Compatible Land Use



CLEARLY ACCEPTABLE
Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.

CONDITIONALLY ACCEPTABLE
If new construction or development proceeds, an analysis of the noise reduction requirements should be made and needed noise insulation features included in the design.

NORMALLY ACCEPTABLE
New construction or development should be undertaken after an analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.

NORMALLY UNACCEPTABLE
New construction or development should generally not be undertaken, unless it can be demonstrated that an interior level of 45 dBA can be achieved.

** Please note that these guidelines are general and may not apply to specific sites.*

Source: California General Plan Guidelines, 1998, as modified by the City of Pasadena, 2002.

Pasadena Police Department Eaton Canyon Firing Range

Noise generated at the Pasadena Police Department Eaton Canyon Firing Range is a source of concern for residents. Noise from this facility can be particularly irritating due to the impulsive sound emanating from gunfire.

Objective 8 The City will minimize noise emanating from the Eaton Canyon Firing Range into residential areas and other sensitive land uses.

Policy 8a The City will limit exterior activity within the Eaton Canyon Firing Range to work towards noise remaining within acceptable levels at nearby residences.

Implementation Measures

The following implementation measures are designed to carry out the objectives and policies of the Noise Element.

Measure 1 The City will consult the guidelines for noise compatible land use shown on Figure 1 to guide the appropriateness of land uses relative to roadway noise. [Policies 1a, 2a]

Measure 2 An acoustical study showing the ability to meet state noise insulation standards may be required for any development proposed in an area where the noise level, as indicated on Figures 2 and 3, exceeds the "clearly acceptable level" as determined by the City and shown on Figure 1. [Policies 1a, 2a]

Measure 3 The City will enforce the California Noise Insulation Standards (Title 25 California Administration Code for future development and redevelopment) to ensure an acceptable interior noise level of 45dBA Ldn in habitable rooms. [Policies 1a, 2a]

Measure 4 The City will consider the use of alternative paving materials that can reduce traffic noise, as feasible, depending on roadway conditions and cost efficiency. [Policies 1b, 2b]

Measure 5 The City will consider the use of "traffic calming" devices, to reduce traffic speed in residential zones. [Policies 2b, 2d]

Measure 6 The City will cooperate with Caltrans in the planning of noise attenuation along freeways. [Policy 1b]

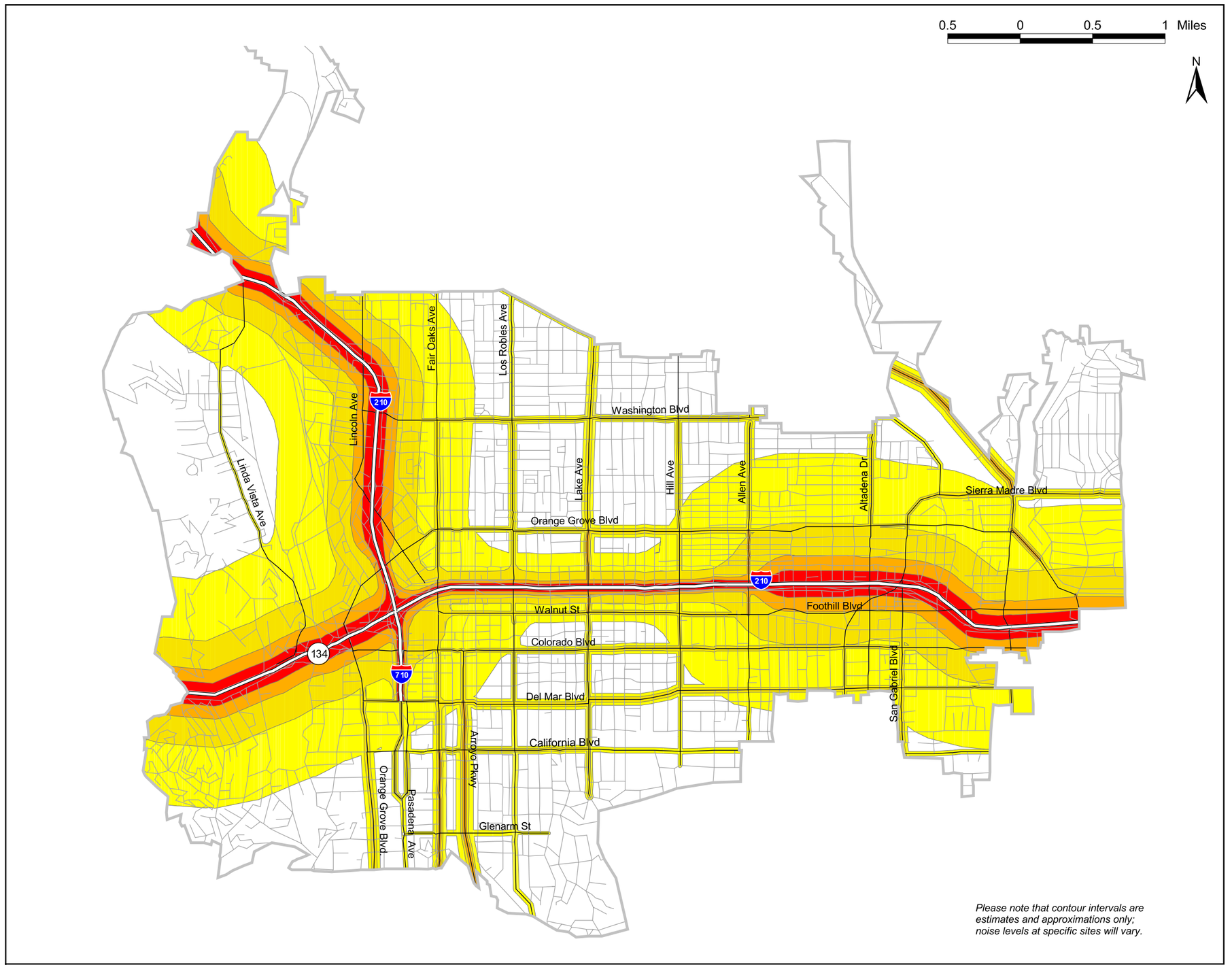
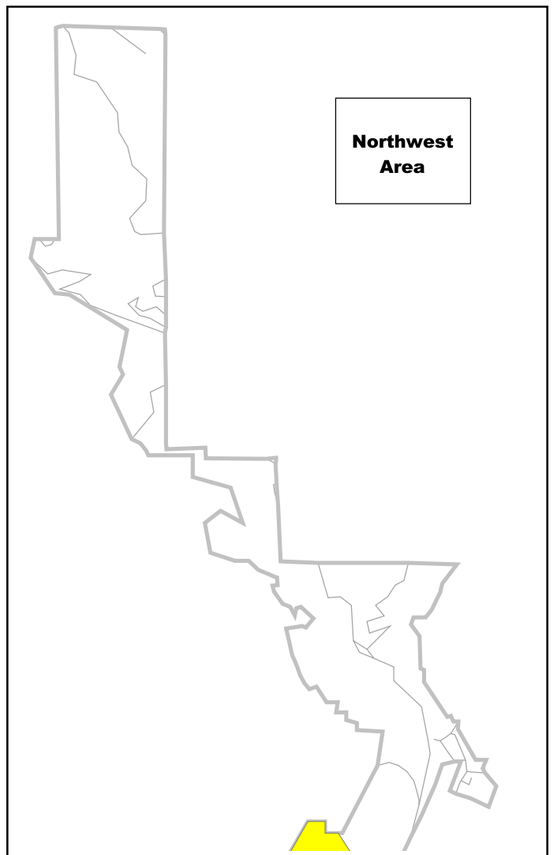
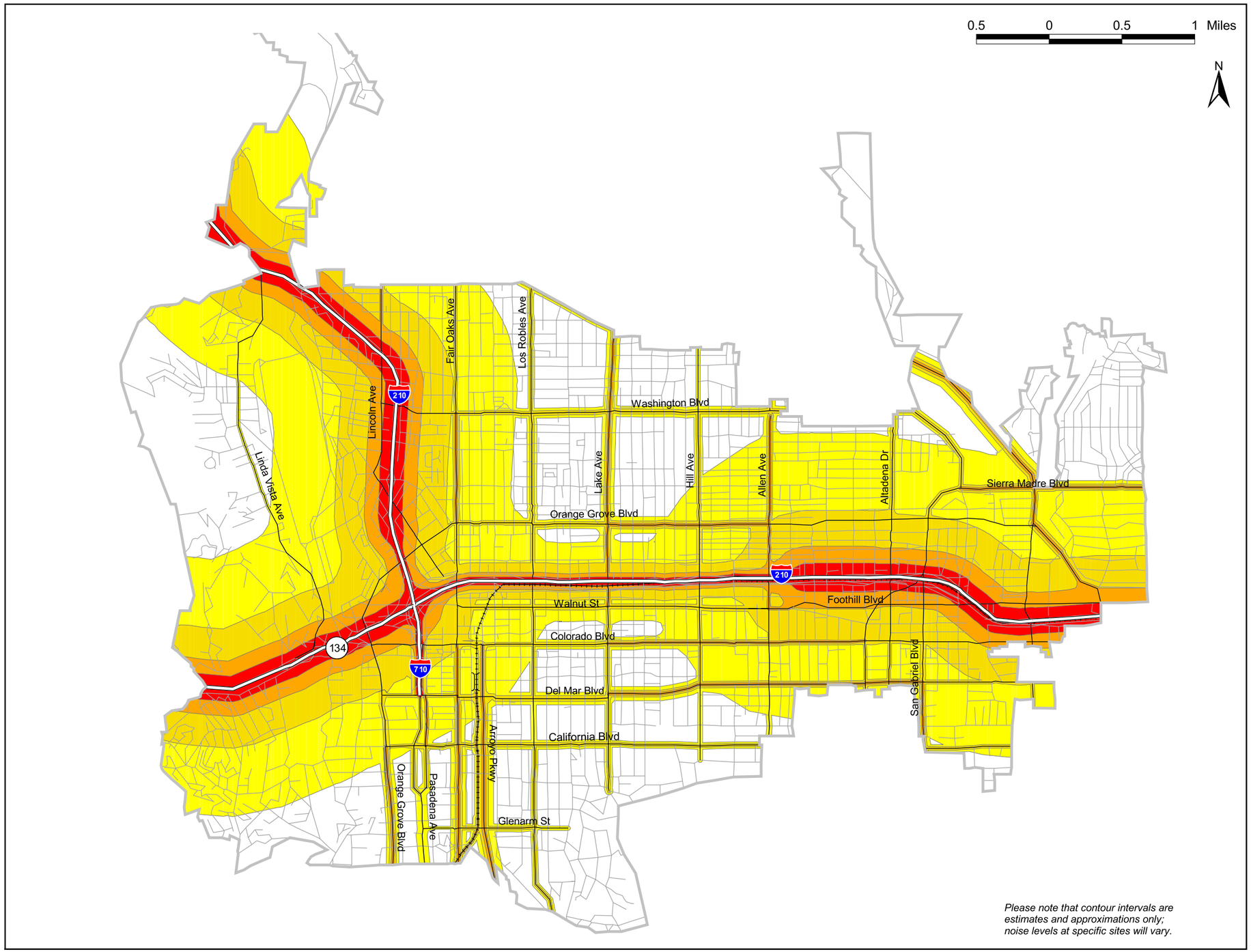


Figure 2 Existing Noise Contours (2001)





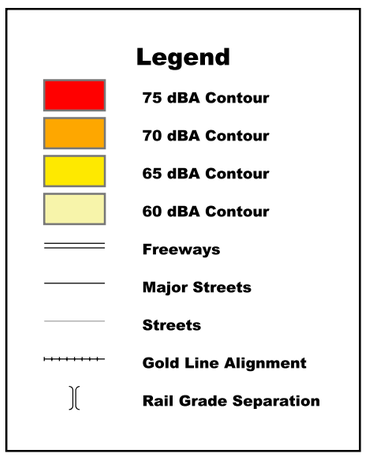


Figure 3 Future Noise Contours (2015)

Measure 7 The City will periodically review major roadways and designated truck routes to reduce traffic in residential zones. [Policy 2b]

Measure 8 As feasible and practical, new equipment purchased by the City will meet noise performance standards consistent with the best available noise reduction technology. [Policy 7c]

Measure 9 The City will review and update the Noise Restrictions Ordinance at least every five years (Chapter 9.36 of the Pasadena Municipal Code) to ensure effectiveness in controlling noise sources. [Policies 6b, 6c, 7b, 7c]

Measure 10 The City will enforce Chapter 9.37 of the Pasadena Municipal Code on the hours, use, and maintenance of leaf blowing machines. [Policy 7c]

Measure 11 The City will consider amending the Pasadena Municipal Code to restrict the use of other landscape equipment and heating, ventilation, and air conditioning (HVAC) equipment if problems arise in the future. [Policy 7d]

Measure 12 The City will monitor implementation of noise-related mitigation measures outlined in the General Plan FEIR to ensure effectiveness in minimizing noise from mobile sources. [Policies 2c, 2b, 2c]

Measure 13 The City will monitor implementation of mitigation measures outlined in the Final Supplemental Environmental Impact Report for the Los Angeles Light Rail Transit project (1993) to verify their success in minimizing noise from the Gold Line (formerly known as the Blue Line). [Policy 3b]

Measure 14 The City will work with the Federal Aviation Administration (FAA) to determine appropriate altitude standards for aircraft flying over congested areas, taking into account public health and safety.[*] [Policies 4a, 4b, 4d]

Measure 15 The City will cooperate with the County Fire Department and Metropolitan Water District to minimize noise conflicts associated with Los Angeles County Fire Department helicopter activity. [Policy 4a]

Measure 16 The City Police Department will continue to implement its standard operating procedures for helicopters to minimize noise conflicts. [Policy 4a]

[*] *Note: Several community groups around the country are lobbying for a 1,000 foot minimum altitude for helicopter flyovers.*

Measure 17 The Police Department and the Environmental Health Division will coordinate tracking of community noise complaints. [Policy 7d]

Measure 18 The City will consider adoption of financial penalties for repeated violations of Pasadena Noise Restrictions Ordinance (Chapter 9.36 of the Municipal Code). [Policy 7d]

Measure 19 The City will continue to monitor noise levels at the Pasadena Police Department Eaton Canyon Firing Range. [Policy 8a]

Measure 20 The City will pursue funding to enclose the pistol range at the Pasadena Police Department Eaton Canyon Firing Range. [Policy 8a]

Measure 21 The City will encourage new developments to site outdoor commercial areas and gathering places, loading areas, parking lots, driveways, trash enclosures, mechanical equipment, and other noisier components away from residential zones and other sensitive uses as defined in Figure 1, to the extent feasible, unless the siting of such components near to noise-sensitive uses provides transportation or other benefits. [Policies 7a, 7b, 7c]

Measure 22 The City will limit new heliports to the Central District or other appropriate areas and will condition new heliports to minimize noise at sensitive uses as defined in Figure 1. [Policy 4c]

Measure 23 The City will encourage commercial and/or industrial uses abutting residential zones to limit deliveries and trash pick-ups from 7:00 A.M. to 9:00 P.M. Monday through Saturday, unless there are substantial transportation or other benefits for different times. [Policy 6c]

Measure 24 The City will continue to enforce the Transportation Management Program Ordinance (Chapter 10.64 of the Pasadena Municipal Code) to reduce vehicle trips and associated noise. [Policies 2b, 2c, 2d]

Measure 25 The City will work with the FAA to limit aircraft operating in the vicinity of the Rose Bowl. [Policies 4c, 4d]

Measure 26 The City will warn new residents and other sensitive noise receptors (refer to Figure 1) about the potential for noise in the Central District and other mixed-use areas. [Policies 6a, 6b, 6c, 7a]

Measure 27 The City will periodically monitor noise levels at major events in the Central Arroyo to determine whether or not current restrictions are achieving acceptable noise levels. [Policy 5a]

Noise Evaluation and Mitigation

The following provides a general methodology to be followed in the evaluation of potential noise problems associated with new development in Pasadena.

When mitigation must be applied to new development to ensure an acceptable noise environment, the following approaches will be considered. First preference will be given to approach (a). Second preference will be given to approach (b). Due to possible aesthetic concerns regarding the use of sound walls, approach (c) will be used only if neither approach (a) nor (b) will achieve desired noise conditions.

a. *Site layout, including setbacks, open space separation and shielding of noise sensitive uses with non-noise-sensitive uses; then*

b. *Acoustical treatment of buildings (see Standard Mitigation Packages below for the types of treatment normally required depending upon the amount of noise reduction needed); then*

c. *Structural measures: Construction of earthen berms or wood or concrete barriers.*

Standard Mitigation Packages

Below are standard mitigation packages that can generally be used to mitigate interior building noise if the needed noise reduction is 30 dBA or less and the noise problem is from a single source.

1. If a 15-20 dBA reduction is needed, the following may suffice:
    a. Air conditioning or a mechanical ventilation system; and
    b. Windows and sliding glass doors should be double-paned glass and mounted in low air infiltration rate frames (0.5 cfm or less, per American National Standard Institute [ANSI] specifications); and
    c. Solid core exterior doors with perimeter weather stripping and threshold seals
2. If a 20-25 dBA reduction is needed, the following may suffice:
    a. Same as No. 1a-c; and
    b. Exterior walls consist of stucco or brick veneer. Wood siding with a 1/2” minimum thickness fiberboard underlayer may also be used; and

c. Glass in both windows and doors should not exceed 20% of the floor area in a room; and

d. Roof or attic vents facing the noise source should be baffled.

3. If a 25-30 dBA reduction is needed, the following may suffice:

   a. Same as No. 2a-d; and

   b. The interior sheetrock of exterior wall assemblies should be attached to studs by resilient channels. Staggered studs or double walls are acceptable alternatives; and

   c. Window assemblies should have a laboratory-tested STC rating of 30 or greater (Windows that provide superior noise reduction capability and that are laboratory-tested are sometimes called "sound-rated" windows. In general, these windows have thicker glass and/or increased air space between panes. In contrast, standard energy conservation double-pane glazing with a 1/8" or 1/4" air space may be less effective in reducing noise from some noise sources than single pane glazing).

Standard Disclosure in New or Rehabilitated Residential Developments in Mixed-Use Areas

When the City exercises discretionary review, provides financial assistance, or otherwise facilitates residential projects in the Central District, Specific Plan areas, or other mixed-use districts, written warnings to potential residents about noise should be made a condition of that approval, assistance, or facilitation. The following language is provided as an example:

> *"All potential buyers and/or renters of residential property within Pasadena's Central District, Specific Plan areas, and/or other mixed-use districts are hereby notified that they may be subject to audible noise levels attributed to business and entertainment-related activities common to such areas, including amplified sound, music, delivery vehicles, pedestrian and vehicular traffic, and other urban noise."*

Chapter 9.36 - NOISE RESTRICTIONS*

Sections:

9.36.010 - Short title.

This chapter shall be known as the "noise restrictions ordinance."

(Ord. 7150 § 2 (part), 2008)

9.36.020 - Declaration of policy.

It is declared to be the policy of the city to prohibit unnecessary, excessive and annoying noises from all sources pursuant to its police power. Noise at certain levels is detrimental to the health and welfare of the general public. Consequently, it shall be systematically proscribed in the public interest.

(Ord. 7150 § 2 (part), 2008)

9.36.030 - Definitions.

As used in this chapter, unless the context otherwise clearly indicates, the words and phrases used in the ordinance codified in this chapter are defined as follows:

A. "Ambient noise" means the all-encompassing noise associated with a given environment, being usually a composite of many sources near and far. For the purpose of this chapter, ambient noise level is the level obtained when the noise level is averaged over a period of 15 minutes without inclusion of noise from isolated identifiable sources, at the location and time of day near that at which a comparison is to be made. This value shall not include noise from occasional, or occasional and transient sources.

B. "A-weighted sound level" means the sound level in decibels as measured on sound level meter using the A weighting network. The level so read is designated "dB(A)" or "dBA."

C. "Commercial purpose" means and includes the use, operation or maintenance of any sound amplifying equipment for the purpose of advertising any business, or any goods, or any services, or for the purpose of attracting the attention of the public to, or advertising for, or soliciting patronage or customers to or for any performance, show, entertainment, exhibition or event, or for the purpose of demonstrating such sound equipment.

D. "Decibel" means a unit measure of sound (noise) level. It is a unit for expressing the relative intensity of sounds on a scale from zero for the average least perceptible sound to about 130 for the average pain level; also a unit for expressing the ratio of two amounts of electric or acoustic signal power equal to 10 times the common logarithm of this ratio.

E. "Emergency work" means work made necessary to restore property to a safe condition

following a public calamity or work required to protect persons or property from an imminent exposure to danger or work by private or public utilities when restoring utility service.

F. "General noise" means noise from any source not specifically exempted in this chapter.

G. "Noncommercial purpose" means the use, operation or maintenance of any sound equipment for other than a commercial purpose. "Noncommercial purpose" means and includes, but shall not be limited to, religious, philanthropic, political, patriotic and charitable purposes.

H. "Property line" means the line that separates private property or the event from the public right-of-way.

I. "Sound amplifying equipment" means any machine or device for the amplification of the human voice, music or any other sound. "Sound amplifying equipment" shall not include standard automobile radios when used and heard only by the occupants of the vehicle in which the automobile radio is installed. "Sound amplifying equipment," as used in this chapter, shall not include warning devices on authorized emergency vehicles or horns or other warning devices on any vehicle used only for traffic safety purposes.

J. "Sound level" (noise level), in decibels (dB), is the sound measured with the A weighting and slow response by a sound level meter.

K. "Sound level meter" means an instrument including a microphone, an amplifier, an output meter and frequency weighting networks for the measurement of sound levels which satisfies the pertinent requirements in American Standard Specifications for sound level meters S1.4-1971 or the most recent revision thereof.

L. Supplementary Definitions of Technical Terms. Definitions of technical terms not defined herein shall be obtained from the American National Standards Institute's Acoustical Terminology S1-1-1971 or any revision thereof.

(Ord. 7150 § 2 (part), 2008)

9.36.040 - Ambient noise level.

A. When "ambient noise level" is referred to in this chapter, it means the actual measured ambient noise level.

B. Any sound level measurement made pursuant to the provisions of this chapter shall be measured with a sound level meter using the A weighting.

1. Where the sound alleged to be offending is of a type or character set forth below, the following values shall be added to the sound level measurement of the offending noise:

a. Except for noise emanating from any electrical transformer or gas metering and pressure control equipment existing and installed prior to the effective date of the ordinance codified herein, any steady audible tone: + 5;

b. Repeated impulsive noise: + 5;

c. Noise occurring more than 5 but less than 15 minutes per hour: - 5;

d. Noise occurring more than 1 but less than 5 minutes per hour: - 10;

e. Noise occurring less than 1 minute per hour: -20.

2. Values of subsections (B)(1)(c), (B)(1)(d) and (B)(1)(e) of this section shall be added to the sound level measurements during daytime (6 a.m. to 11 p.m.) periods only.

(Ord. 7150 § 2 (part), 2008)

9.36.050 - General noise sources.

A. It is unlawful for any person to create, cause, make or continue to make or permit to be made or continued any noise or sound which exceeds the ambient noise level at the property line of any property by more than 5 decibels.

B. Notwithstanding any other provision of this chapter and in addition thereto it shall be unlawful for any person to willfully make or continue, or cause to be made or continued, any loud, unnecessary or unusual noise which disturbs the peace or quiet of any neighborhood or which causes discomfort or annoyance to any reasonable person of normal sensitiveness residing in the area. The standards which shall be considered in determining whether a violation of the provisions of this section exists shall include, but not be limited to, the following:

1. The level of the noise;
2. The intensity of the noise;
3. Whether the nature of the noise is usual or unusual;
4. Whether the origin of the noise is natural or unnatural;
5. The level and intensity of the background noise, if any;
6. The proximity of the noise to residential sleeping facilities;
7. The nature and zoning of the area within which the noise emanates;
8. The density of the inhabitation of the area within which the noise emanates;
9. The time of the day or night the noise occurs;
10. The duration of the noise;
11. Whether the noise is recurrent, intermittent or constant; and
12. Whether the noise is produced by a commercial or noncommercial activity.

(Ord. 7150 § 2 (part), 2008)

9.36.060 - Interior noise standard—Multifamily residential property.

It is unlawful for any person to produce, suffer or allow to be produced on any multifamily residential property, sounds at a level in excess of those enumerated in Table No. 1 when measured inside any dwelling unit on the same property or twenty (20) feet from the outside of the dwelling unit in which the noise source or sources may be located.

TABLE NO. 1—Interior Noise Standard

Time Interval	Interior Noise Standards (dBA)
7:00 a.m. to 10:00 p.m.	60
10:00 p.m. to 7:00 a.m.	50

(Ord. 7150 § 2 (part), 2008)

9.36.070 - Construction projects.

A. No person shall operate any pile driver, power shovel, pneumatic hammer, derrick power hoist, forklift, cement mixer or any other similar construction equipment within a residential district or within a radius of 500 feet therefrom at any time other than as listed below:
   1. From 7:00 a.m. to 7:00 p.m. Monday through Friday;
   2. From 8:00 a.m. to 5:00 p.m. on Saturday;
   3. Operation of any of the listed construction equipment is prohibited on Sundays and holidays.

B. No person shall perform any construction or repair work on buildings, structures or projects within a residential district or within a radius of 500 feet therefrom in such a manner that a reasonable person of normal sensitiveness residing in the area is caused discomfort or annoyance at any time other than as listed below:
   1. From 7:00 a.m. to 7:00 p.m. Monday through Friday;

2. From 8:00 a.m. to 5:00 p.m. on Saturday;
3. Performance of construction or repair work is prohibited on Sundays and holidays.

C. The prohibition against construction on Sundays and holidays as set forth in subsection B of this section shall not apply under either of the following conditions:
   1. The construction is actually performed by an individual who is the owner or lessor of the premises and who is assisted by not more than two individuals;
   2. The person performing the construction shall have provided the building official with a petition which indicates the consent of 65 percent of the households residing within 500 feet of the construction site and the unanimous consent of the households adjacent to the construction site. Said petition shall be on a form promulgated by said building official and shall be accompanied by a fee, the amount of which shall be established by resolution by the city council.

D. The prohibitions of this section shall not apply to the performance of emergency work as defined in Section 9.36.030.

E. For purposes of this section, holidays are New Year's Day, Martin Luther King Jr. Day, Lincoln's Birthday, Washington's Birthday, Memorial Day, Independence Day, Labor Day, Veterans Day, Thanksgiving Day, Day after Thanksgiving, and Christmas.

(Ord. 7150 § 2 (part), 2008)

9.36.080 - Construction equipment.

It is unlawful for any person to operate any powered construction equipment if the operation of such equipment emits noise at a level in excess of 85 dBA when measured within a radius of 100 feet from such equipment.

(Ord. 7150 § 2 (part), 2008)

9.36.090 - Machinery, equipment, fans and air conditioning.

Except for emergency work, as defined in this chapter it is unlawful for any person to operate any machinery, equipment, pump, fan, air conditioning apparatus or similar mechanical device in any manner so as to create any noise which would cause the noise level at the property line of any property to exceed the ambient noise level by more than 5 decibels.

(Ord. 7150 § 2 (part), 2008)

9.36.100 - Motor driven vehicles and vehicle repairs.

A. It is unlawful for any person within any residential area of the city to repair, rebuild or test any motor vehicle between the hours of 10 p.m. of one day and 8 a.m. of the next day in such a

manner that a reasonable person of normal sensitiveness residing in the area is caused discomfort or annoyance.

B. It is unlawful for any person to operate any motor driven vehicle within the city in such a manner that a reasonable person of normal sensitiveness residing in the area is caused discomfort or annoyance; provided, however, any such vehicle which is operated upon any public highway, street, or right-of-way shall be excluded from the provisions of this section.

(Ord. 7150 § 2 (part), 2008)

9.36.110 - Radio, television sets and similar devices.

A. Use Restricted. It is unlawful for any person within any residential zone of the city to use or operate any radio receiving set, musical instrument, phonograph, television set or other machine or device for the producing or reproducing of sound (between the hours of 10 p.m. of one day and 7 a.m. of the following day) in such a manner as to disturb the peace, quiet and comfort of neighboring residents or any reasonable person of normal sensitiveness residing in the area.

B. Prima Facie Violation. Any noise level exceeding the ambient base level at the property line of any property by more than 5 decibels is deemed to be prima facie evidence of a violation of the provisions of this section.

(Ord. 7150 § 2 (part), 2008)

9.36.120 - Near schools, hospitals and churches.

It is unlawful for any person to create any noise on any street, sidewalk or public place adjacent to any school, institution of learning, or church while the same is in use or adjacent to any hospital, which noise unreasonably interferes with the workings of such institution or which disturbs or unduly annoys patients in the hospital, provided conspicuous signs are displayed in such streets, sidewalk or public place indicating the presence of a school, church or hospital.

(Ord. 7150 § 2 (part), 2008)

9.36.130 - Hawkers and peddlers.

It is unlawful for any person within the city to sell anything by shouting out loud within any area of the city zoned for residential uses. The provisions of this section shall not be construed to prohibit the selling by yelling of merchandise, food and beverages at licensed sporting events, parades, fairs, circuses and other similar licensed public entertainment events.

(Ord. 7150 § 2 (part), 2008)

9.36.140 - Drums.

It is unlawful for any person to use any drum or other instrument or device of any kind for the purpose of attracting attention by the creation of noise within the city. This section shall not apply to any person who is a participant in a school band or duly licensed parade or who has been otherwise duly authorized to engage in such conduct.

(Ord. 7150 § 2 (part), 2008)

9.36.150 - Animals and fowl.

No person shall keep or maintain, or permit the keeping of, upon any premises owned, occupied or controlled by such person any animal or fowl otherwise permitted to be kept which, by any sound, cry, or behavior, causes annoyance or discomfort to a reasonable person of normal sensitiveness in any residential neighborhood.

(Ord. 7150 § 2 (part), 2008)

9.36.160 - Amplified sound on public property.

A. Purpose. The city council enacts this section for the sole purpose of securing and promoting the public health, comfort, safety and welfare of its residents and visitors. While recognizing that the use of sound amplifying equipment is protected by the constitutional rights of freedom of speech and assembly, the council nevertheless feels obligated to regulate reasonably the use of sound amplifying equipment in order to protect the correlative constitutional rights of the residents and visitors of this community to privacy and freedom from the public nuisance of loud and unnecessary noise.

B. Required Registration. It is unlawful for any person, other than personnel of law enforcement or governmental agencies, to install, use or operate within the city a loudspeaker or sound amplifying equipment in a fixed or movable position or mounted upon any sound truck for the purposes of giving instructions, directions, talks, addresses, lectures or transmitting music to any persons or assemblages of persons in or upon any street, alley, sidewalk, park or public property without first filing a registration statement with the director of finance and obtaining approval thereof as set forth in this chapter.

C. Filing. Every user of sound amplifying equipment shall file a registration statement with the director of finance 10 days prior to the date on which the sound amplifying equipment is intended to be used, which statement shall contain the following information:

1. The name, address and telephone number of both the owner and user of the sound amplifying equipment;
2. The maximum sound-producing power of the sound amplifying equipment which shall include the wattage to be used, the volume in decibels of sound which will be produced, and the approximate distance for which sound will be audible from the sound amplifying

equipment;

3. The license and motor number if a sound truck is to be used;
4. A general description of the sound to be amplified (speech, music, or both) and the sound amplifying equipment which is to be used;
5. Whether the sound amplifying equipment will be used for commercial or noncommercial purposes;
6. Location of fixed sound equipment, or general route where the sound truck will be used; and
7. Such other information as the director of finance may reasonably require.

D. Appeal Process.

1. Initial Determination. The director of finance shall return to the applicant an approved certified copy of the registration statement unless it is found that:
   a. The conditions of the motor vehicle movement are such that in the opinion of the police chief, use of the equipment would constitute a detriment to traffic safety; or
   b. The conditions of pedestrian movement are such that use of the equipment would constitute a detriment to traffic safety; or
   c. The registration statement required reveals that the applicant would violate the provisions set forth in subsection E of this section or any other provisions of this chapter; or
   d. Failure to file said statement within the prescribed period.

In the event the registration statement is disapproved, the director of finance shall cause to be endorsed upon the statement the reasons for disapproval, and return it forthwith to applicant.

2. Appeal of Decision. Any person aggrieved by disapproval of a registration statement may file a written appeal with the city manager within five (5) days of receipt of the notice of disapproval, setting forth all the facts which the applicant wishes the city manager to consider. The city manager or designee shall render a written decision on the appeal within five business days of receipt.
3. Fee for Operation. Prior to the issuance of the registration statement, a fee in the amount of $25.00 per day, or any portion thereof, shall be paid to the city, if the loudspeaker or sound amplifying equipment is to be used for commercial purposes. No fee shall be required for the operation of a loudspeaker or sound amplifying equipment for noncommercial purposes.

E. Regulations. The commercial and noncommercial use of sound amplifying equipment shall be subject to the following regulations:

1. The only sounds permitted shall be either music or the human voice, or both.
2. The operation of sound amplifying equipment shall only occur between the hours of 8 a.m. and 10 p.m. each day except on Sundays and legal holidays. No operation of sound amplifying equipment for commercial purposes shall be permitted on Sundays or legal

holidays. The operation of sound amplifying equipment for noncommercial purposes on Sundays and legal holidays shall only occur between the hours of 10 a.m. and 10 p.m., except New Year's Day.

3. Sound level emanating from sound amplifying equipment shall not exceed continuously the maximum noise level of 15 decibels above the ambient noise level when measured at the outside property line where the event is being held.
4. Notwithstanding the provisions of subsection (E)(3) of this section, sound amplifying equipment shall not be operated within 200 feet of churches, schools, hospitals or city or county buildings, unless written consent thereto has been given by such church, school, hospital, city or county.
5. In any event, the volume of sound shall be so controlled that it will not be unreasonably loud, raucous, jarring, disturbing or a nuisance to reasonable persons of normal sensitiveness within the area of audibility.

F. Old Pasadena. The commercial use of sound amplifying equipment in the Old Pasadena section of the city shall be subject to the following regulations:

1. In this section "amplified sound" means amplified music or the human voice used for entertainment only.
2. The ambient noise level in the Old Pasadena section of the city shall be 60 decibels between 6:00 a.m. and 1:30 a.m. of the following day; and 50 decibels between 1:30 a.m. and 6:00 a.m.
3. Amplified music on private property shall not exceed 15 decibels above the ambient noise level.
4. Use of sound amplifying equipment shall be limited to the hours between 6:00 p.m. and 1:30 a.m. of the following day.
5. Operators of sound amplifying equipment within 500 feet of a functioning church, school or hospital site shall initially obtain the written consent of such facility prior to commencing operation of amplified sound equipment.
6. Any business owner within 300 feet of a business using amplified sound equipment may request the health officer or a designee to mediate informally any dispute related to the use of such amplified sound equipment.
7. Notwithstanding the enactment of the ordinance codified in this chapter, the city council reserves the right at a future time to amend or repeal this provision in its entirety, and does not intend the creation of any special property rights by this amendment.

(Ord. 7150 § 2 (part), 2008)

9.36.170 - Exemptions.

A. This chapter is not intended to regulate construction or maintenance and repair activities

conducted by public agencies or their contractors necessitated by emergency conditions or deemed necessary by the city to serve the best interests of the public and to protect the public health, safety and welfare. These operations may include, but are not limited to, street sweeping, debris and limb removal, removal of downed wires, restoring electrical service, repairing traffic lights, unplugging sewers, vacuuming catch basins, repairing water hydrants and mains, gas lines, oil lines, storm drains, roads, sidewalks, etc.

B. Notwithstanding the ordinance codified in this chapter, the city manager is authorized to permit special events to generate noise levels up to the limits specified in the noise element of the city's general plan.

C. Notwithstanding the ordinance codified in this chapter, the general manager of the Rose Bowl is authorized to permit events licensed by the Rose Bowl Operating Company to generate noise levels up to the limits specified in the noise element of the city's general plan.

D. Provisions in the permit or license agreement shall specify the specific hour limitations imposed, and the set decibel level delineated in the noise element which would apply.

(Ord. 7150 § 2 (part), 2008)

9.36.180 - Enforcement responsibility.

The manager of the environmental health division shall have primary responsibility for the administration and enforcement of this chapter.

(Ord. 7150 § 2 (part), 2008)

9.36.190 - Violation—Penalty.

A. It shall be unlawful and a public nuisance for any person to violate the provisions of this chapter, punishable as a misdemeanor.

B. The provisions of this chapter are nonexclusive and supplementary to existing rights and remedies. Nothing in this chapter shall prevent the city from commencing any appropriate civil action to abate a public nuisance in addition to, or alternatively to, or in conjunction with the proceedings set forth in this chapter.

(Ord. 7150 § 2 (part), 2008)

CONSTRUCTION NOISE MODELING

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 09/10/2021
Case Description: RBOC-01

**** Receptor #1 ****

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
Demolition	Residential	60.0	55.0	50.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Concrete Saw	No	20		89.6	50.0	0.0
Excavator	No	40		80.7	50.0	0.0
Dozer	No	40		81.7	50.0	0.0

Results

Equipment	Calculated (dBA) Lmax	Calculated (dBA) Leq	Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq	Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq
Concrete Saw	89.6	82.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	80.7	76.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	81.7	77.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	89.6	84.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 09/10/2021
Case Description: RBOC-01

**** Receptor #1 ****

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
Site Prep	Residential	60.0	55.0	50.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	50.0	0.0
Tractor	No	40	84.0		50.0	0.0
Tractor	No	40	84.0		50.0	0.0

Results

	Calculated (dBA)		Noise Limits (dBA)				Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer	81.7	77.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	84.0	80.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	84.0	80.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	84.0	84.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 09/10/2021
Case Description: RBOC-01

**** Receptor #1 ****

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
Grading	Residential	60.0	55.0	50.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Grader	No	40	85.0		50.0	0.0
Scraper	No	40		83.6	50.0	0.0
Tractor	No	40	84.0		50.0	0.0

Results

	Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
	Calculated (dBA)		Day		Evening		Night		Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Grader	85.0	81.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper	83.6	79.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	84.0	80.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	85.0	85.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 09/10/2021
Case Description: RBOC-01

**** Receptor #1 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Grading (Mini Golf Course Area)	Residential	60.0	55.0	50.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40	81.7	50.0		0.0
Front End Loader	No	40	79.1	50.0		0.0
Tractor	No	40	84.0	50.0		0.0

Results

Equipment	Calculated (dBA) Lmax	Leq	Noise Limits (dBA) Day Lmax	Leq	Evening Lmax	Leq	Night Lmax	Leq	Noise Limit Exceedance (dBA) Day Lmax	Leq	Evening Lmax	Leq	Night Lmax	Leq
Dozer	81.7	77.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	79.1	75.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	84.0	80.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	84.0	82.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 09/10/2021
Case Description: RBOC-01

**** Receptor #1 ****

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
Trenching	Residential	60.0	55.0	50.0

Equipment

Description	Impact Device	Spec Usage (%)	Actual Lmax (dBA)	Receptor Lmax (dBA)	Estimated Distance (feet)	Shielding (dBA)
Tractor	No	40	84.0		50.0	0.0
Excavator	No	40		80.7	50.0	0.0

Results

	Calculated (dBA)		Noise Limits (dBA)				Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Tractor	84.0	80.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	80.7	76.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	84.0	81.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 09/10/2021
Case Description: RBOC-01

**** Receptor #1 ****

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
Fencing	Residential	60.0	55.0	50.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	50.0	0.0
Tractor	No	40	84.0		50.0	0.0
Soil Mix Drill Rig	No	50	80.0		50.0	0.0

Results

Equipment	Calculated (dBA) Lmax	Calculated (dBA) Leq	Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq	Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq
Crane	80.6	72.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	84.0	80.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Soil Mix Drill Rig	80.0	77.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	84.0	82.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 09/10/2021
Case Description: RBOC-01

**** Receptor #1 ****

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
Paving	Residential	60.0	55.0	50.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	50.0	0.0
Pavement Scarafier	No	20		89.5	50.0	0.0
Drum Mixer	No	50		80.0	50.0	0.0

Results

	Calculated (dBA)		Noise Limits (dBA)				Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver	77.2	74.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pavement Scarafier	89.5	82.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Drum Mixer	80.0	77.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	89.5	84.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 09/10/2021
Case Description: RBOC-01

**** Receptor #1 ****

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
Fencing and Trenching Overlap	Residential	60.0	55.0	50.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	50.0	0.0
Tractor	No	40	84.0		50.0	0.0
Welder / Torch	No	40		74.0	50.0	0.0
Tractor	No	40	84.0		50.0	0.0
Excavator	No	40		80.7	50.0	0.0

Results

	Calculated (dBA)		Noise Limits (dBA)				Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane	80.6	72.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	84.0	80.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	74.0	70.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	84.0	80.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	80.7	76.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	84.0	84.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 09/10/2021
Case Description: RBOC-01

**** Receptor #1 ****

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
Trenching & Paving Overlap (Mini Golf Course)	Residential	60.0	55.0	50.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Tractor	No	40	84.0		50.0	0.0
Excavator	No	40		80.7	50.0	0.0
Paver	No	50		77.2	50.0	0.0
Drum Mixer	No	50		80.0	50.0	0.0
Pavement Scarafier	No	20		89.5	50.0	0.0

Results

	Calculated (dBA)		Noise Limits (dBA)				Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Tractor	84.0	80.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	80.7	76.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	77.2	74.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Drum Mixer	80.0	77.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pavement Scarafier	89.5	82.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	89.5	86.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

RBOC-01 Construction Noise Modeling Attenuation Calculations

Levels in dBA Leq

Driving Range Phases	**RCNM Reference Noise Level**	**Levels at 100 feet**	**Residences to East**	**Residences to West**
Distance in feet	*50*	*100*	*1000*	*900*
Demolition	85	79	59	59
Distance in feet	*50*	*100*	*960*	*1080*
Site Prep	84	78	58	57
Grading	85	79	59	58
Trenching	82	76	56	55
Distance in feet	*50*	*100*	*660*	*870*
Fencing	82	76	60	57
Overlapping Fencing and Trenching (Driving Range)	84	78	62	60
Distance in feet	*50*	*100*	*1050*	*1050*
Paving of Golf Cart Path	84	78	58	58

Levels in dBA Leq

Mini Golf Phases	**RCNM Reference Noise Level**	**Levels at 100 feet**	**Residences to East**	**Residences to West**
Distance in feet	*50*	*100*	*1000*	*900*
Demolition	85	79	59	59
Distance in feet	*50*	*100*	*1200*	*900*
Site Prep	84	78	56	59
Grading (Mini Golf Course Area)	83	77	55	58
Trenching	82	76	54	57

Attenuation calculated through Inverse Square Law: Lp(R2) = Lp(R1) - 20Log(R2/R1)

RBOC-01 Vibration Annoyance Attenuation Calculations

Levels in in/sec PPV

Distance in feet	**Vibration Reference Level at *25 feet***	**Residential to east** *440*	**Residential to west** *900*
Vibratory Roller	0.21	0.003	0.001
Clam shovel	0.202	0.003	0.001
Hoe Ram	0.089	0.001	0.000
Large Bulldozer	0.089	0.001	0.000
Caisson Drilling	0.089	0.001	0.000
Loaded Trucks	0.076	0.001	0.000
Jackhammer	0.035	0.000	0.000
Small Bulldozer	0.003	0.000	0.000

Appendix

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Appendix F Transportation Impact Analysis

PASADENA DEPARTMENT OF TRANSPORTATION

MOVING PEOPLE TO PLACES, CONNECTIVITY

Transportation Impact Analysis

Outside of CEQA Evaluation

Project Address: 1133 Rosemont Avenue

Project Summary: Expansion of the existing Brookside Golf Course to add 40-bays to the existing 20-bay driving range to total 60-bays, and an addition of a 36-hole miniature golf course

Applicant:
Rose Bowl Operating Company
1001 Rose Bowl Drive
Pasadena, CA 91103

Attention:
Luis Rocha, Zoning Administrator
City Planning Department

May 28, 2021

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I. Study Objective

The Department of Transportation conducted this analysis to assess the changes to intersection Levels of Service (LOS) and "Access and Connector-Neighborhood" Street Type segments adjacent to the project. The findings may result in imposing project approval conditions to better manage project trips and protect neighborhoods from the proposed development's vehicular trips, if applicable.

II. Project Description

The City of Pasadena Department of Transportation received an application to improve the existing Brookside Golf Course with an expansion of the existing 20-bay driving range to 60-bays, and an addition of a 36-hole miniature golf course. As described in the project description, the existing Brookside Golf Complex is currently served by approximately 100 employees, and operation of the project would not require additional employees.

III. Existing Transportation Network

Street System Classifications

Rosemont Avenue is a north-south 2-lane Neighborhood Connector with a speed limit of 35 mph adjacent to the project. It is observed as a Green Edge Drive north of Seco Street and a Residential – Suburban south of Seco Street in the City's Street Design Guide. Time limited parking is allowed along the east side of this roadway adjacent to the project. This roadway includes an existing recreational loop surrounding the golf course and Rose Bowl Stadium.

Lincoln Avenue is a 2-lane City Connector from Orange Grove Boulevard to the northern City limits, and an Access Road south of Orange Grove Boulevard. It is observed as a Residential – Suburban north of the Mountain Street intersection and a Commercial – Suburban south of the Mountain Street intersection.

Washington Boulevard is a 2-lane Neighborhood Connector west of Lincoln Avenue with parking allowed on the south side of the street. Between Forest Avenue and Lincoln Avenue are primarily residential uses.

Seco Street is an east-west City Connector from Linda Vista Avenue to Lincoln Avenue with a speed limit of 35 mph. A center median island is found along this roadway between Arroyo Boulevard to Rosemont Avenue. Public transit stops closest to the project are found along Seco Street. This roadway includes an existing recreational loop surrounding the golf course and Rose Bowl Stadium.

Orange Grove Boulevard is a 4-lane City Connector from Columbia Street to the south to Sierra Madre Villa Avenue to the east. It is predominantly observed as Residential – Suburban within the City limits. Between Rosemont Avenue to Oakland Avenue, Orange

Grove Boulevard is observed as a Commercial – Suburban in the City's Street Design Guide.

Street segment analyses are limited to "access" and "neighborhood connector" street types within a residential context.

The analysis considered potential traffic changes along the following street segments and intersections:

Segment

- Washington Boulevard between Forest Avenue and Lincoln Avenue
- Rosemont Ave between Prospect Terrace and Fremont Drive

Intersections

- Lincoln Avenue at Washington Boulevard
- Lincoln Avenue at Mountain Street-Seco Street
- Orange Grove Boulevard at Rosemont Avenue

Existing Transit Service

Public transit service within the project study area is currently provided by Pasadena Transit (PT) Route 51. The locations of public transit stops near the project are located along Seco Street between Arroyo Boulevard and Rosemont Avenue south of the Rose Bowl.

Figure 1 highlights the location of the project in relation to the Rose Bowl.

Figure 2 depicts the project in the City of Pasadena's Adopted Streets Plan map.

Figure 1. Project Location and Site Boundary

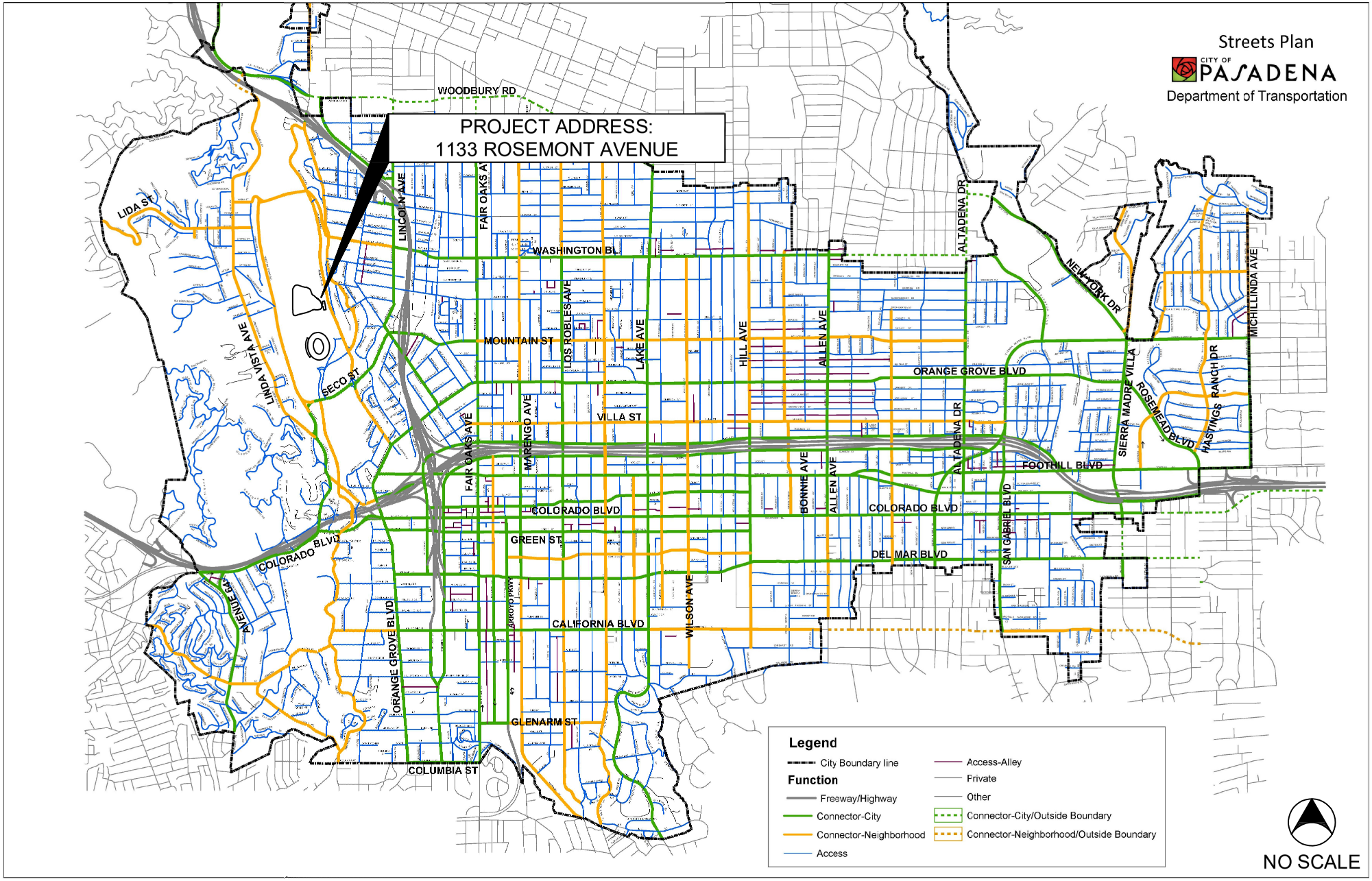


FIGURE 2
CITY OF PASADENA ADOPTED STREET TYPES

PASADENA
DEPARTMENT OF TRANSPORTATION

BROOKSIDE GOLF COURSE - 1133 ROSEMONT AVENUE

IV. Transportation Analysis Methodology

With the City of Pasadena General Plan, the City's guiding principles cumulatively represent the community's vision for the future:

- Growth will be targeted to serve community needs and enhance quality of life.
- New construction that could affect the integrity of historic resources will be compatible with, and differentiated from, the existing historic resource.
- Economic vitality will be promoted to provide jobs, services, revenues, and opportunities.
- Pasadena will be a socially, economically, and environmentally sustainable community.
- Pasadena will be a city where people can circulate without cars.
- Pasadena will be promoted as a cultural, scientific, corporate, entertainment, and educational center for the region.
- Community participation will be a permanent part of achieving a greater city.
- Pasadena is committed to public education and a diverse educational system responsive to the broad needs of the community.

Understanding the goals and objectives of the General Plan, the Pasadena Department of Transportation sets forth goals and policies to improve overall transportation in Pasadena and create "a community where people can circulate without cars." Inherent in this vision statement is to accommodate different modes of transportation including vehicle, pedestrian, bicycle, and transit. The analysis is based on City Transportation Impact Analysis Guidelines. This report will assess accessibility of these different modes of travel and the project's transportation impacts using the City's adopted transportation performance measures.

Analysis Criteria - Transportation Performance Measures

The Department's defined criteria and categories when determining the level of transportation impact of projects fall under three categories based on project size and community-wide significance.

- Exempt projects have 10 residential units or less, are 10,000 sf or less, or generate less than 300 daily trips if less than 10,000 sf.
- Category 1 Projects considered below community-wide significance are between 11-49 residential units, or 10,001 to 49,999 sf.
- Category 2 Projects classified as having community-wide significance have 50 or more residential units, or are 50,000 sf or more.

Pasadena Department of Transportation's mobility performance measures assess the quality of walking, biking, transit, and vehicular travel in the City. A combination of vehicular and multimodal performance measures are employed to evaluate system performance in reviewing new development impacts.

The following table summarizes the City's Metrics Cap Outside of CEQA for projects below "communitywide significance:"

Table 1. City of Pasadena Metrics Cap

METRIC	DESCRIPTION	CAP*
1. Street Segment Analysis	The street segment analysis assesses traffic intrusion on local streets in residential neighborhoods	Increases of 10-15% above existing on streets with more than 1,500 ADT would trigger conditions of approval to reduce project vehicular trips
2. Auto Level of Service	Level of Service (LOS) as defined by the Transportation Research Board's *Highway Capacity Manual (HCM) 2010*.	A decrease beyond LOS D Citywide or LOS E within Transit Oriented Districts (TODs) would trigger conditions of approval to reduce project vehicular trips
3. PEQI	Pedestrian Environmental Quality Index	Below average conditions
4. BEQI	Bicycle Environmental Quality Index	Below average conditions

*The adopted caps are not intended to be the absolute limits, but rather limits/ranges when exceeded may require additional project approval conditions.

Caps for Determining Project Street Segment Changes

Caps for evaluating changes in vehicular volumes on street segments were developed to measure the potential changes of net new trips from projects that intensify an existing land use, change site access, or alter existing traffic patterns. The caps are designed to capture a project's anticipated level of changes measured in terms of net new trips over existing conditions.

Specific caps have been established to determine whether there would be any potential project changes along neighborhood street segments by project traffic. A conservative approach is taken when calculating the traffic growth by basing the calculation on the increase relative to existing traffic volumes as follows:

$$\text{Percentage of Increase} = {}^{\text{net new project trips}}/_{\text{existing daily traffic}}$$

The daily traffic growth caps for determining the level of street segment transportation changes are summarized as follows:

Table 2. Street Segment Caps

Existing ADT	Project-Related Vehicular Increase in ADT
0 to 1,500 average daily trips	150 trips or more
1,501 to 3,499 average daily trips	10 percent or more of final project ADT
3,500 or more	8 percent or more of final project ADT

If project-related net trips exceed the caps in the table above, conditions of approval would require the project applicant to implement measures to discourage neighborhood intrusion by project related traffic. If the project traffic increases fall below the street segment caps, additional analyses are not required.

Caps for Determining Intersection Changes

Proposed development projects that meet or exceed the caps will be evaluated using the Highway Capacity Manual (HCM) Level of Service (LOS) analysis criteria at study intersections. This methodology determines an intersection's level of service by calculating delay. LOS descriptions are summarized in Table 3.

Table 3. LOS Capacity Criteria

HIGHWAY CAPACITY LEVEL OF SERVICE CRITERIA		
LOS	DESCRIPTION	DELAY (s)
A	Progression is extremely favorable and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.	< 10.0
B	Progression is good, cycle lengths are short, or both. More vehicles stop than with LOS A, causing higher levels of average delay.	> 10.0 to 20.0
C	Higher congestion may result from fair progression, longer cycle lengths, or both. Individual cycle failures may begin to appear at this level, though many still pass through the intersection without stopping.	> 20.0 to 35.0
D	The influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high V/C ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.	> 35.0 to 55.0

E	This level is considered by many agencies to be the limit of acceptable delay. These high delay values generally indicate poor (vehicle) progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences.	> 55.0 to 80.0
F	This level is considered oversaturation, which is when arrival flow rates exceed the capacity of the intersection. This level may also occur at high V/C ratios below 1.0 with many individual cycle failures. Poor progression and long cycle lengths may also be contributing factors to such delay levels.	> 80.0
Source: 2010 *Highway Capacity Manual.*		

Intersection LOS analysis using HCM criteria will be conducted for peak hour conditions. LOS caps are summarized in the following table:

Table 4: Intersection Level of Service Caps.

Study Intersections	Existing + Project LOS Cap
Citywide	D
Transit Oriented District (TOD)	E

Where the evaluated intersections exceed the LOS caps, conditions of approval will be recommended consistent with the City's guiding principles to encourage walking, biking, and transit to and from the project site to reduce project-related vehicular trips.

Pedestrian and Bicycle Environmental Quality Index Discussion

The Pedestrian Environmental Quality Index (PEQI) and Bicycle Environmental Quality Index (BEQI) is a quantitative, observational instrument used to describe and summarize the street and intersection environmental factors known to affect people's travel behaviors. The PEQI and BEQI were developed by the San Francisco Department of Public Health as a tool to assess pedestrian and bicycle safety and needs as well as to gain attention and demand for non-vehicle travel planning. The PEQI and BEQI consists of factors associated with pedestrian and bicycle environmental quality and safety, classified into five categories; Intersection Safety, Traffic, Street Design, Land Use and Perceived Safety.

Data is primarily collected through an observational survey. Indicator scores for each indicator category are based on a survey of national experts, including City, transportation planners and consultants regarding the importance of each indicator to pedestrian and bicycle environmental quality. The scores reflect the degree to which environmental factors supportive of walking, biking, and safety have been incorporated into street segment and intersection design. The PEQI and BEQI analysis result in a score for street segments and intersections on a scale ranging between 0-100 as outlined below.

Score	Description
81-100	Highest quality, many important pedestrian/bicycle conditions present
61-80	High quality, some important pedestrian/bicycle conditions present
41-60	Average quality, pedestrian/bicycle conditions present but room for improvement
21-40	Low quality, minimal pedestrian/bicycle conditions
20 and below	Poor quality, pedestrian/bicycle conditions absent

V. Transportation Analysis

Project Trip Generation

The industry standard procedure to determine the number of daily and peak hour trips a project would generate is based on published trip generation estimates from the ITE Trip Generation manual and is summarized in the following table:

Trip Generation Rates (proposed)

Proposed Use	Land Use Code	Amount	Units	Measure	Daily	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total
Miniature Golf Course*	431	36	HOLES	1	3.60	0.06	0.05	0.11	0.18	0.15	0.33
Golf Driving Range	432	60	TEES	1	13.65	0.24	0.16	0.40	0.56	0.69	1.25

Trip Generation Rates (previous)

Previous Use	Land Use Code	Amount	Units	Measure	Daily	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total
Golf Driving Range	432	20	TEES	1	13.65	0.24	0.16	0.40	0.56	0.69	1.25

Volumes

Proposed Use		Daily	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total
Miniature Golf Course*		130	2	2	4	7	5	12
Golf Driving Range		819	15	9	24	34	41	75
Total Project Trips		949	17	11	28	40	47	87
Internal Trip Capture (Driving Range)	50%	410	7	5	12	17	21	38
Net Project Vehicle Trips		539	10	6	16	23	26	49

Volumes

Previous Use		Daily	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total
Golf Driving Range		273	5	3	8	11	14	25
Total Project Trips		273	5	3	8	11	14	25
Internal Trip Capture	50%	137	2	2	4	6	7	13
Net Project Vehicle Trips		136	3	1	4	5	7	12

* Used ratio of total PM peak hour between LU 431 and LU 432 to determine LU 431 daily and AM peak hour trip generation rate.

Net total (proposed minus existing trips)	***403***	***7***	***5***	***12***	***18***	***19***	***37***

In summary, it is estimated that the project would generate 403 net daily trip, 12 AM and 37 PM peak hour project trips.

Street Segment Analysis

Figure 3 describes the project trip distribution and project traffic intersection volumes on the street network. A growth factor of 1.15 was used to adjust the available counts on file. The calculated segment analysis results are summarized in Table 5.

Table 5. Street Segment Volume Summary

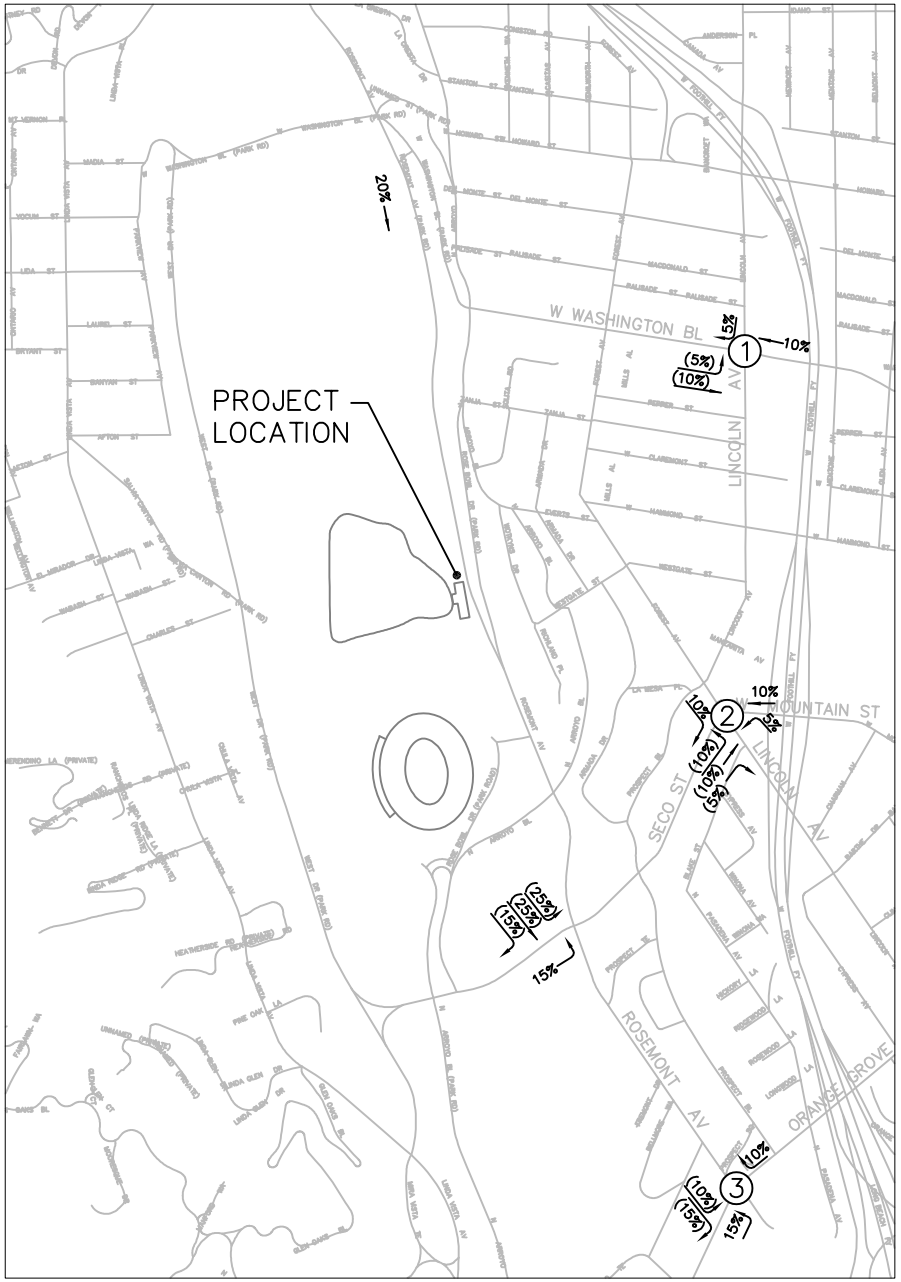
Street Segment	Baseline ADT	Baseline ADT x 1.15	Project ADT	Vehicular Increase in ADT	Exceeds Cap?
Washington Blvd b/t Forest Ave and Lincoln Ave	2,440	2,806	60	2.2%	No
Rosemont Ave b/t Prospect Terrace and Fremont Dr	4,555	5,238	101	1.9%	No

Intersection Level of Service (LOS) Analysis

Figure 4 indicates that the project is outside of the City's Transit Oriented District. Therefore, the Existing + Project LOS cap for intersections is "LOS D". A growth factor of 1.15 was used to adjust the available counts on file. The calculated LOS results are summarized in Table 6.

Table 6. Signalized Intersection LOS Summary

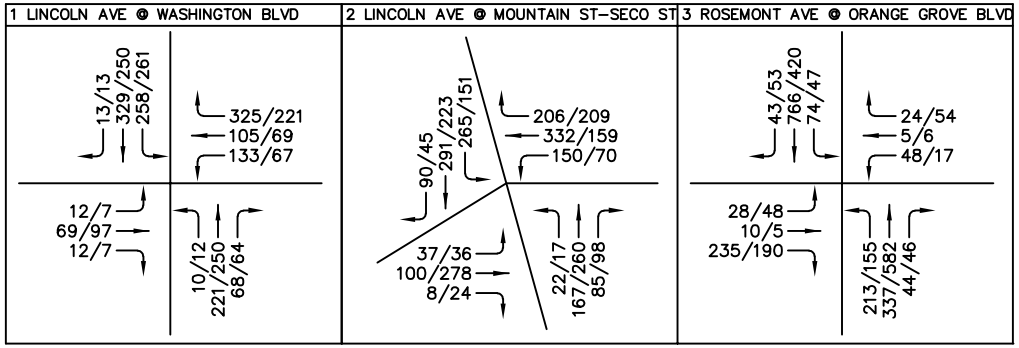
Intersection	Peak Hour	Existing		Existing w/Project		Exceeds LOS Cap?
		Delay	LOS	Delay	LOS	Yes/No
Lincoln Ave at Washington Blvd	AM	17.1	B	17.1	B	No
	PM	16.1	B	17.0	B	No
Lincoln Ave at Mountain St-Seco St	AM	10.7	B	10.7	B	No
	PM	9.4	A	9.5	A	No
Orange Grove Blvd at Rosemont Ave	AM	12.2	B	12.2	B	No
	PM	8.1	A	8.2	A	No



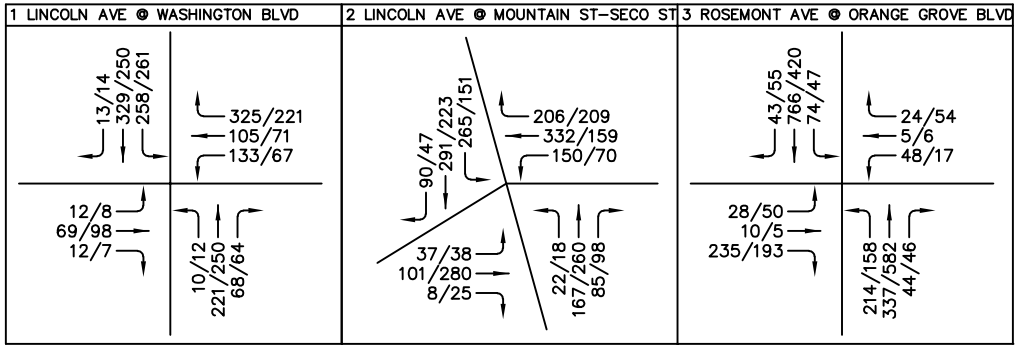
LEGEND

XX% PROJECT INBOUND TRIPS
(XX%) PROJECT OUTBOUND TRIPS

EXISTING TRAFFIC VOLUMES*



EXISTING + PROJECT TRAFFIC VOLUMES*



* A growth factor of 1.15 was used to adjust available counts.

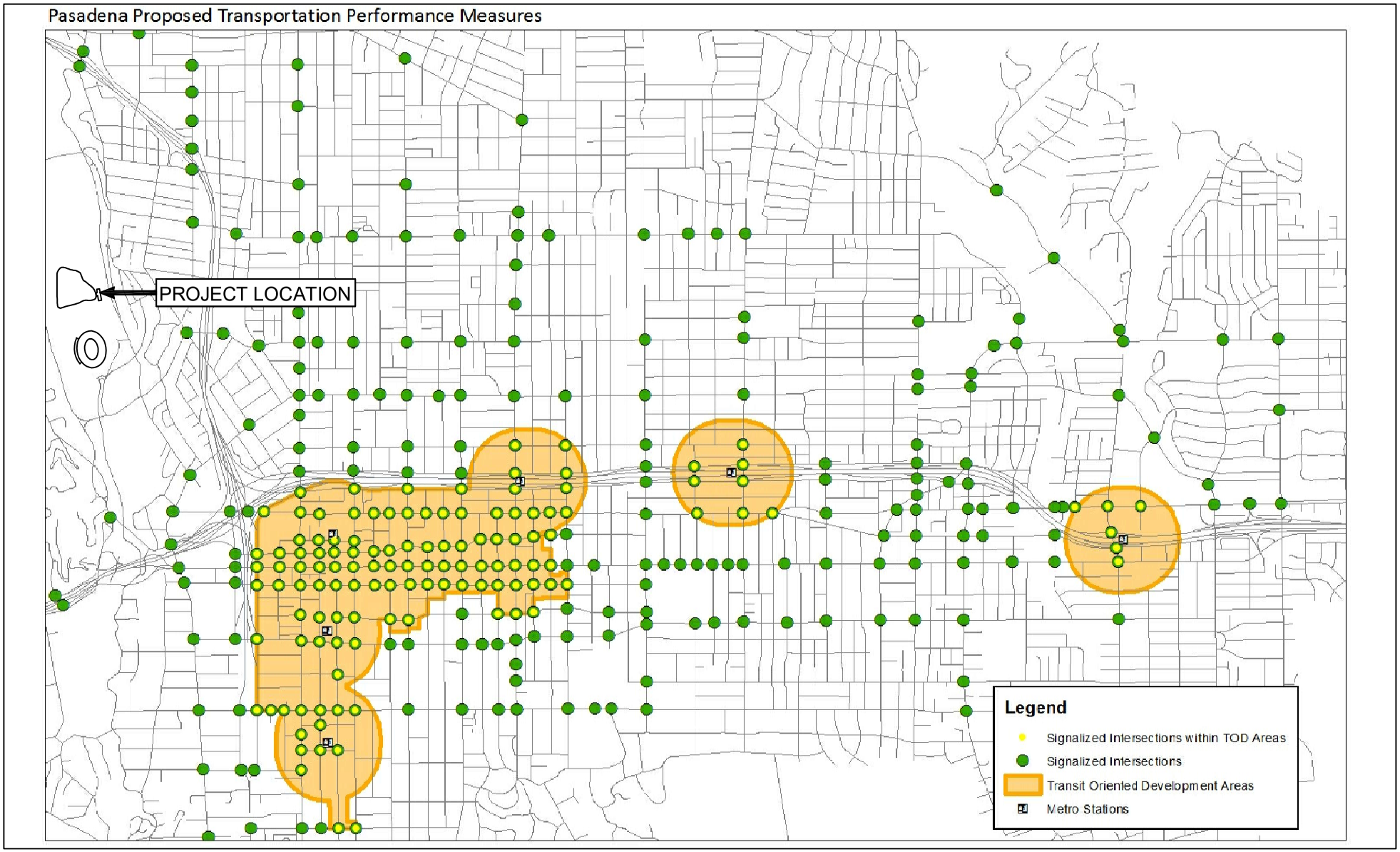
LEGEND

XX/YY EXISTING AM/PM PEAK HOUR VOLUMES

NO SCALE

PASADENA
DEPARTMENT OF TRANSPORTATION

FIGURE 3
PROJECT TRIP DISTRIBUTION AND TRAFFIC VOLUMES
BROOKSIDE GOLF COURSE – 1133 ROSEMONT AVENUE



NO SCALE

PASADENA
DEPARTMENT OF TRANSPORTATION

FIGURE 4
CITY OF PASADENA ADOPTED TRANSIT ORIENTED DEVELOPMENT AREA
BROOKSIDE GOLF COURSE - 1133 ROSEMONT AVENUE

PEQI/BEQI Analysis

An observational survey was conducted along Rosemont Avenue between Washington Boulevard and Rose Bowl Drive to document existing pedestrian and bicycle quality conditions. Vehicle traffic features (i.e., number of lanes, vehicle speed, etc.) as well as street quality features (i.e., sidewalk widths and impediments, driveway cuts, land use characteristics, etc.) were collected on both sides of the street.

Environmental quality of non-vehicular modes must be improved when the assessment of project study segments reveal less than average conditions. According to the PEQI and BEQI indicator and indicator category scores, the following observational scores are:

Table 7. PEQI/BEQI Summary

Segment	**PEQI Score**	**BEQI Score**
Rosemont Avenue between Washington Blvd and Rose Bowl Drive		
- West side	46 - Average	37 - Low
- East side	49 - Average	37 - Low

PEQI and BEQI calculations are found in the appendix of this report.

VI. Conclusion

The City of Pasadena Department of Transportation conducted an analysis to review the proposed improvements to the existing Brookside Golf Course. The application proposes to expand the existing 20-bay driving range to 60-bays, and add a 36-hole miniature golf course.

No segments or intersections exceed the adopted caps.

The calculated PEQI scores determined that existing pedestrian conditions are average along Rosemont Avenue between Washington Boulevard and Rose Bowl Drive.

The calculated BEQI scores determined that existing bicycling conditions are low along Rosemont Avenue between Washington Boulevard and Rose Bowl Drive.

VII. Appendices

Memorandum of Understanding
Traffic Volumes
HCM Analysis
PEQI Calculation Sheet
BEQI Calculation Sheet

Appendix:
Memorandum of Understanding

Appendix:
Traffic Volumes

Brookside Golf Course Improvement Project

Peak IntersectionVolumes Summary

1133 Rosemont Avenue

Intersection	Direction	AM Peak Baseline Year 2012 Volumes	PM Peak Baseline Year 2012 Volumes	AM Peak Baseline Year+Ambient Growth* Growth Factor = 1.15 Volumes	PM Peak Baseline Year+Ambient Growth* Growth Factor = 1.15 Volumes	Project % IN	Project % OUT	Project Volume AM	Project Volume PM	AM Peak Baseline Year+Ambient Growth+Project Volumes	PM Peak Baseline Year+Ambient Growth+Project Volumes
Lincoln Ave at Washington Blvd	NBL	9	10	10	12			0	0	10	12
	NBT	192	217	221	250			0	0	221	250
	NBR	59	56	68	64			0	0	68	64
	SBL	224	227	258	261			0	0	258	261
	SBT	286	217	329	250			0	0	329	250
	SBR	11	11	13	13	5%		0	1	13	14
	EBL	10	6	12	7		5%	0	1	12	8
	EBT	60	84	69	97		10%	0	2	69	98
	EBR	10	6	12	7			0	0	12	7
	WBL	116	58	133	67			0	0	133	67
	WBT	91	60	105	69	10%		1	2	105	71
	WBR	283	192	325	221			0	0	325	221
Lincoln Ave at Mountain St-Seco St	NBL	19	15	22	17	5%		0	1	22	18
	NBT	145	226	167	260			0	0	167	260
	NBR	74	85	85	98			0	0	85	98
	SBL	230	131	265	151			0	0	265	151
	SBT	253	194	291	223			0	0	291	223
	SBR	78	39	90	45	10%		1	2	90	47
	EBL	32	31	37	36		10%	0	2	37	38
	EBT	87	242	100	278		10%	0	2	101	280
	EBR	7	21	8	24		5%	0	1	8	25
	WBL	130	61	150	70			0	0	150	70
	WBT	289	138	332	159			0	0	332	159
	WBR	179	182	206	209			0	0	206	209
Orange Grove Blvd at Rosemont Ave	NBL	185	135	213	155	15%		1	3	214	158
	NBT	293	506	337	582			0	0	337	582
	NBR	38	40	44	46			0	0	44	46
	SBL	64	41	74	47			0	0	74	47
	SBT	666	365	766	420			0	0	766	420
	SBR	37	46	43	53	10%		1	2	43	55
	EBL	24	42	28	48		10%	0	2	28	50
	EBT	9	4	10	5			0	0	10	5
	EBR	204	165	235	190		15%	1	3	235	193
	WBL	42	15	48	17			0	0	48	17
	WBT	4	5	5	6			0	0	5	6
	WBR	21	47	24	54			0	0	24	54

* Exhibit D-1 of the 2010 Congestion Management Program for Los Angeles County estimates the general traffic volume growth factor in Pasadena to be 1.098 in year 2025. To be conservative, the analysis used 1.15 as the growth factor from available 2012 counts.

City of Pasadena

MS2

Transportation Data Management System

Volume Count Report

LOCATION INFO	
Location ID	1928
Type	SPOT
Fnct'l Class	-
Located On	Washington Blvd
Direction	2-WAY
County	Los Angeles
Community	Pasadena
MPO ID	
HPMS ID	
Agency	City of Pasadena

COUNT DATA INFO	
Count Status	Accepted
Start Date	Thu 1/27/2011
End Date	Fri 1/28/2011
Start Time	12:00:00 AM
End Time	12:00:00 AM
Direction	
Notes	
Station	
Study	
Speed Limit	
Description	
Sensor Type	
Source	
Latitude,Longitude	

INTERVAL:15-MIN					
Time	15-min Interval				Hourly Count
	1st	2nd	3rd	4th	
0:00-1:00	2	1	3	3	9
1:00-2:00	2	0	1	1	4
2:00-3:00	2	1	0	3	6
3:00-4:00	0	2	4	0	6
4:00-5:00	5	1	4	3	13
5:00-6:00	2	6	8	8	24
6:00-7:00	9	15	13	28	65
7:00-8:00	21	46	31	42	140
8:00-9:00	73	57	73	64	267
9:00-10:00	34	20	39	34	127
10:00-11:00	33	33	32	37	135
11:00-12:00	34	40	27	43	144
12:00-13:00	26	16	41	36	119
13:00-14:00	27	41	33	39	140
14:00-15:00	45	36	34	51	166
15:00-16:00	61	73	29	28	191
16:00-17:00	41	39	49	32	161
17:00-18:00	51	78	64	61	254
18:00-19:00	46	41	31	31	149
19:00-20:00	30	24	35	23	112
20:00-21:00	20	18	21	16	75
21:00-22:00	18	17	14	17	66
22:00-23:00	12	14	10	6	42
23:00-24:00	6	6	10	3	25
Total					2,440
AADT					2,440
AM Peak					08:00-09:00 267
PM Peak					17:00-18:00 254

City of Pasadena

Transportation Data Management System

Volume Count Report

LOCATION INFO	
Location ID	2089
Type	SPOT
Fnct'l Class	-
Located On	Rosemont Avenue
Loc On Alias	
BETWEEN	Prospect Terrace AND Fremont Drive
Direction	2-WAY
County	Los Angeles
Community	Pasadena
MPO ID	
HPMS ID	
Agency	City of Pasadena

COUNT DATA INFO	
Count Status	Accepted
Start Date	Tue 6/14/2016
End Date	Wed 6/15/2016
Start Time	12:00:00 AM
End Time	12:00:00 AM
Direction	2-WAY
Notes	pasadena
Station	2089
Study	
Speed Limit	
Description	
Sensor Type	
Source	
Latitude,Longitude	

INTERVAL:15-MIN					
Time	15-min Interval 1st	2nd	3rd	4th	Hourly Count
0:00-1:00	0	0	1	1	2
1:00-2:00	5	1	2	3	11
2:00-3:00	1	0	0	2	3
3:00-4:00	0	0	2	4	6
4:00-5:00	0	2	2	4	8
5:00-6:00	11	17	28	33	89
6:00-7:00	32	27	31	31	121
7:00-8:00	53	56	56	80	245
8:00-9:00	83	86	85	115	369
9:00-10:00	74	69	77	83	303
10:00-11:00	71	86	51	63	271
11:00-12:00	67	78	73	58	276
12:00-13:00	64	72	67	74	277
13:00-14:00	59	52	57	70	238
14:00-15:00	70	65	66	71	272
15:00-16:00	69	74	84	63	290
16:00-17:00	77	75	76	89	317
17:00-18:00	98	90	99	111	398
18:00-19:00	93	96	75	90	354
19:00-20:00	93	78	70	64	305
20:00-21:00	81	51	40	49	221
21:00-22:00	40	20	24	17	101
22:00-23:00	11	13	6	11	41
23:00-24:00	15	9	6	7	37
Total					4,555
AADT					4,555
AM Peak					08:00-09:00 369
PM Peak					17:30-18:30 399

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA12_5078_001 **Day:** TUESDAY

City: City of Pasadena **Date:** 2/28/2012

AM

NS/EW Streets:	Lincoln Ave			Lincoln Ave			Washington Blvd			Washington Blvd			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1	2	0	0	1	0	0	1	1	
7:00 AM	1	19	3	34	34	1	3	6	2	15	6	43	167
7:15 AM	1	31	8	31	49	2	2	13	4	11	12	55	219
7:30 AM	0	43	12	53	57	1	2	13	2	28	26	81	318
7:45 AM	4	44	13	75	61	4	4	19	4	32	21	63	344
8:00 AM	2	52	21	50	89	1	1	13	2	30	28	76	365
8:15 AM	3	53	13	46	79	5	3	15	2	26	16	63	324
8:30 AM	3	33	12	47	76	9	4	16	2	14	30	56	302
8:45 AM	4	46	8	47	77	6	4	17	4	13	18	40	284
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	18	321	90	383	522	29	23	112	22	169	157	477	2323
APPROACH %'s :	4.20%	74.83%	20.98%	41.01%	55.89%	3.10%	14.65%	71.34%	14.01%	21.05%	19.55%	59.40%	
PEAK HR START TIME :	730 AM												TOTAL
PEAK HR VOL :	9	192	59	224	286	11	10	60	10	116	91	283	1351
PEAK HR FACTOR :		0.867			0.930			0.741			0.907		0.925

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA12_5078_001 **Day:** TUESDAY

City: City of Pasadena **Date:** 2/28/2012

PM

NS/EW Streets:	Lincoln Ave			Lincoln Ave			Washington Blvd			Washington Blvd			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1	2	0	0	1	0	0	1	1	
4:00 PM	2	61	13	53	57	2	2	15	3	21	8	55	292
4:15 PM	0	59	8	43	55	2	3	17	2	16	16	46	267
4:30 PM	2	49	16	58	66	4	4	22	5	10	10	42	288
4:45 PM	3	39	10	71	44	1	1	19	2	12	12	36	250
5:00 PM	5	54	14	51	54	3	2	22	0	19	29	48	301
5:15 PM	0	50	11	60	51	4	1	24	2	12	12	52	279
5:30 PM	2	60	11	62	57	3	0	20	1	13	13	53	295
5:45 PM	3	53	20	54	55	1	3	18	3	14	6	39	269
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	17	425	103	452	439	20	16	157	18	117	106	371	2241
APPROACH %'s :	3.12%	77.98%	18.90%	49.62%	48.19%	2.20%	8.38%	82.20%	9.42%	19.70%	17.85%	62.46%	
PEAK HR START TIME :	500 PM												TOTAL
PEAK HR VOL :	10	217	56	227	217	11	6	84	6	58	60	192	1144
PEAK HR FACTOR :		0.931			0.932			0.889			0.807		0.950

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA12_5078_007 **Day:** TUESDAY

City: City of Pasadena **Date:** 2/28/2012

AM

NS/EW Streets:	Lincoln Ave			Lincoln Ave			Mountain St/Seco St			Mountain St/Seco St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	2	0	0	2	0	1	2	0	1	2	0	
7:00 AM	2	18	17	48	28	11	3	28	0	12	29	17	213
7:15 AM	1	26	15	44	44	12	4	17	1	14	29	22	229
7:30 AM	3	31	20	65	48	20	8	15	2	13	48	36	309
7:45 AM	9	37	23	56	56	25	10	42	2	49	118	69	496
8:00 AM	6	40	18	57	72	14	6	15	1	35	64	45	373
8:15 AM	1	37	13	52	77	19	8	15	2	33	59	29	345
8:30 AM	6	36	14	56	61	18	9	15	1	18	47	20	301
8:45 AM	4	41	13	35	47	15	4	15	3	23	55	18	273
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	32	266	133	413	433	134	52	162	12	197	449	256	2539
APPROACH %'s :	7.42%	61.72%	30.86%	42.14%	44.18%	13.67%	23.01%	71.68%	5.31%	21.84%	49.78%	28.38%	
PEAK HR START TIME :	730 AM												TOTAL
PEAK HR VOL :	19	145	74	230	253	78	32	87	7	130	289	179	1523
PEAK HR FACTOR :		0.862			0.948			0.583			0.633		0.768

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA12_5078_007 **Day:** TUESDAY

City: City of Pasadena **Date:** 2/28/2012

PM

NS/EW Streets:	Lincoln Ave			Lincoln Ave			Mountain St/Seco St			Mountain St/Seco St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	2	0	0	2	0	1	2	0	1	2	0	
4:00 PM	9	46	18	33	67	9	7	36	3	19	33	46	326
4:15 PM	9	59	26	45	43	7	6	25	6	11	37	46	320
4:30 PM	8	55	24	36	53	10	10	42	5	13	42	37	335
4:45 PM	4	56	21	37	44	12	9	50	6	9	36	35	319
5:00 PM	5	61	20	34	61	8	6	71	7	18	39	47	377
5:15 PM	4	45	15	37	35	10	6	60	2	18	34	53	319
5:30 PM	2	64	29	23	54	9	10	61	6	16	29	47	350
5:45 PM	1	73	22	23	47	6	10	55	6	12	24	28	307
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	42	459	175	268	404	71	64	400	41	116	274	339	2653
APPROACH %'s :	6.21%	67.90%	25.89%	36.07%	54.37%	9.56%	12.67%	79.21%	8.12%	15.91%	37.59%	46.50%	
PEAK HR START TIME :	445 PM												TOTAL
PEAK HR VOL :	15	226	85	131	194	39	31	242	21	61	138	182	1365
PEAK HR FACTOR :		0.858			0.883			0.875			0.907		0.905

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA12_5078_019 **Day:** TUESDAY

City: City of Pasadena **Date:** 2/28/2012

AM

NS/EW Streets:	Orange Grove Blvd			Orange Grove Blvd			Rosemont Ave			Rosemont Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1	2	1	0	1	0	0	1	0	
7:00 AM	16	31	3	0	91	6	2	0	13	11	0	0	173
7:15 AM	19	69	2	0	117	10	4	1	29	6	1	2	260
7:30 AM	17	81	2	1	150	7	6	0	41	7	0	1	313
7:45 AM	34	97	1	4	198	11	8	3	80	5	2	5	448
8:00 AM	21	94	5	8	176	8	7	2	40	12	1	4	378
8:15 AM	25	55	13	28	168	12	4	2	47	7	0	6	367
8:30 AM	29	47	19	24	124	6	5	2	37	18	1	6	318
8:45 AM	24	63	4	7	146	12	5	3	45	8	1	6	324
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	185	537	49	72	1170	72	41	13	332	74	6	30	2581
APPROACH %'s :	23.99%	69.65%	6.36%	5.48%	89.04%	5.48%	10.62%	3.37%	86.01%	67.27%	5.45%	27.27%	
PEAK HR START TIME :	745 AM												TOTAL
PEAK HR VOL :	109	293	38	64	666	37	24	9	204	42	4	21	1511
PEAK HR FACTOR :		0.833			0.900			0.651			0.670		0.843

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA12_5078_019 **Day:** TUESDAY

City: City of Pasadena **Date:** 2/28/2012

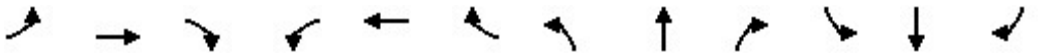
PM

NS/EW Streets:	Orange Grove Blvd			Orange Grove Blvd			Rosemont Ave			Rosemont Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1	2	1	0	1	0	0	1	0	
4:00 PM	34	119	6	4	94	13	8	0	27	5	0	2	312
4:15 PM	28	118	6	3	99	13	9	0	15	3	2	2	298
4:30 PM	29	119	5	0	89	12	6	1	22	4	0	2	289
4:45 PM	39	123	11	6	95	16	12	0	24	4	1	6	337
5:00 PM	33	126	13	10	94	18	11	2	34	3	2	13	359
5:15 PM	33	128	8	10	103	11	16	1	37	1	0	8	356
5:30 PM	33	122	9	8	89	12	8	0	47	3	1	13	345
5:45 PM	36	130	10	13	79	5	7	1	47	8	2	13	351
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	265	985	68	54	742	100	77	5	253	31	8	59	2647
APPROACH %'s :	20.11%	74.73%	5.16%	6.03%	82.81%	11.16%	22.99%	1.49%	75.52%	31.63%	8.16%	60.20%	

PEAK HR START TIME :	500 PM												TOTAL
PEAK HR VOL :	135	506	40	41	365	46	42	4	165	15	5	47	1411
PEAK HR FACTOR :		0.967			0.911			0.959			0.728		0.983

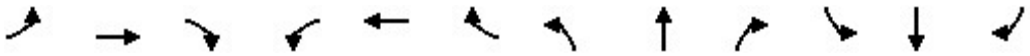
CONTROL : Signalized

Appendix:
HCM Analysis



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	69	12	133	105	325	10	221	68	258	329	13
Future Volume (vph)	12	69	12	133	105	325	10	221	68	258	329	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.9			3.9	3.9	3.9	3.9		3.9	3.9	3.9
Lane Util. Factor		1.00			1.00	1.00	1.00	0.95		1.00	1.00	1.00
Frt		0.98			1.00	0.85	1.00	0.96		1.00	1.00	0.85
Flt Protected		0.99			0.97	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1856			1848	1615	1805	3483		1805	1900	1615
Flt Permitted		0.96			0.78	1.00	0.45	1.00		0.56	1.00	1.00
Satd. Flow (perm)		1790			1486	1615	850	3483		1069	1900	1615
Peak-hour factor, PHF	0.89	0.89	0.89	0.81	0.81	0.81	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	13	78	13	164	130	401	11	238	73	277	354	14
RTOR Reduction (vph)	0	7	0	0	0	220	0	42	0	0	0	8
Lane Group Flow (vph)	0	97	0	0	294	181	11	269	0	277	354	6
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases		4			4			2			2	
Permitted Phases	4			4		4	2			2		2
Actuated Green, G (s)		27.1			27.1	27.1	25.1	25.1		25.1	25.1	25.1
Effective Green, g (s)		27.1			27.1	27.1	25.1	25.1		25.1	25.1	25.1
Actuated g/C Ratio		0.45			0.45	0.45	0.42	0.42		0.42	0.42	0.42
Clearance Time (s)		3.9			3.9	3.9	3.9	3.9		3.9	3.9	3.9
Lane Grp Cap (vph)		808			671	729	355	1457		447	794	675
v/s Ratio Prot								0.08			0.19	
v/s Ratio Perm		0.05			c0.20	0.11	0.01			c0.26		0.00
v/c Ratio		0.12			0.44	0.25	0.03	0.18		0.62	0.45	0.01
Uniform Delay, d1		9.5			11.2	10.2	10.3	11.0		13.7	12.5	10.2
Progression Factor		1.00			0.98	2.60	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		0.3			2.1	0.8	0.2	0.3		6.3	1.8	0.0
Delay (s)		9.8			13.0	27.2	10.4	11.3		20.0	14.3	10.2
Level of Service		A			B	C	B	B		C	B	B
Approach Delay (s)		9.8			21.2			11.2			16.7	
Approach LOS		A			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	17.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	7.8
Intersection Capacity Utilization	55.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	37	100	8	150	332	206	22	167	85	265	291	90
Future Volume (vph)	37	100	8	150	332	206	22	167	85	265	291	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.9	3.9		3.9	3.9			3.9			3.9	
Lane Util. Factor	1.00	0.95		1.00	0.95			0.95			0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.99		1.00	0.94			0.95			0.98	
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.98	
Satd. Flow (prot)	1805	3566		1805	3403			3415			3457	
Flt Permitted	0.34	1.00		0.67	1.00			0.89			0.71	
Satd. Flow (perm)	649	3566		1281	3403			3051			2501	
Peak-hour factor, PHF	0.88	0.88	0.88	0.91	0.91	0.91	0.86	0.86	0.86	0.88	0.88	0.88
Adj. Flow (vph)	42	114	9	165	365	226	26	194	99	301	331	102
RTOR Reduction (vph)	0	6	0	0	155	0	0	47	0	0	18	0
Lane Group Flow (vph)	42	117	0	165	436	0	0	272	0	0	716	0
Confl. Peds. (#/hr)			7						1			5
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Actuated Green, G (s)	15.6	15.6		15.6	15.6			26.1			26.1	
Effective Green, g (s)	15.6	15.6		15.6	15.6			26.1			26.1	
Actuated g/C Ratio	0.32	0.32		0.32	0.32			0.53			0.53	
Clearance Time (s)	3.9	3.9		3.9	3.9			3.9			3.9	
Vehicle Extension (s)	4.8	4.8		4.8	4.8			5.8			5.8	
Lane Grp Cap (vph)	204	1123		403	1072			1608			1318	
v/s Ratio Prot		0.03			0.13							
v/s Ratio Perm	0.06			c0.13				0.09			c0.29	
v/c Ratio	0.21	0.10		0.41	0.41			0.17			0.54	
Uniform Delay, d1	12.4	12.0		13.3	13.3			6.1			7.8	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	1.0	0.1		1.3	0.5			0.1			1.0	
Delay (s)	13.4	12.1		14.6	13.8			6.2			8.7	
Level of Service	B	B		B	B			A			A	
Approach Delay (s)		12.4			14.0			6.2			8.7	
Approach LOS		B			B			A			A	

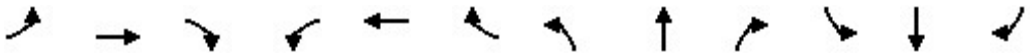
Intersection Summary			
HCM 2000 Control Delay	10.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	49.5	Sum of lost time (s)	7.8
Intersection Capacity Utilization	65.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	NBL	NBR	NBR2	SEL	SET	SER	NWL	NWT	NWR	SWL2	SWL	SWR
Lane Configurations												
Traffic Volume (vph)	213	337	44	28	10	235	48	5	24	74	766	43
Future Volume (vph)	213	337	44	28	10	235	48	5	24	74	766	43
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	4.4			4.4	3.6		4.4	3.6	4.4	4.4	4.4
Lane Util. Factor	1.00	0.88			1.00	1.00		1.00	1.00	1.00	0.97	1.00
Frt	1.00	0.85			1.00	0.85		1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00			0.96	1.00		0.96	1.00	0.95	0.95	1.00
Satd. Flow (prot)	1770	2787			1796	1583		1782	1583	1770	3433	1583
Flt Permitted	0.33	1.00			0.77	1.00		0.72	1.00	0.50	0.95	1.00
Satd. Flow (perm)	616	2787			1443	1583		1338	1583	941	3433	1583
Peak-hour factor, PHF	0.97	0.97	0.97	0.96	0.96	0.96	0.73	0.73	0.73	0.91	0.91	0.91
Adj. Flow (vph)	220	347	45	29	10	245	66	7	33	81	842	47
RTOR Reduction (vph)	0	6	0	0	0	98	0	0	28	0	0	8
Lane Group Flow (vph)	220	386	0	0	39	147	0	73	5	81	842	39
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Perm	Over		Perm	NA	Perm	Perm	NA	Perm	Perm	Prot	Perm
Protected Phases		2			4			4			2	
Permitted Phases	6			4		4	4		4	6		2
Actuated Green, G (s)	60.5	60.5			11.6	11.6		11.6	11.6	60.5	60.5	60.5
Effective Green, g (s)	60.4	60.4			10.8	11.6		10.8	11.6	60.4	60.4	60.4
Actuated g/C Ratio	0.75	0.75			0.14	0.14		0.14	0.14	0.75	0.75	0.75
Clearance Time (s)	4.3	4.3			3.6	3.6		3.6	3.6	4.3	4.3	4.3
Vehicle Extension (s)	2.5	4.8			3.0	3.0		3.0	3.0	2.5	4.8	4.8
Lane Grp Cap (vph)	465	2104			194	229		180	229	710	2591	1195
v/s Ratio Prot		0.14									0.25	
v/s Ratio Perm	c0.36				0.03	c0.09		0.05	0.00	0.09		0.02
v/c Ratio	0.47	0.18			0.20	0.64		0.41	0.02	0.11	0.32	0.03
Uniform Delay, d1	3.7	2.8			30.8	32.2		31.7	29.3	2.6	3.2	2.5
Progression Factor	3.11	3.04			1.00	1.00		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.3	0.2			0.5	6.0		1.5	0.0	0.3	0.3	0.1
Delay (s)	14.9	8.7			31.3	38.2		33.2	29.4	3.0	3.5	2.5
Level of Service	B	A			C	D		C	C	A	A	A
Approach Delay (s)	10.9				37.3			32.0			3.4	
Approach LOS	B				D			C			A	

Intersection Summary			
HCM 2000 Control Delay	12.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.8
Intersection Capacity Utilization	54.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	97	7	67	69	221	12	250	64	261	250	13
Future Volume (vph)	7	97	7	67	69	221	12	250	64	261	250	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.9			3.9	3.9	3.9	3.9		3.9	3.9	3.9
Lane Util. Factor		1.00			1.00	1.00	1.00	0.95		1.00	1.00	1.00
Frt		0.99			1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected		1.00			0.98	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1878			1854	1615	1805	3499		1805	1900	1615
Flt Permitted		0.99			0.83	1.00	0.53	1.00		0.55	1.00	1.00
Satd. Flow (perm)		1857			1570	1615	1015	3499		1040	1900	1615
Peak-hour factor, PHF	0.89	0.89	0.89	0.81	0.81	0.81	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	8	109	8	83	85	273	13	269	69	281	269	14
RTOR Reduction (vph)	0	4	0	0	0	145	0	38	0	0	0	8
Lane Group Flow (vph)	0	121	0	0	168	128	13	300	0	281	269	6
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases		4			4			2			2	
Permitted Phases	4			4		4	2			2		2
Actuated Green, G (s)		28.1			28.1	28.1	24.1	24.1		24.1	24.1	24.1
Effective Green, g (s)		28.1			28.1	28.1	24.1	24.1		24.1	24.1	24.1
Actuated g/C Ratio		0.47			0.47	0.47	0.40	0.40		0.40	0.40	0.40
Clearance Time (s)		3.9			3.9	3.9	3.9	3.9		3.9	3.9	3.9
Lane Grp Cap (vph)		869			735	756	407	1405		417	763	648
v/s Ratio Prot								0.09			0.14	
v/s Ratio Perm		0.07			c0.11	0.08	0.01			c0.27		0.00
v/c Ratio		0.14			0.23	0.17	0.03	0.21		0.67	0.35	0.01
Uniform Delay, d1		9.1			9.5	9.2	10.9	11.7		14.7	12.5	10.8
Progression Factor		1.00			0.90	2.57	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		0.3			0.7	0.5	0.1	0.3		8.4	1.3	0.0
Delay (s)		9.4			9.2	24.1	11.0	12.1		23.2	13.8	10.8
Level of Service		A			A	C	B	B		C	B	B
Approach Delay (s)		9.4			18.4			12.1			18.4	
Approach LOS		A			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	16.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	7.8
Intersection Capacity Utilization	47.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

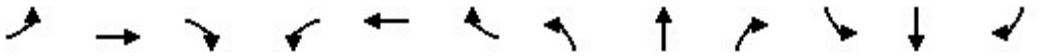


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	36	278	24	70	159	209	17	260	98	151	223	45
Future Volume (vph)	36	278	24	70	159	209	17	260	98	151	223	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.9	3.9		3.9	3.9			3.9			3.9	
Lane Util. Factor	1.00	0.95		1.00	0.95			0.95			0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.99		1.00	0.91			0.96			0.98	
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.98	
Satd. Flow (prot)	1805	3563		1805	3302			3449			3483	
Flt Permitted	0.50	1.00		0.55	1.00			0.93			0.71	
Satd. Flow (perm)	947	3563		1037	3302			3217			2502	
Peak-hour factor, PHF	0.88	0.88	0.88	0.91	0.91	0.91	0.86	0.86	0.86	0.88	0.88	0.88
Adj. Flow (vph)	41	316	27	77	175	230	20	302	114	172	253	51
RTOR Reduction (vph)	0	13	0	0	159	0	0	50	0	0	13	0
Lane Group Flow (vph)	41	330	0	77	246	0	0	386	0	0	463	0
Confl. Peds. (#/hr)			7						1			5
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Actuated Green, G (s)	14.4	14.4		14.4	14.4			24.5			24.5	
Effective Green, g (s)	14.4	14.4		14.4	14.4			24.5			24.5	
Actuated g/C Ratio	0.31	0.31		0.31	0.31			0.52			0.52	
Clearance Time (s)	3.9	3.9		3.9	3.9			3.9			3.9	
Vehicle Extension (s)	4.8	4.8		4.8	4.8			5.8			5.8	
Lane Grp Cap (vph)	292	1098		319	1018			1687			1312	
v/s Ratio Prot		c0.09			0.07							
v/s Ratio Perm	0.04			0.07				0.12			c0.19	
v/c Ratio	0.14	0.30		0.24	0.24			0.23			0.35	
Uniform Delay, d1	11.7	12.3		12.1	12.1			6.0			6.5	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.4	0.3		0.8	0.2			0.2			0.4	
Delay (s)	12.1	12.6		12.8	12.3			6.2			6.9	
Level of Service	B	B		B	B			A			A	
Approach Delay (s)		12.6			12.4			6.2			6.9	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	9.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	46.7	Sum of lost time (s)	7.8
Intersection Capacity Utilization	57.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	NBL	NBR	NBR2	SEL	SET	SER	NWL	NWT	NWR	SWL2	SWL	SWR
Lane Configurations												
Traffic Volume (vph)	155	582	46	48	5	190	17	6	54	47	420	53
Future Volume (vph)	155	582	46	48	5	190	17	6	54	47	420	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	4.4			4.4	3.6		4.4	3.6	4.4	4.4	4.4
Lane Util. Factor	1.00	0.88			1.00	1.00		1.00	1.00	1.00	0.97	1.00
Frt	1.00	0.85			1.00	0.85		1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00			0.96	1.00		0.96	1.00	0.95	0.95	1.00
Satd. Flow (prot)	1770	2787			1782	1583		1796	1583	1770	3433	1583
Flt Permitted	0.49	1.00			0.72	1.00		0.77	1.00	0.39	0.95	1.00
Satd. Flow (perm)	914	2787			1347	1583		1434	1583	719	3433	1583
Peak-hour factor, PHF	0.97	0.97	0.97	0.96	0.96	0.96	0.73	0.73	0.73	0.91	0.91	0.91
Adj. Flow (vph)	160	600	47	50	5	198	23	8	74	52	462	58
RTOR Reduction (vph)	0	3	0	0	0	175	0	0	66	0	0	12
Lane Group Flow (vph)	160	644	0	0	55	23	0	31	8	52	462	46
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Perm	Over		Perm	NA	Perm	Perm	NA	Perm	Perm	Prot	Perm
Protected Phases		2			4			4			2	
Permitted Phases	6			4		4	4		4	6		2
Actuated Green, G (s)	63.0	63.0			9.1	9.1		9.1	9.1	63.0	63.0	63.0
Effective Green, g (s)	62.9	62.9			8.3	9.1		8.3	9.1	62.9	62.9	62.9
Actuated g/C Ratio	0.79	0.79			0.10	0.11		0.10	0.11	0.79	0.79	0.79
Clearance Time (s)	4.3	4.3			3.6	3.6		3.6	3.6	4.3	4.3	4.3
Vehicle Extension (s)	2.5	4.8			3.0	3.0		3.0	3.0	2.5	4.8	4.8
Lane Grp Cap (vph)	718	2191			139	180		148	180	565	2699	1244
v/s Ratio Prot		c0.23									0.13	
v/s Ratio Perm	0.18				c0.04	0.01		0.02	0.01	0.07		0.03
v/c Ratio	0.22	0.29			0.40	0.13		0.21	0.05	0.09	0.17	0.04
Uniform Delay, d1	2.2	2.4			33.5	31.9		32.8	31.6	2.0	2.1	1.9
Progression Factor	0.40	0.41			1.00	1.00		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.7	0.3			1.9	0.3		0.7	0.1	0.3	0.1	0.1
Delay (s)	1.6	1.3			35.4	32.2		33.6	31.7	2.3	2.2	1.9
Level of Service	A	A			D	C		C	C	A	A	A
Approach Delay (s)	1.4				32.9			32.2			2.2	
Approach LOS	A				C			C			A	

Intersection Summary			
HCM 2000 Control Delay	8.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.31		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.8
Intersection Capacity Utilization	47.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	69	12	133	105	325	10	221	68	258	329	13
Future Volume (vph)	12	69	12	133	105	325	10	221	68	258	329	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.9			3.9	3.9	3.9	3.9		3.9	3.9	3.9
Lane Util. Factor		1.00			1.00	1.00	1.00	0.95		1.00	1.00	1.00
Frt		0.98			1.00	0.85	1.00	0.96		1.00	1.00	0.85
Flt Protected		0.99			0.97	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1856			1848	1615	1805	3483		1805	1900	1615
Flt Permitted		0.96			0.78	1.00	0.45	1.00		0.56	1.00	1.00
Satd. Flow (perm)		1790			1486	1615	850	3483		1069	1900	1615
Peak-hour factor, PHF	0.89	0.89	0.89	0.81	0.81	0.81	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	13	78	13	164	130	401	11	238	73	277	354	14
RTOR Reduction (vph)	0	7	0	0	0	220	0	42	0	0	0	8
Lane Group Flow (vph)	0	97	0	0	294	181	11	269	0	277	354	6
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases		4			4			2			2	
Permitted Phases	4			4		4	2			2		2
Actuated Green, G (s)		27.1			27.1	27.1	25.1	25.1		25.1	25.1	25.1
Effective Green, g (s)		27.1			27.1	27.1	25.1	25.1		25.1	25.1	25.1
Actuated g/C Ratio		0.45			0.45	0.45	0.42	0.42		0.42	0.42	0.42
Clearance Time (s)		3.9			3.9	3.9	3.9	3.9		3.9	3.9	3.9
Lane Grp Cap (vph)		808			671	729	355	1457		447	794	675
v/s Ratio Prot								0.08			0.19	
v/s Ratio Perm		0.05			c0.20	0.11	0.01			c0.26		0.00
v/c Ratio		0.12			0.44	0.25	0.03	0.18		0.62	0.45	0.01
Uniform Delay, d1		9.5			11.2	10.2	10.3	11.0		13.7	12.5	10.2
Progression Factor		1.00			0.98	2.60	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		0.3			2.1	0.8	0.2	0.3		6.3	1.8	0.0
Delay (s)		9.8			13.0	27.2	10.4	11.3		20.0	14.3	10.2
Level of Service		A			B	C	B	B		C	B	B
Approach Delay (s)		9.8			21.2			11.2			16.7	
Approach LOS		A			C			B			B	

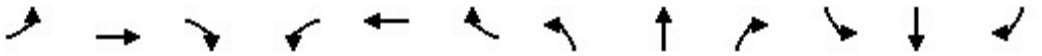
Intersection Summary			
HCM 2000 Control Delay	17.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	7.8
Intersection Capacity Utilization	55.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	37	101	8	150	332	206	22	167	85	265	291	90
Future Volume (vph)	37	101	8	150	332	206	22	167	85	265	291	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.9	3.9		3.9	3.9			3.9			3.9	
Lane Util. Factor	1.00	0.95		1.00	0.95			0.95			0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.99		1.00	0.94			0.95			0.98	
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.98	
Satd. Flow (prot)	1805	3566		1805	3403			3415			3457	
Flt Permitted	0.34	1.00		0.67	1.00			0.89			0.71	
Satd. Flow (perm)	649	3566		1279	3403			3051			2501	
Peak-hour factor, PHF	0.88	0.88	0.88	0.91	0.91	0.91	0.86	0.86	0.86	0.88	0.88	0.88
Adj. Flow (vph)	42	115	9	165	365	226	26	194	99	301	331	102
RTOR Reduction (vph)	0	6	0	0	155	0	0	47	0	0	18	0
Lane Group Flow (vph)	42	118	0	165	436	0	0	272	0	0	716	0
Confl. Peds. (#/hr)			7						1			5
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Actuated Green, G (s)	15.6	15.6		15.6	15.6			26.1			26.1	
Effective Green, g (s)	15.6	15.6		15.6	15.6			26.1			26.1	
Actuated g/C Ratio	0.32	0.32		0.32	0.32			0.53			0.53	
Clearance Time (s)	3.9	3.9		3.9	3.9			3.9			3.9	
Vehicle Extension (s)	4.8	4.8		4.8	4.8			5.8			5.8	
Lane Grp Cap (vph)	204	1123		403	1072			1608			1318	
v/s Ratio Prot		0.03			0.13							
v/s Ratio Perm	0.06			c0.13				0.09			c0.29	
v/c Ratio	0.21	0.10		0.41	0.41			0.17			0.54	
Uniform Delay, d1	12.4	12.0		13.3	13.3			6.1			7.8	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	1.0	0.1		1.3	0.5			0.1			1.0	
Delay (s)	13.4	12.1		14.6	13.8			6.2			8.7	
Level of Service	B	B		B	B			A			A	
Approach Delay (s)		12.4			14.0			6.2			8.7	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	10.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	49.5	Sum of lost time (s)	7.8
Intersection Capacity Utilization	65.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	NBL	NBR	NBR2	SEL	SET	SER	NWL	NWT	NWR	SWL2	SWL	SWR
Lane Configurations												
Traffic Volume (vph)	214	337	44	28	10	235	48	5	24	74	766	43
Future Volume (vph)	214	337	44	28	10	235	48	5	24	74	766	43
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	4.4			4.4	3.6		4.4	3.6	4.4	4.4	4.4
Lane Util. Factor	1.00	0.88			1.00	1.00		1.00	1.00	1.00	0.97	1.00
Frt	1.00	0.85			1.00	0.85		1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00			0.96	1.00		0.96	1.00	0.95	0.95	1.00
Satd. Flow (prot)	1770	2787			1796	1583		1782	1583	1770	3433	1583
Flt Permitted	0.33	1.00			0.77	1.00		0.72	1.00	0.50	0.95	1.00
Satd. Flow (perm)	616	2787			1443	1583		1338	1583	941	3433	1583
Peak-hour factor, PHF	0.97	0.97	0.97	0.96	0.96	0.96	0.73	0.73	0.73	0.91	0.91	0.91
Adj. Flow (vph)	221	347	45	29	10	245	66	7	33	81	842	47
RTOR Reduction (vph)	0	6	0	0	0	98	0	0	28	0	0	8
Lane Group Flow (vph)	221	386	0	0	39	147	0	73	5	81	842	39
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Perm	Over		Perm	NA	Perm	Perm	NA	Perm	Perm	Prot	Perm
Protected Phases		2			4			4			2	
Permitted Phases	6			4		4	4		4	6		2
Actuated Green, G (s)	60.5	60.5			11.6	11.6		11.6	11.6	60.5	60.5	60.5
Effective Green, g (s)	60.4	60.4			10.8	11.6		10.8	11.6	60.4	60.4	60.4
Actuated g/C Ratio	0.75	0.75			0.14	0.14		0.14	0.14	0.75	0.75	0.75
Clearance Time (s)	4.3	4.3			3.6	3.6		3.6	3.6	4.3	4.3	4.3
Vehicle Extension (s)	2.5	4.8			3.0	3.0		3.0	3.0	2.5	4.8	4.8
Lane Grp Cap (vph)	465	2104			194	229		180	229	710	2591	1195
v/s Ratio Prot		0.14									0.25	
v/s Ratio Perm	c0.36				0.03	c0.09		0.05	0.00	0.09		0.02
v/c Ratio	0.48	0.18			0.20	0.64		0.41	0.02	0.11	0.32	0.03
Uniform Delay, d1	3.7	2.8			30.8	32.2		31.7	29.3	2.6	3.2	2.5
Progression Factor	3.13	3.09			1.00	1.00		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.4	0.2			0.5	6.0		1.5	0.0	0.3	0.3	0.1
Delay (s)	15.1	8.8			31.3	38.2		33.2	29.4	3.0	3.5	2.5
Level of Service	B	A			C	D		C	C	A	A	A
Approach Delay (s)	11.1				37.3			32.0			3.4	
Approach LOS	B				D			C			A	

Intersection Summary			
HCM 2000 Control Delay	12.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.8
Intersection Capacity Utilization	54.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	98	7	67	71	221	12	250	64	261	250	14
Future Volume (vph)	8	98	7	67	71	221	12	250	64	261	250	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.9			3.9	3.9	3.9	3.9		3.9	3.9	3.9
Lane Util. Factor		1.00			1.00	1.00	1.00	0.95		1.00	1.00	1.00
Frt		0.99			1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected		1.00			0.98	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1877			1855	1615	1805	3499		1805	1900	1615
Flt Permitted		0.98			0.83	1.00	0.54	1.00		0.55	1.00	1.00
Satd. Flow (perm)		1853			1571	1615	1028	3499		1042	1900	1615
Peak-hour factor, PHF	0.89	0.89	0.89	0.81	0.81	0.81	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	9	110	8	83	88	273	13	269	69	281	269	15
RTOR Reduction (vph)	0	4	0	0	0	150	0	38	0	0	0	9
Lane Group Flow (vph)	0	123	0	0	171	123	13	300	0	281	269	6
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases		4			4			2			2	
Permitted Phases	4			4		4	2			2		2
Actuated Green, G (s)		27.1			27.1	27.1	25.1	25.1		25.1	25.1	25.1
Effective Green, g (s)		27.1			27.1	27.1	25.1	25.1		25.1	25.1	25.1
Actuated g/C Ratio		0.45			0.45	0.45	0.42	0.42		0.42	0.42	0.42
Clearance Time (s)		3.9			3.9	3.9	3.9	3.9		3.9	3.9	3.9
Lane Grp Cap (vph)		836			709	729	430	1463		435	794	675
v/s Ratio Prot								0.09			0.14	
v/s Ratio Perm		0.07			c0.11	0.08	0.01			c0.27		0.00
v/c Ratio		0.15			0.24	0.17	0.03	0.21		0.65	0.34	0.01
Uniform Delay, d1		9.7			10.1	9.8	10.3	11.1		13.9	11.8	10.2
Progression Factor		1.00			1.04	3.15	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		0.4			0.8	0.5	0.1	0.3		7.2	1.2	0.0
Delay (s)		10.0			11.3	31.2	10.4	11.4		21.1	13.0	10.2
Level of Service		B			B	C	B	B		C	B	B
Approach Delay (s)		10.0			23.6			11.4			17.0	
Approach LOS		B			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	17.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	7.8
Intersection Capacity Utilization	47.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	36	280	25	70	159	209	18	260	98	151	223	47
Future Volume (vph)	36	280	25	70	159	209	18	260	98	151	223	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.9	3.9		3.9	3.9			3.9			3.9	
Lane Util. Factor	1.00	0.95		1.00	0.95			0.95			0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.99		1.00	0.91			0.96			0.98	
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.98	
Satd. Flow (prot)	1805	3561		1805	3302			3449			3482	
Flt Permitted	0.50	1.00		0.54	1.00			0.93			0.71	
Satd. Flow (perm)	947	3561		1034	3302			3211			2499	
Peak-hour factor, PHF	0.88	0.88	0.88	0.91	0.91	0.91	0.86	0.86	0.86	0.88	0.88	0.88
Adj. Flow (vph)	41	318	28	77	175	230	21	302	114	172	253	53
RTOR Reduction (vph)	0	13	0	0	158	0	0	50	0	0	13	0
Lane Group Flow (vph)	41	333	0	77	247	0	0	387	0	0	465	0
Confl. Peds. (#/hr)			7						1			5
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Actuated Green, G (s)	14.8	14.8		14.8	14.8			24.5			24.5	
Effective Green, g (s)	14.8	14.8		14.8	14.8			24.5			24.5	
Actuated g/C Ratio	0.31	0.31		0.31	0.31			0.52			0.52	
Clearance Time (s)	3.9	3.9		3.9	3.9			3.9			3.9	
Vehicle Extension (s)	4.8	4.8		4.8	4.8			5.8			5.8	
Lane Grp Cap (vph)	297	1118		324	1037			1670			1299	
v/s Ratio Prot		c0.09			0.07							
v/s Ratio Perm	0.04			0.07				0.12			c0.19	
v/c Ratio	0.14	0.30		0.24	0.24			0.23			0.36	
Uniform Delay, d1	11.6	12.2		12.0	12.0			6.2			6.7	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.4	0.3		0.7	0.2			0.2			0.5	
Delay (s)	12.0	12.5		12.7	12.2			6.4			7.1	
Level of Service	B	B		B	B			A			A	
Approach Delay (s)		12.5			12.3			6.4			7.1	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	9.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	47.1	Sum of lost time (s)	7.8
Intersection Capacity Utilization	57.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	NBL	NBR	NBR2	SEL	SET	SER	NWL	NWT	NWR	SWL2	SWL	SWR
Lane Configurations												
Traffic Volume (vph)	158	582	46	50	5	193	17	6	54	47	420	55
Future Volume (vph)	158	582	46	50	5	193	17	6	54	47	420	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	4.4			4.4	3.6		4.4	3.6	4.4	4.4	4.4
Lane Util. Factor	1.00	0.88			1.00	1.00		1.00	1.00	1.00	0.97	1.00
Frt	1.00	0.85			1.00	0.85		1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00			0.96	1.00		0.96	1.00	0.95	0.95	1.00
Satd. Flow (prot)	1770	2787			1781	1583		1796	1583	1770	3433	1583
Flt Permitted	0.49	1.00			0.72	1.00		0.77	1.00	0.39	0.95	1.00
Satd. Flow (perm)	914	2787			1345	1583		1432	1583	719	3433	1583
Peak-hour factor, PHF	0.97	0.97	0.97	0.96	0.96	0.96	0.73	0.73	0.73	0.91	0.91	0.91
Adj. Flow (vph)	163	600	47	52	5	201	23	8	74	52	462	60
RTOR Reduction (vph)	0	3	0	0	0	178	0	0	66	0	0	13
Lane Group Flow (vph)	163	644	0	0	57	23	0	31	8	52	462	47
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Perm	Over		Perm	NA	Perm	Perm	NA	Perm	Perm	Prot	Perm
Protected Phases		2			4			4			2	
Permitted Phases	6			4		4	4		4	6		2
Actuated Green, G (s)	63.0	63.0			9.1	9.1		9.1	9.1	63.0	63.0	63.0
Effective Green, g (s)	62.9	62.9			8.3	9.1		8.3	9.1	62.9	62.9	62.9
Actuated g/C Ratio	0.79	0.79			0.10	0.11		0.10	0.11	0.79	0.79	0.79
Clearance Time (s)	4.3	4.3			3.6	3.6		3.6	3.6	4.3	4.3	4.3
Vehicle Extension (s)	2.5	4.8			3.0	3.0		3.0	3.0	2.5	4.8	4.8
Lane Grp Cap (vph)	718	2191			139	180		148	180	565	2699	1244
v/s Ratio Prot		c0.23									0.13	
v/s Ratio Perm	0.18				c0.04	0.01		0.02	0.01	0.07		0.03
v/c Ratio	0.23	0.29			0.41	0.13		0.21	0.05	0.09	0.17	0.04
Uniform Delay, d1	2.2	2.4			33.6	31.9		32.8	31.6	2.0	2.1	1.9
Progression Factor	0.40	0.41			1.00	1.00		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.7	0.3			2.0	0.3		0.7	0.1	0.3	0.1	0.1
Delay (s)	1.6	1.3			35.5	32.2		33.6	31.7	2.3	2.2	1.9
Level of Service	A	A			D	C		C	C	A	A	A
Approach Delay (s)	1.4				32.9			32.2			2.2	
Approach LOS	A				C			C			A	

Intersection Summary			
HCM 2000 Control Delay	8.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.31		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.8
Intersection Capacity Utilization	47.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Appendix:
PEQI Calculation Sheet

City of Pasadena
Department of Transportation
Pedestrian Environmental Quality Index
Calculation Summary
-- Segment --

Segment: Rosemont Avenue
Limits: Between Washington Blvd and Rose Bowl Dr

Indicator Category	Score Weight	Indicator Response	Southbound (West side) Surveyed Response Category Score	Indicator Response	Northbound (East side) Surveyed Response Category Score
Traffic					
Number of Lanes	0.64	2	9	2	9
Posted Speed Limit	0.64	Over 25 mph	0	Over 25 mph	0
Traffic Volume[1]	0.64	1,000-6,000 V/D	11	1,000-6,000 V/D	11
Street Traffic Calming Features (TCFs)	0.64	None	0	None	0
			20		**20**
Street design					
Width of Sidewalk	1.35	No Sidewalk	0	No Sidewalk	0
Width of Throughway	1.35	No Sidewalk	0	No Sidewalk	0
Large SW Obstructions	1.35	None	22	None	22
Sidewalk Impediments	1.35	None	24	None	24
Trees	1.35	Continuous	9	Continuous	9
Driveway Cuts	1.35	1 to 5	7	None	15
Presence of Buffer	1.35	None	0	Parallel parking	11
Planters/Gardens	1.35	Yes	4	Yes	4
Public Seating	1.35	No	0	No	0
			66		**85**
Land Use					
Public Art/ Historic Sites	0.15	Yes	4	No	0
Retail Use/Public Places	0.15	1 or 2	7	None	0
			11		**0**
Perceived Safety					
Lighting	0.34	None	0	None	0
Illegal Graffiti	0.34	No	2	No	2
Litter	0.34	No	11	No	11
Empty Spaces	0.34	No	4	No	4
			17		**17**

Domain Summary	Score Weight		Category Score		Category Score
Traffic	0.64	Traffic	20	Traffic	20
Street Design	1.35	Street Design	66	Street Design	85
Land Use	0.15	Land Use	11	Land Use	0
Safety	0.34	Safety	17	Safety	17
	2.48		114		122

PEQI Score **46** Southbound (West side)

PEQI Score **49** Northbound (East side)

Appendix:
BEQI Calculation Sheet

City of Pasadena
Department of Transportation
Bicycle Environmental Quality Index
Calculation Summary

Segment: Rosemont Avenue
Limits: Between Washington Blvd and Rose Bowl Dr

Indicator Category	Score Weight	Indicator Response	Southbound (West side) Surveyed Response Category Score	Indicator Response	Northbound (East side) Surveyed Response Category Score
Street design					
Presence of a Marked Area for Bicycle Traffic	2.05	None	4	None	4
Width of Bike Lane	2.05	None	0	None	0
Bicycle Lane Markings	2.05	None	4	None	4
Connectivity of Bicycle Lanes	2.05	No	13	No	13
Pavement Type/Condition	2.05	Smooth Surface	40	Smooth Surface	40
Street Slope	2.05	< 5%	27	< 5%	27
Driveway Cuts	2.05	Few (Less than Five)	16	None	27
Presence of Trees	2.05	Continuously Lined	29	Continuously Lined	29
			133		**144**
Vehicle Traffic					
Posted Speed Limit	1.39	35	0	35	0
Traffic Volume - Avg # of Vehicles Per Day	1.39	1,000 - 5,000	19	1,000 - 5,000	19
Percentage of Heavy Vehicles	1.39	Less than 5%	36	Less than 5%	36
Parallel Parking Adjacent to Bicycle Lane/Route	1.39	None	27	Time-restricted Parallel Parking (TPP) < 7 ft	19
Traffic Calming Features Streets	1.39	0 TCF	11	0 TCF	11
Number of Lanes	1.39	2	31	2	31
			124		**116**
Safety/Other					
Presence of Bicycle Lane Signs	0.42	No	15	No	15
Bicycle/Pedestrian Scale Lighting	0.42	No	15	No	15
			30		**30**
Land Use					
Bicycle Parking	0.66	No	12	No	12
Retail Use	0.66	1 - 2	16	0	14
Line of Site	0.66	Clear Line of Sight	36	Clear Line of Sight	36
			64		**62**

Domain Summary	Score Weight	Min Score	Category Score	Min Score	Category Score
Street design	2.05	62	133	62	144
Vehicle Traffic	1.39	59	124	59	116
Safety/Other	0.42	30	30	30	30
Land Use	0.66	33	64	33	62
	4.52	184	351	184	352

BEQI Score [1] **37** Southbound (West side)

BEQI Score [1] **37** Northbound (East side)

MEMORANDUM

PASADENA DEPARTMENT OF TRANSPORTATION

MOVING PEOPLE TO PLACES, CONNECTIVITY

DATE: **June 3, 2021**

TO: **Luis Rocha, Zoning Administrator**
Planning and Development Department

FROM: **Nader Asmar, T.E.**
Principal Engineer

RE: **CEQA**

CASE: **Brookside Golf Course Improvements Project**
1133 Rosemont Avenue

The City of Pasadena, Department of Transportation (DOT) reviewed the application for the improvements to the existing Brookside Golf Course described as an expansion of the existing 20-bay driving range to 60 bays, and the addition of a 36-hole miniature golf course. As indicated in the project description, the existing Brookside Golf Complex is currently served by approximately 100 employees, and operation of the project would not require additional employees.

Since there is no increase in service population, there will be no significant impact to any of the City's five CEQA transportation thresholds.

This memo was prepared based on the project scope provided to DOT. An update of the findings might be required if a significant change is made to the project scope, or if additional analysis is requested by the decision makers.

If you have any questions, please feel free to contact me, or Mr. Conrad Viana of my staff at extension 7424.

c: Laura Rubio-Cornejo, Director of Transportation
David Reyes, Planning Director, Planning Department
Jennifer Paige, Deputy Planning Director, Planning Department
Beilin Yu, Senior Planner, Planning Department

MEMORANDUM

PASADENA DEPARTMENT OF TRANSPORTATION

MOVING PEOPLE TO PLACES, CONNECTIVITY

DATE: **June 3, 2021**

TO: **Luis Rocha, Zoning Administrator**
Planning and Development Department

FROM: **Nader Asmar, T.E.**
Principal Engineer

RE: **Transportation Analysis – Conditions of Approval**

CASE: **1133 Rosemont Avenue**

The City of Pasadena, Department of Transportation (DOT) conducted a transportation analysis for the improvements to the existing Brookside Golf Course described as an expansion of the existing 20-bay driving range to 60 bays, and the addition of a 36-hole miniature golf course.

Pursuant to the City's transportation study guidelines, DOT recommends the following conditions for the project:

1. Prior to the start of construction or the issuance of any permits, the applicant shall submit a Construction Staging & Traffic Management Plan to the Department of Public Works for review and approval. This plan shall show the impact of the various construction stages on the public right-of-way including street occupations, closures, detours, staging areas, and routes of construction vehicles entering and exiting the construction site.

   Construction-related traffic (delivery trucks or haul trucks) shall be restricted to the hours between 9:00 AM to 3:00 PM to limit peak hour traffic conflict along the local street network.

2. The project shall satisfy the project's parking requirements to the satisfaction of the Planning Department.

The study and conditions have been prepared based on the project scope provided to DOT. An update of the traffic study and its findings might be required if a significant change is made to the project scope, or if additional analysis is requested by the decision makers.

If you have any questions, please feel free to contact me, or Mr. Conrad Viana of my staff at extension 7424.

Enclosed: Transportation Analysis – Outside of CEQA, dated May 28, 2021

c: Laura Rubio-Cornejo, Director of Transportation
David Reyes, Planning Director, Planning Department
Jennifer Paige, Deputy Planning Director, Planning Department
Beilin Yu, Senior Planner, Planning Department

Appendix

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