APPENDIX A

Site Design Plans

CITY OF HALF MOON BAY
SAN MATEO COUNTY, CALIFORNIA
SMITH FIELD PARKING LOT PROJECT
CITY PROJECT NO. 1008

VICINITY MAP

NO SCALE

SEE SHEET C3.0 FOR LOCATION MAP

GENERAL NOTES:

1. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THESE PLANS, SPECIAL PROVISIONS, THE CITY OF HALF MOON BAY DEPARTMENT OF PUBLIC WORKS STANDARD SPECIFICATIONS FOR PUBLIC IMPROVEMENTS, AND CALTRANS STANDARD PLANS AND SPECIFICATIONS DATED 2022.

2. CONSTRUCTION CONTRACTOR AGREES THAT IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, CONSTRUCTION CONTRACTOR WILL BE REQUIRED TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY; THAT THIS REQUIREMENT SHALL BE MADE TO APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS; AND CONSTRUCTION CONTRACTOR FURTHER AGREES TO DEFEND, INDEMNIFY AND HOLD THE OWNER AND FREYER & LAURETA, INC. HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THE PROJECT.

3. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE WITH THE APPROPRIATE UTILITY COMPANIES AND TO OBTAIN ANY PERMITS REQUIRED BY THE CITY OF HALF MOON BAY AND OTHER AGENCIES IN ORDER TO DO THE WORK SHOWN ON THESE PLANS.

4. THE CITY ENGINEER SHALL BE NOTIFIED IN WRITING FIVE (5) DAYS PRIOR TO COMMENCING CONSTRUCTION OPERATIONS. THE CONTRACTOR SHALL GIVE THE CITY OF HALF MOON BAY ENGINEERING DEPARTMENT AT LEAST THREE (3) WORKING DAYS ADVANCE NOTICE PRIOR TO BEGINNING OF ACTUAL WORK AND ALL REQUIRED INSPECTION REQUESTS, AT (650) 558-7230.

5. THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES AND TOPOGRAPHIC FEATURES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE TRUE LOCATION OF ALL EXISTING UTILITIES RELATIVE TO THE TOPOGRAPHIC FEATURES BEFORE COMMENCING WORK AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES, BUILDINGS AND WALLS. THE CONTRACTOR SHALL NOTIFY THE UTILITY COMPANIES THAT WILL BE AFFECTED BY THE WORK TO OBTAIN ASSISTANCE IN LOCATING EXISTING MAINS AND SERVICE CONNECTIONS. A LIST OF MAJOR UTILITY COMPANIES WITH KNOWN EXISTING UNDERGROUND UTILITIES IN THE AREA IS:

UTILITY COMPANY	UTILITY	TELEPHONE NO.
PG&E	GAS	800-743-5000
PG&E	ELECTRIC	800-743-5000
AT&T	TELEPHONE	800-924-9420
COMCAST	TELECOM	800-391-3000
COASTSIDE COUNTY WATER DISTRICT	WATER	650-726-4405
CITY OF HALF MOON BAY	SANITARY SEWER & STORM	650-726-8270

PRIOR TO ANY DIGGING CALL U.S.A. (800) 642-2444 or 811 48 HOURS IN ADVANCE TO HAVE EXISTING UNDERGROUND FACILITIES MARKED.

6. THE CONTRACTOR SHALL COORDINATE THE CONSTRUCTION OPERATION WITH ALL THE UTILITIES COMPANIES WHICH ARE TO RELOCATE OR INSTALL THEIR UTILITIES TO ACHIEVE AN EFFICIENT SCHEDULE OF OPERATIONS THAT DOES NOT DELAY CONSTRUCTION.

7. AS PART OF THEIR PRE-BID INSPECTION, BIDDERS SHALL VISIT THE SITE AND NOTE THE TYPE AND LOCATION OF OVERHEAD UTILITIES IN THE PROPOSED WORK AREA. BIDDERS PRICE SHALL INCLUDE PROVISIONS FOR WORKING IN AREAS WHERE OVERHEAD UTILITIES EXIST AT THE TIME OF BIDDING, WHETHER SHOWN ON THE PLAN OR NOT, AND NO ADDITIONAL COMPENSATION IS ALLOWED.

8. THE CONTRACTOR SHALL NOTIFY THE CITY ENGINEER OF ANY DISCREPANCIES OR UNUSUAL CONDITIONS ASSOCIATED WITH THE PLANS, DETAILS OR CONSTRUCTION NOTES FIVE (5) DAYS PRIOR TO FINALIZATION OF BIDS AND COMMENCEMENT OF ANY CONSTRUCTION.

9. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PROTECT ANY SURVEYING MONUMENTS FOUND WITHIN PROJECT AREA, AND FURTHER THE CONTRACTOR SHALL BE FINANCIALLY RESPONSIBLE FOR RESETTING MONUMENTS DAMAGED OR DESTROYED BY THE CONSTRUCTION OPERATIONS.

10. HORIZONTAL AND VERTICAL DIMENSIONS PROVIDED ON THE DRAWINGS ARE BASED ON FIELD MEASUREMENTS. ADJUSTMENTS MAY BE MADE BY THE ENGINEER DURING CONSTRUCTION. PAYMENT WILL BE BASED ON QUANTITIES INSTALLED.

11. REFER TO SPECIFICATIONS FOR TRAFFIC CONTROL RESTRICTIONS AND HOURS OF WORK.

12. THE CONTRACTOR SHALL MAINTAIN ACCESS TO ALL DRIVEWAYS AND FOOT TRAFFIC AT ALL TIMES EXCEPT WHEN PRECLUDED BY NECESSARY CONSTRUCTION, AS NOTED IN CALTRANS TRAFFIC MANUAL AND AS APPROVED BY THE CITY ENGINEER OR RESIDENT TO CLOSE ACCESS.

13. THE CONTRACTOR SHALL PROVIDE ALL LIGHTS, SIGNS, BARRICADES, FLAGMAN OR OTHER DEVICES NECESSARY TO PROVIDE FOR PUBLIC SAFETY IN ACCORDANCE WITH THE SPECIAL PROVISIONS.

14. THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR ANY FIELD CHANGES MADE WITHOUT PRIOR WRITTEN AUTHORIZATION FROM THE CITY ENGINEER.

15. UPON SATISFACTORY COMPLETION OF THE WORK, THE ENTIRE WORK SITE SHALL BE CLEANED AND LEFT FREE OF CONSTRUCTION WASTE, RUBBISH AND DEBRIS OF ANY NATURE TO THE SATISFACTION OF THE CITY ENGINEER.

16. CONSTRUCTION STAKING TO BE PROVIDED BY THE CONTRACTOR. CONTRACTOR SHALL MAINTAIN STAKING POINTS AT ALL TIMES DURING CONSTRUCTION.

17. NOTES APPEARING ON THESE PLANS SHALL BE CONSIDERED AS REFERRING TO INCIDENTAL WORK REQUIRED FOR THE ACTIVITIES SPECIFICALLY LISTED IN THE BID SCHEDULE. NO ADDITIONAL COMPENSATION SHALL BE ALLOWED FOR ACTIVITIES OTHER THAN THOSE LISTED IN THE BID SCHEDULE.

18. THE CONTRACTOR SHALL PROVIDE ALL MATERIALS, LABOR, EQUIPMENT AND APPARATUS NOT SPECIFICALLY MENTIONED ON THE PLANS OR SPECIFICATIONS, BUT WHICH ARE NECESSARY TO COMPLETE THE CONTRACTED WORK.

19. THE CONTRACTOR SHALL SUPPLY AND MAINTAIN SANITARY FACILITIES FOR THE WORKERS AT THE CONSTRUCTION SITE.

20. THE CONTRACTOR SHALL SATISFY THEMSELVES AS TO THE CORRECTNESS OF THE EXISTING TOPOGRAPHY, UTILITIES, AND EXISTING CONDITIONS PRIOR TO BIDDING THE PROJECT.

21. TREES AND SHRUBS WITHIN THE CITY EASEMENT AND ON PRIVATE PROPERTY ADJACENT TO THE PROJECT WORK, NOTED ON THE PLANS TO BE PROTECTED, SHALL BE PROTECTED FROM DAMAGE DURING CONSTRUCTION. CONTRACTOR SHALL DEVELOP METHODS TO WORK AROUND THE TREES. (650)558-7330

22. CONTRACTOR TO CONTACT CITY ENGINEER, INSPECTOR, AND CITY ARBORIST TO IDENTIFY TREES TO BE PRUNED OR REMOVED FROM CITY EASEMENT AS REQUIRED FOR ACCESS TO PROJECT AREA.

23. CONTRACTOR IS RESPONSIBLE FOR SELECTING THE MEANS, METHODS, AND EQUIPMENT TO CONSTRUCT THE IMPROVEMENTS IDENTIFIED ON THE DRAWINGS.

24. THE PAVEMENT GRINDING MAY CONTAIN FABRIC, ENGINEERED PAVING MAT, OR OTHER CONTAMINATED MATERIALS IN SOME CITY STREETS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO REMOVE AND DISPOSE OF THESE MATERIALS ALONG WITH THE GRINDING. THERE WILL BE NO ADDITIONAL COMPENSATION ALLOWED.

ABBREVIATIONS

AB	AGGREGATE BASE
AC	ASPHALT CONCRETE
ADA	AMERICANS WITH DISABILITIES ACT
BMP'S	BEST MANAGEMENT PRACTICES
BW	BACK OF WALK
CA	CALIFORNIA
CB	CATCH BASIN
CDF	CONTROLLED DENSITY FILL
CL	CENTER LINE
CONC	CONCRETE
DET	DETAIL
DIP	DUCTILE IRON PIPE
DWY	DRIVEWAY
E	ELECTRIC
EL	ELEVATION
EX OR (E)	EXISTING
EV	ELECTRIC VEHICLE
FC	FACE OF CURB
FG	FINISHED GRADE
FL	FLOW LINE
FW	FRONT OF WALK
GB	GRADE BREAK
HP	HIGH POINT
INV	INVERT ELEVATION
ISA	INTERNATIONAL SYMBOL OF ACCESSIBILITY
LF	LINEAR FEET
LG	LIP OF GUTTER
LT	LEFT
MAX	MAXIMUM
MIN	MINIMUM
MUTCD	MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES
RCP	REINFORCED CONCRETE PIPE
REQ'D	REQUIRED
ROW	RIGHT OF WAY
RT	RIGHT
S	SLOPE
SD	STORM DRAIN
SDCB	STORM DRAIN CATCH BASIN
SF	SQUARE FEET
SS	SANITARY SEWER
SSCO	SANITARY SEWER CLEANOUT
STA	STATION
STD	STANDARD
SW	SIDEWALK
TC	TOP OF CURB
TYP (TYP)	TYPICAL
UNK.	UNKNOWN
W	WATER

SHEET INDEX:

LEGEND

- STORM DRAIN TO BE INSTALLED
- EXISTING STORM DRAIN
- SS — SS EXISTING SANITARY SEWER
- GAS — GAS EXISTING GAS LINE
- OH — OH EXISTING ELECTRICAL LINE OVER HEAD
- W — W EXISTING WATER LINE
- EXISTING CITY LIMITS LINE
- ROLLED CURB AND GUTTER
- CURB AND GUTTER
- ABANDONED WATER LINE
- PROPOSED STORM DRAIN INLET
- PROPOSED STORM DRAIN MANHOLE
- PP / JP EXISTING JOINT POLE/ POWER POLE
- G EXISTING GAS VALVE
- W EXISTING WATER VALVE
- WM EXISTING WATER METER
- CO EXISTING CLEAN OUT
- EXISTING FIRE HYDRANT
- S / D EXISTING SEWER / STORM DRAIN MANHOLE
- ELEC EXISTING ELECTRICAL PULL BOX
- EXISTING CATCH BASIN
- TRAFFIC SIGN

DETAIL CALL-OUT

4 — DETAIL NUMBER

C8.0 — SHEET NO. WHERE DETAIL IS LOCATED OR SPEC SECTION

TWO DAYS BEFORE YOU DIG
CALL USA TOLL FREE
800-642-2444
OR 811

REGISTERED PROFESSIONAL ENGINEER
MAZIAR BOZORGINIA
NO. 76723
EXP. 12/31/24
CIVIL
STATE OF CALIFORNIA

APPROVED BY:
CITY OF HALF MOON BAY

MAZIAR BOZORGINIA — DATE
CITY ENGINEER

TITLE SHEET

SMITH FIELD PARKING LOT PROJECT
Half Moon Bay, CA

REGISTERED PROFESSIONAL ENGINEER
RICHARD J. LAURETA
C-055783
Exp.12/31/24
CIVIL
STATE OF CALIFORNIA
NOT FOR CONSTRUCTION

FREYER & LAURETA, INC.
CIVIL ENGINEERS • SURVEYORS • CONSTRUCTION MANAGERS
150 Executive Park Blvd • Suite 4200 • San Francisco, CA 94134
(415) 534-7070 • www.freyerlaureta.com

THE CITY OF HALF MOON BAY CALIFORNIA

City of Half Moon Bay

501 Main Street
Half Moon Bay
CA 94019

p 650-726-7177
f 650-726-8261
hmbcity.com

REVISIONS	BY
35% SUBMITTAL	CG

DATE	09-13-2024
SCALE	AS SHOWN
DRAWN	CG
JOB NO.	276005
DWG	
SHEET	C1.0 OF 12 SHEETS

CONSTRUCTION NOTES:

THE FOLLOWING CONTROL MEASURES FOR CONSTRUCTION ACTIVITIES SHALL BE ADHERED TO, UNLESS OTHERWISE APPROVED BY THE CITY ENGINEER.

1. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO CALL THE CITY OFFICE AT (650)726–8285 FOR INSPECTION 24 HOURS PRIOR TO PERFORMING ANY WORK. WORK PERFORMED WITHOUT WITHOUT CALLING FOR INSPECTION SHALL BE REJECTED AND SHALL BE REMOVED SOLELY AT THE CONTRACTOR'S EXPENSE.
2. THE CONTRACTOR SHALL SATISFY HIMSELF/HERSELF THAT ESTIMATED QUANTITIES SHOWN ARE CORRECT BEFORE BIDDING ON ANY ITEM.
3. ALL EXISTING PAVEMENT TO BE REMOVED SHALL BE SAW CUT AND REMOVED TO CLEAN STRAIGHT LINES. HEADER CUTS MAY BE PROVIDED ADJACENT TO SAWCUTS.
4. CONTRACTOR SHALL BE RESPONSIBLE FOR THE DISPOSAL OF ANY EXCESS MATERIALS FROM THE WORK SITE.
5. EROSION CONTROL MEASURES SHALL BE INSTALLED AS NECESSARY TO PREVENT SEDIMENT RUNOFF TO PUBLIC ROADWAY DRAINAGE FACILITIES, ADJACENT PROPERTIES AND THE SAN FRANCISCO BAY.
6. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGES ON OR OFF THE PROJECT SITE AS A RESULT OF LACK OF DUST CONTROL.
7. DURING THE PROGRESS OF THE CONSTRUCTION WORK THE CONTRACTOR SHALL MAINTAIN THE PREMISES IN A NEAT AND CLEAN CONDITION, DISPOSING OF REFUSE IN A SATISFACTORY MANNER AS OFTEN AS DIRECTED OR AS MAY BE NECESSARY SO THAT THERE SHALL BE AT NO TIME ANY UNSIGHTLY ACCUMULATION OF RUBBISH AT THE JOB SITE.
8. CONTRACTOR TO ADHERE TO ALL REQUIREMENTS OF THE SAN MATEO COUNTY HEALTH SERVICES AGENCY.
9. STORAGE OF CONSTRUCTION MATERIALS AND EQUIPMENT WILL NOT BE ALLOWED IN OR UPON THE PUBLIC RIGHT–OF–WAY. ALL MATERIALS INTENDED FOR USE ON ANY PROJECT SHALL BE OFF LOADED DIRECTLY FROM DELIVERY. VEHICLES AND PLACED AS REQUIRED DURING THE COURSE OF CONSTRUCTION. SHOULD THE PERMIT HOLDER OR SUB–CONTRACTORS WISH TO STOCKPILE MATERIALS NEAR THE WORK SITE, THEY SHALL MAKE ARRANGEMENTS IN ADVANCE FOR STORAGE. ALL STORAGE SITES SHALL BE SECURE, INACCESSIBLE TO THE GENERAL PUBLIC AND KEPT FREE OF CONSTRUCTION SPOILS, DEBRIS AND TRASH AT ALL TIMES. STORAGE SITES SHALL BE SUBJECT TO THE REVIEW AND APPROVAL OF THE CITY ENGINEER. CONTRACTOR SHALL COORDINATE WITH THE CITY TO FIND AN APPROPRIATE LOCATION FOR STOCKPILING AND PROTECTING MATERIALS DURING CONSTRUCTION.
10. CONTRACTOR SHALL COMPLY WITH THE RULES AND REGULATIONS OF THE STATE CONSTRUCTION SAFETY ORDERS.
11. THE CONTRACTOR SHALL PROVIDE ALL LIGHTS, SIGNS, BARRICADES, FLAG MEN OR OTHER DEVICES NECESSARY TO PROVIDE FOR PUBLIC SAFETY & TRAFFIC CONTROL.
12. THE CONTRACTOR SHALL POST EMERGENCY TELEPHONE NUMBERS FOR POLICE, FIRE, AMBULANCE, AND THOSE AGENCIES RESPONSIBLE FOR MAINTENANCE OF UTILITIES IN THE VICINITY OF JOB SITE.
13. THE CONTRACTOR SHALL IMMEDIATELY REPORT ANY SOIL OR WATER CONTAMINATION NOTICED DURING CONSTRUCTION TO THE CITY OF HALF MOON BAY FIRE DEPARTMENT HAZARDOUS MATERIALS DIVISION, THE SAN MATEO COUNTY DEPARTMENT OF HEALTH, AND THE CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD.
14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO THE SITE OR SURROUNDING AREA DUE TO DUST OR EROSION, RESULTING FROM WORK DONE BY THE CONTRACTOR. CONTRACTOR SHALL PROVIDE A SEVEN (7) DAY PHONE NUMBER TO RECEIVE AND RESPOND TO DUST COMPLAINTS RESULTING FROM ALL CONSTRUCTION OPERATIONS AND SHALL BE MAINTAINED UNTIL CONSTRUCTION IS COMPLETE. ALL BUSINESSES AND RESIDENTS WITHIN 300' OF THE PROJECT SHALL BE NOTIFIED BY THE CONTRACTOR BY MAIL WITH INFORMATION AND COMPLAINT LINES TO BE CALLED.
15. CONTRACTOR IS TO MAINTAIN ALL JOB SITE FACILITIES UNTIL ACCEPTED BY THE CITY.
16. ALL EXCAVATION SPOILS SHALL BE PLACED DIRECTLY INTO TRUCKS AND DISPOSED OF AT AN APPROVED DUMPSITE.
17. CONSTRUCTION HOURS IN THE CITY PUBLIC RIGHT–OF–WAY ARE LIMITED TO WEEKDAYS AND NON–CITY HOLIDAYS BETWEEN 8:00AM TO 5:00PM.
18. SURVEY ELEVATIONS SHOWN ARE BASED ON ASSUMED BENCHMARKS. ELEVATIONS DO NOT RELATE TO SEA LEVEL.
19. CONTRACTOR SHALL ADJUST ALL EXISTING SURFACE UTILITY FEATURES FOR ASPHALT AND CONCRETE REPAVING. UPON COMPLETION, UTILITY FEATURES SHALL BE SET FLUSH WITH NEW SURFACE GRADE. ADJUSTMENT OF ALL EXISTING SURFACE UTILITY FEATURES SHALL BE INCLUDED IN CONTRACTORS PRICE WHETHER OR NOT SPECIFICALLY CALLED OUT ON THE PLANS.
20. CONTRACTOR SHALL ACCOUNT FOR NECESSARY GROUNDWATER CONTROL.
21. IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROTECT ANY SURVEYING MONUMENT OR GROUNDWATER MONUMENTS WITHIN PROJECT AREA, AND FURTHER, THE CONTRACTOR IS FINANCIALLY RESPONSIBLE FOR RESETTING MONUMENTS DAMAGED OR DESTROYED BY THE CONSTRUCTION OPERATIONS INCLUDING FILING THE CORNER RECORD(S) AS REQUIRED BY LAW.
22. PAVEMENT GRINDINGS MAY CONTAIN FABRIC OR OTHER CONTAMINATED MATERIALS. IT IS YOUR RESPONSIBILITY TO REMOVE AND DISPOSE OF THESE MATERIALS ALONG WITH THE GRINDING SPOILS. THERE WILL BE NO ADDITIONAL COMPENSATION ALLOWED.

CONCRETE GENERAL NOTES:

1. SUBGRADE SHALL BE COMPACTED TO AT LEAST 95% RELATIVE COMPACTION. WHERE SUBGRADE CAN NOT BE COMPACTED TO 95% REMEDIAL METHODS SHOWN SHALL BE INCORPORATED IN THE WORK.
2. WHERE UNSUITABLE SUBGRADE MATERIAL IS ENCOUNTERED, REMEDIAL WORK TO BE DONE UNDER THE DIRECTION OF THE CITY ENGINEER, INCLUDES BUT IS NOT LIMITED TO, REMOVING UNSUITABLE MATERIAL AND PLACING A LAYER OF GEOTECHNIC FABRIC AND CLASS 2 AGGREGATE BASE COMPACTED TO 95% UNDER THE INSTALLATION.
3. OVER–EXCAVATED SUBGRADE FOR GUTTER OR SIDEWALK SHALL BE BACK–FILLED WITH CLASS 2 AGGREGATE BASE MATERIAL.
4. EXISTING CONCRETE SHALL BE REMOVED PER CITY OF HALF MOON BAY STANDARDS AND SPECIFICATIONS.
5. SEE PROJECT SPECIFICATIONS FOR CONCRETE TYPE AND FINISHES.
6. NO ADMIXTURES SHALL BE USED WITHOUT THE PERMISSION OF THE CITY ENGINEER.
7. NO CONCRETE SHALL BE PLACED UNTIL THE CITY ENGINEER OR HIS AUTHORIZED REPRESENTATIVE HAS INSPECTED AND APPROVED FORMS AND SUBGRADE.
8. ALL EXPOSED EDGES SHALL BE ROUNDED WITH 1/2–INCH RADIUS TOOL.
9. ALL SURFACES SHALL BE BROOM FINISHED FOR CURB AND GUTTER. REFER TO PROJECT SPECIFICATIONS FOR FLATWORK AND OTHER CONCRETE IMPROVEMENTS FINISHES.
10. CURBS, SIDEWALKS AND DRIVEWAY APPROACHES SHALL BE BACK FILLED WITHIN 7 DAYS AFTER PLACING CONCRETE. THIS SHALL INCLUDE ANY REQUIRED AC PATCHWORK.
11. FORM FACES SHALL NOT VARY FROM THE DIMENSIONS SHOWN BY MORE THAN .02 FEET. FORMS SHALL MEET GRADE.
12. CONCRETE SHALL BE CURED PER CITY OF HALF MOON BAY STANDARD AND SPECIFICATIONS.
13. ALL WORK WITHIN THE PUBLIC RIGHT–OF–WAY SHALL BE PERFORMED BY A STATE LICENSED "CLASS A" CONTRACTOR. A CONCRETE CONTRACTOR WITH A "C" LICENSE MAY PERFORM CONCRETE FLAT WORK.
14. ALL NEW ASPHALT SHALL BE FLUSH WITH THE ADJACENT SURFACES AT CONFORMS AND EDGES. MAXIMUM ALLOWABLE TOLERANCES SHALL BE .01' LONGITUDINALLY AND .02' TRANSVERSELY.
15. ALL DRIVEWAYS, CURB AND GUTTER, AND SIDEWALK SHALL BE CONSTRUCTED PER CITY STANDARDS. CONTRACTOR IS RESPONSIBLE FOR UNDERSTANDING THESE DETAILS FOR PROPER BIDDING AND INSTALLATION.

UNDERGROUND NOTES:

1. LOCATIONS OF EXISTING UNDERGROUND FACILITIES AND UTILITIES SHOWN ARE BASED ON AVAILABLE UTILITY COMPANY INFORMATION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE ACTUAL LOCATION OF UTILITIES PRIOR TO THE COMMENCEMENT OF WORK. THE CONTRACTOR SHALL CONTACT UNDERGROUND SERVICE ALERT (U.S.A.) AT 811 AT LEAST 48 HOURS IN ADVANCE OF ANY EXCAVATING.
2. PHYSICAL VERIFICATION OF UTILITY LOCATION SHALL BE PERFORMED BY POTHOLING OR HAND DIGGING AND CAREFUL SUBSURFACE PROBING IN CONFORMANCE WITH ARTICLE 6 OF THE CAL/OSHA CONSTRUCTION SAFETY ORDERS. ANY DEVIATIONS FROM LOCATIONS SHOWN ON PLANS SHALL BE BROUGHT TO THE ENGINEER'S ATTENTION BEFORE STARTING CONSTRUCTION.
3. EXISTING UTILITIES ARE SHOWN PER AVAILABLE INFORMATION. THERE MAY BE ADDITIONAL EXISTING LINES NOT SHOWN ON THE PLANS. CONTRACTOR SHALL BE CAREFUL TO AVOID ANY DAMAGE TO THESE UTILITY SERVICES.
4. ALL EXISTING UTILITIES AND IMPROVEMENTS THAT BECOME DAMAGED DURING CONSTRUCTION SHALL BE COMPLETELY RESTORED TO THE SATISFACTION OF THE CITY ENGINEER AND THE UTILITY OWNER AT THE CONTRACTOR'S SOLE EXPENSE.
5. MAIN UTILITIES, OTHER THAN WATER, SANITARY SEWER, AND STORM IN CONFLICT WITH THE WORK WILL BE RELOCATED BY OTHERS. WATER MAINS, SANITARY SEWER MAINS, STORM DRAINS AND THEIR SERVICES REQUIRED TO BE TEMPORARILY OR PERMANENTLY RELOCATED FOR CONSTRUCTION OF PROPOSED IMPROVEMENTS SHALL BE RELOCATED BY THE CONTRACTOR.
6. NOTIFY PG&E SEVEN CALENDAR DAYS PRIOR TO PROCEEDING WITH WORK WITHIN 5 FEET OF THEIR FACILITIES.

REGISTERED PROFESSIONAL ENGINEER
MAZIAR BOZORGINIA
NO. 76723
EXP. 12/31/24
CIVIL
STATE OF CALIFORNIA

APPROVED BY:
CITY OF HALF MOON BAY

MAZIAR BOZORGINIA DATE
CITY ENGINEER

GENERAL NOTES

SMITH FIELD PARKING LOT PROJECT
Half Moon Bay, CA

NOT FOR CONSTRUCTION

FREYER & LAURETA, INC.
CIVIL ENGINEERS • SURVEYORS • CONSTRUCTION MANAGERS

THE CITY OF HALF MOON BAY CALIFORNIA

City of
Half Moon Bay

501 Main Street
Half Moon Bay
CA 94019

p 650–726–7177
f 650–726–8261
hmbcity.com

REVISIONS	BY
35% SUBMITTAL	CG

DATE 09–13–2024
SCALE AS SHOWN
DRAWN CG
JOB NO. 276005
DWG
SHEET C2.0
OF 12 SHEETS

GRAPHIC SCALE

900 0 450 900 1800 3600

(IN FEET)
1 inch = 900 ft.

LOCATION MAP

SMITH FIELD PARKING LOT PROJECT
Half Moon Bay, CA

REGISTERED PROFESSIONAL ENGINEER
C-55783
Exp. 12/31/24
CIVIL
STATE OF CALIFORNIA

FREYER & LAURETA, INC.
CIVIL ENGINEERS • SURVEYORS • CONSTRUCTION MANAGERS

THE CITY OF HALF MOON BAY CALIFORNIA

City of Half Moon Bay

501 Main Street
Half Moon Bay
CA 94019

p 650-726-7177
f 650-726-8261
hmbcity.com

REVISIONS	BY
35% SUBMITTAL	CG

DATE 09-13-2024
SCALE AS SHOWN
DRAWN CG
JOB NO. 276005
DWG
SHEET C3.0 OF 12 SHEETS

REGISTERED PROFESSIONAL ENGINEER
MAZIAR BOZORGINIA
NO. 76723
EXP. 12/31/24
CIVIL
STATE OF CALIFORNIA

APPROVED BY:
CITY OF HALF MOON BAY

MAZIAR BOZORGINIA DATE
CITY ENGINEER

LEGEND

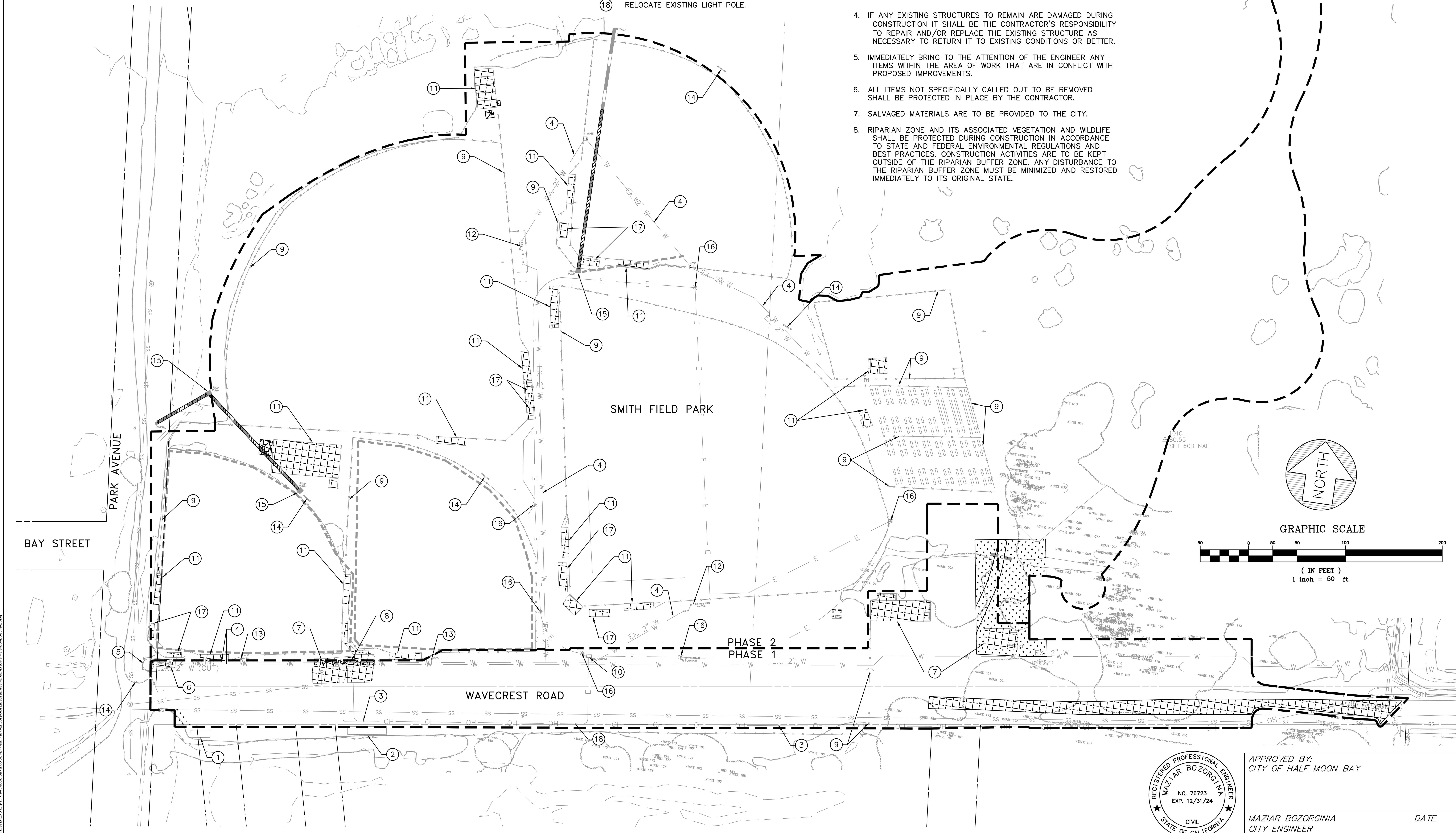
- EXISTING CONCRETE TO BE REMOVED
- CLEAR AND GRUB
- PROPERTY LINE
- PHASING DELINEATION LINEWORK
- STORM DRAIN PIPE REMOVAL

DEMOLITION KEY NOTES

1. PROTECT IN PLACE EXISTING STORAGE CONTAINER.
2. PROTECT IN PLACE EXISTING PORTABLE OFFICE.
3. EXISTING LIGHT POLE TO BE PROTECTED IN PLACE.
4. EXISTING WATER TO BE REMOVED.
5. EXISTING WATER TANK TO BE REMOVED.
6. EXISTING WATER PUMP HOUSE TO BE REMOVED.
7. EXISTING BUILDING TO BE PROTECTED IN PLACE.
8. EXISTING WATER VALVE TO BE REMOVED.
9. EXISTING FENCE TO BE REMOVED.
10. EXISTING VAULT TO BE RELOCATED.
11. EXISTING BUILDING TO BE REMOVED.
12. EXISTING IRRIGATION SYSTEM TO BE REMOVED.
13. EXISTING WATER METER TO BE REMOVED.
14. EXISTING SIGN TO BE SALVAGED.
15. REMOVE EXISTING SUMP PUMP.
16. EXISTING LIGHT POLE TO BE REMOVED.
17. EXISTING BLEACHERS TO BE REMOVED.
18. RELOCATE EXISTING LIGHT POLE.
18. RELOCATE EXISTING LIGHT POLE.

NOTES

1. ALL EXISTING UTILITY AND SITE FEATURES SHOWN ARE FROM THE TOPOGRAPHIC SURVEY. THERE MAY BE ADDITIONAL EXISTING UTILITIES NOT SHOWN ON THE PLANS. IT IS THE CONTRACTORS RESPONSIBILITY TO FIELD LOCATE EXACT LOCATIONS OF ALL SITE UTILITIES PRIOR TO DEMOLITION ACTIVITIES. CONTRACTOR SHALL CONTACT UNDERGROUND SERVICE ALERT (USA) AT LEAST 48 HOURS IN ADVANCE OF EXCAVATION.
2. CONTRACTOR SHALL COORDINATE UTILITY RELOCATION WITH PG&E AND THE RESPECTIVE UTILITY AGENCY.
3. CONTRACTOR SHALL DISPOSE OF ALL DEMOLISHED OR REMOVED MATERIALS IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL REQUIREMENTS.
4. IF ANY EXISTING STRUCTURES TO REMAIN ARE DAMAGED DURING CONSTRUCTION IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REPAIR AND/OR REPLACE THE EXISTING STRUCTURE AS NECESSARY TO RETURN IT TO EXISTING CONDITIONS OR BETTER.
5. IMMEDIATELY BRING TO THE ATTENTION OF THE ENGINEER ANY ITEMS WITHIN THE AREA OF WORK THAT ARE IN CONFLICT WITH PROPOSED IMPROVEMENTS.
6. ALL ITEMS NOT SPECIFICALLY CALLED OUT TO BE REMOVED SHALL BE PROTECTED IN PLACE BY THE CONTRACTOR.
7. SALVAGED MATERIALS ARE TO BE PROVIDED TO THE CITY.
8. RIPARIAN ZONE AND ITS ASSOCIATED VEGETATION AND WILDLIFE SHALL BE PROTECTED DURING CONSTRUCTION IN ACCORDANCE TO STATE AND FEDERAL ENVIRONMENTAL REGULATIONS AND BEST PRACTICES. CONSTRUCTION ACTIVITIES ARE TO BE KEPT OUTSIDE OF THE RIPARIAN BUFFER ZONE. ANY DISTURBANCE TO THE RIPARIAN BUFFER ZONE MUST BE MINIMIZED AND RESTORED IMMEDIATELY TO ITS ORIGINAL STATE.



DEMOLITION PLAN

SMITH FIELD PARKING LOT PROJECT
Half Moon Bay, CA

REGISTERED PROFESSIONAL ENGINEER, C-55783, Exp. 12/31/24, CIVIL, STATE OF CALIFORNIA

FREYER & LAURETA, INC.
CIVIL ENGINEERS • SURVEYORS • CONSTRUCTION MANAGERS

THE CITY OF HALF MOON BAY CALIFORNIA

City of Half Moon Bay
501 Main Street
Half Moon Bay
CA 94019
p 650-726-7177
f 650-726-8261
hmbcity.com

REVISIONS	BY
35% SUBMITTAL	CG

DATE 09-13-2024
SCALE AS SHOWN
DRAWN CG
JOB NO. 276005
DWG
SHEET C4.0
of 12 SHEETS

REGISTERED PROFESSIONAL ENGINEER, MAZIAR BOZORGINIA, NO. 76723, EXP. 12/31/24, CIVIL, STATE OF CALIFORNIA

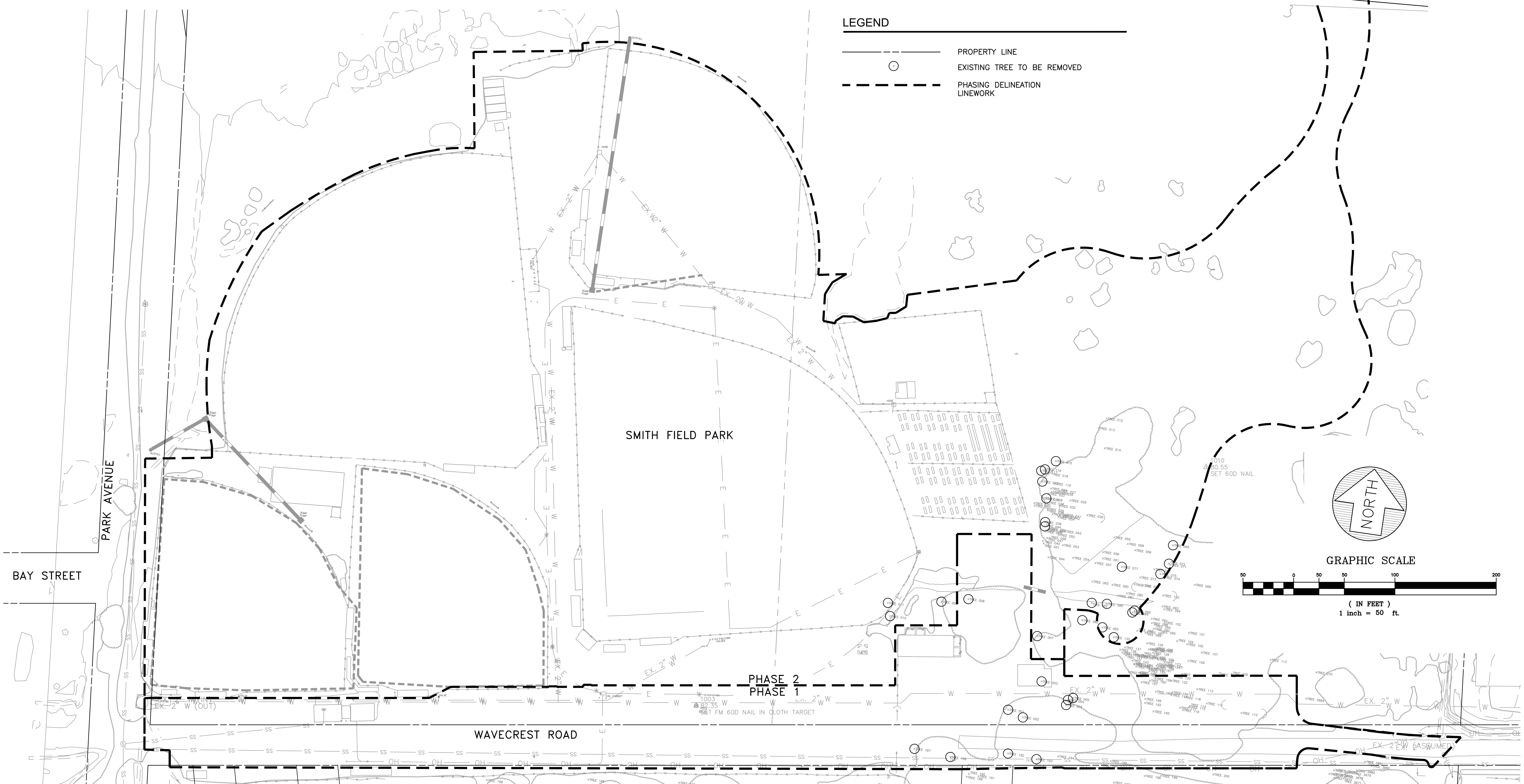
APPROVED BY:
CITY OF HALF MOON BAY

MAZIAR BOZORGINIA DATE
CITY ENGINEER

TREES TO BE REMOVED			
TREE TAG #	TREE TYPE	HEIGHT (FT)	TREE CONDITION
001	MONTEREY CYPRESS	40	FAIR
002	MONTEREY CYPRESS	45	FAIR
003	MONTEREY CYPRESS	32	FAIR
004	MONTEREY CYPRESS	45	POOR
005	MONTEREY CYPRESS	45	POOR
006	MONTEREY CYPRESS	45	FAIR
007	MONTEREY PINE	28	POOR
008	MONTEREY CYPRESS	45	FAIR
009	MONTEREY CYPRESS	30	FAIR
010	MONTEREY CYPRESS	10	GOOD

011	MONTEREY CYPRESS	13	FAIR
015	MONTEREY CYPRESS	30	FAIR
028	MONTEREY CYPRESS	32	FAIR
039	MONTEREY CYPRESS	28	POOR
044	MONTEREY CYPRESS	25	DEAD
062	MONTEREY CYPRESS	30	FAIR
065	MONTEREY CYPRESS	28	FAIR
072	MONTEREY CYPRESS	35	FAIR
075	MONTEREY CYPRESS	35	FAIR
077	MONTEREY CYPRESS	35	FAIR
082	MONTEREY CYPRESS	--	POOR
083	MONTEREY CYPRESS	30	FAIR

084	MONTEREY CYPRESS	35	FAIR
085	MONTEREY CYPRESS	35	FAIR
086	MONTEREY CYPRESS	32	FAIR
116	MONTEREY CYPRESS	35	FAIR
117	MONTEREY CYPRESS	38	FAIR
119	MONTEREY CYPRESS	35	FAIR
135	MONTEREY CYPRESS	30	FAIR
187	MONTEREY CYPRESS	25	POOR
188	MONTEREY CYPRESS	15	FAIR
192	MONTEREY CYPRESS	30	POOR
193	MONTEREY CYPRESS	20	FAIR



APPROVED BY:
CITY OF HALF MOON BAY

MAZIAR BOZORGINIA
CITY ENGINEER

DATE

REGISTERED PROFESSIONAL ENGINEER
MAZIAR BOZORGINIA
NO. 76723
EXP. 12/31/24
CIVIL
STATE OF CALIFORNIA

DEMOLITION TREE PLAN

SMITH FIELD PARKING LOT PROJECT
Half Moon Bay, CA

FREYER & LAURETA, INC.
CIVIL ENGINEERS • SURVEYORS • CONSTRUCTION MANAGERS

THE CITY OF HALF MOON BAY CALIFORNIA

City of Half Moon Bay

501 Main Street
Half Moon Bay
CA 94019

p 650-726-7177
f 650-726-8261
hmbcity.com

REVISIONS	BY
35% SUBMITTAL	CG

DATE 09-13-2024
SCALE AS SHOWN
DRAWN CG
JOB NO. 276005
DWG

SHEET C4.1
of 12 SHEETS

SURVEY CONTROL TABLE

POINT	NORTHING	EASTING	ELEVATION	DESCRIPTION
4	1991318.927	6000067.462	79.96'	SET HUB/TAC
7	1991099.088	6000077.603	81.73'	SET HUB/TAC
1001	1990727.333	5998957.909	80.97'	SET FM 60D NAIL IN CLOTH TARGET
1003	1991014.967	5999663.517	82.35'	SET FM 60D NAIL IN CLOTH TARGET

HORIZONTAL DATUM

THE BEARINGS SHOWN HEREON ARE BASED UPON THE NORTH AMERICAN DATUM OF 1983, EPOCH 2011.00 (CALIFORNIA COORDINATE SYSTEM–ZONE 3) AND WERE ESTABLISHED USING THE CALIFORNIA SURVEYING AND DRAFTING REAL–TIME NETWORK (CSDS RTN). WWW.CSDSINC.COM/GPS-NETWORK-SERVICES/

SITE BENCHMARK

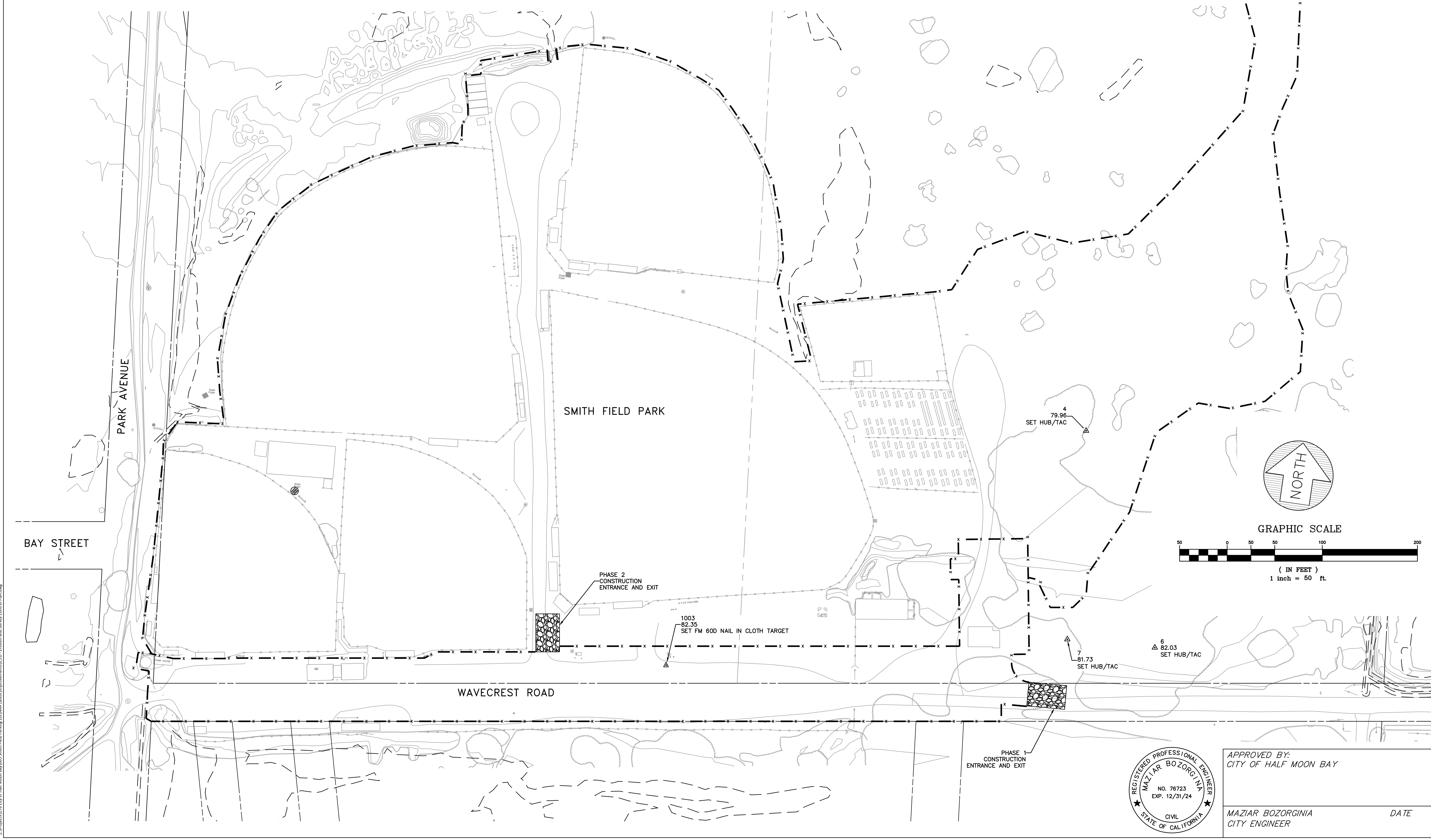
ELEVATION: 95.88 FEET
DATUM: NAVD 88
POINT I.D.: CSI 1005

DESCRIPTION: SET MAG NAIL IN NE CORNER OF ACCESSIBLE RAMP TRUNK DOME MAT

LOCATION: AT ENTRANCE TO RESIDENCE AT 1340 HIGHWAY 1, CABRILLO HIGHWAY

LEGEND

PROPERTY LINE
WETLAND AREA
SILT FENCE (SE–1) AND FIBER ROLL (SE–5) 3/C12.0
STABILIZED CONSTRUCTION ENTRANCE AND EXIT (TC–1) 2/C12.0
INLET PROTECTION 6/C11.0



GRAPHIC SCALE

50 0 50 100 200

(IN FEET)
1 inch = 50 ft.

APPROVED BY:
CITY OF HALF MOON BAY

MAZIAR BOZORGINIA
CITY ENGINEER

DATE

REGISTERED PROFESSIONAL ENGINEER
MAZIAR BOZORGINIA
NO. 76723
EXP. 12/31/24
CIVIL
STATE OF CALIFORNIA

EROSION AND SURVEY CONTROL PLAN

SMITH FIELD PARKING LOT PROJECT
Half Moon Bay, CA

NOT FOR CONSTRUCTION

REGISTERED PROFESSIONAL ENGINEER
C-55783
Exp.12/31/24
CIVIL
STATE OF CALIFORNIA

FREYER & LAURETA, INC.
CIVIL ENGINEERS • SURVEYORS • CONSTRUCTION MANAGERS

THE CITY OF HALF MOON BAY CALIFORNIA

City of
Half Moon Bay

501 Main Street
Half Moon Bay
CA 94019

p 650–726–7177
f 650–726–8261
hmbcity.com

REVISIONS	BY
35% SUBMITTAL	CG

DATE 09–13–2024
SCALE AS SHOWN
DRAWN CG
JOB NO. 276005
DWG
SHEET C5.0
of 12 SHEETS

LEGEND

- PHASE I – BIORETENTION AREA REQUIRED
- PHASE II – BIORETENTION AREA REQUIRED
- PROPERTY LINE
- WETLAND AREA
- LIMIT OF WORK AREA

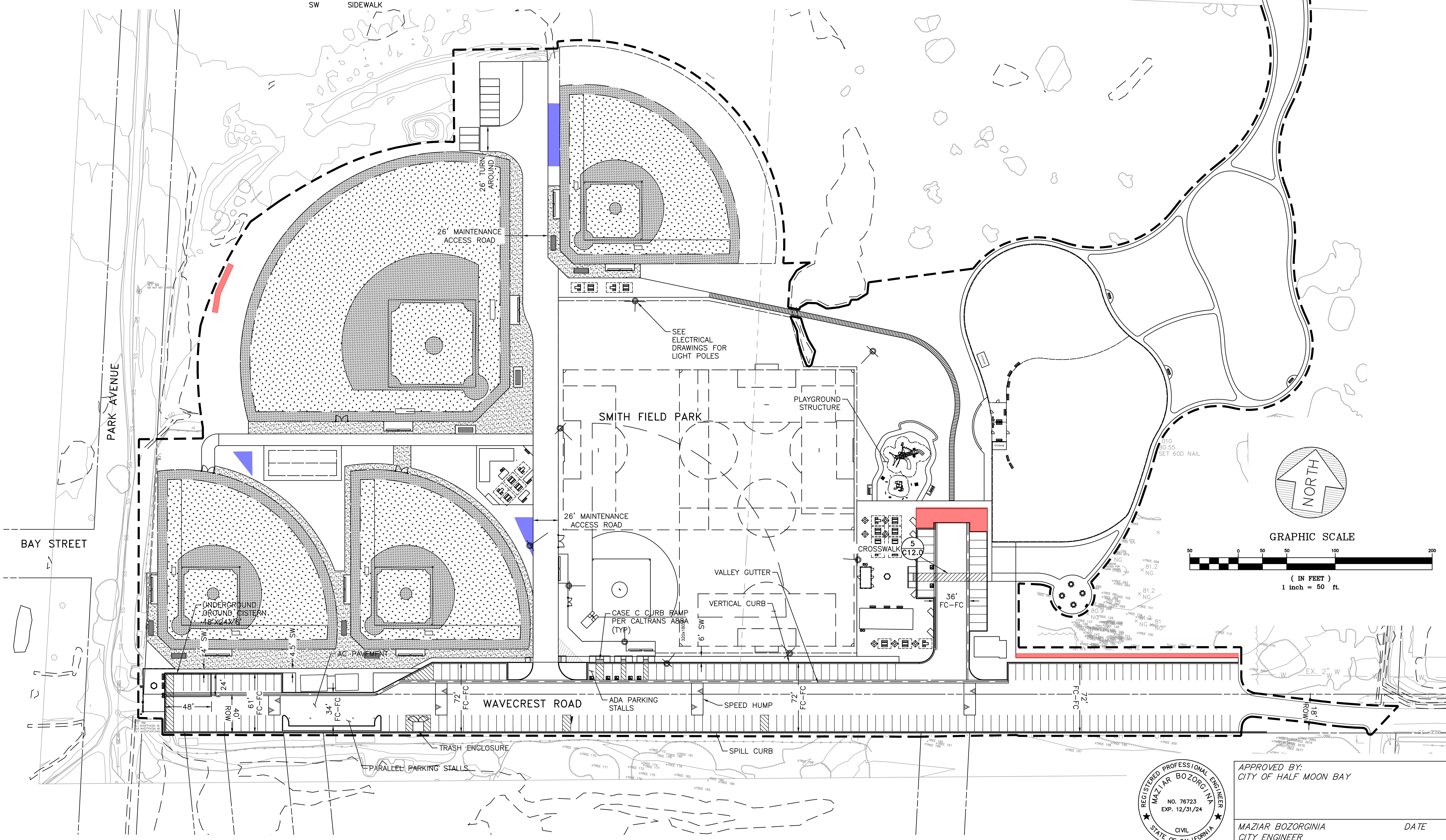
NOTES

1. REFER TO LANDSCAPE PLANS FOR SCORELINES, PLANTING, AND SITE FURNISHING PLACEMENT INCLUDING PICNIC TABLES, BLEACHERS, TRASH BIN, AND SYMBOLS NOT SHOWN ON PLANS.
2. 2.CURB RAMPS TO COMPLY WITH CALTRANS STANDARD DETAILS 2022.

ABBREVIATIONS

AC	ASPHALT CONCRETE
FC	FACE OF CURB
ROW	RIGHT–OF–WAY
SW	SIDEWALK

PARKING COUNT	
	LARGE LOT
REGULAR STALL	431
ADA STALL	7
TOTAL	438



SITE PLAN

SMITH FIELD PARKING LOT PROJECT
Half Moon Bay, CA

FREYER & LAURETA, INC.
CIVIL ENGINEERS • SURVEYORS • CONSTRUCTION MANAGERS

THE CITY OF HALF MOON BAY CALIFORNIA

City of Half Moon Bay
501 Main Street
Half Moon Bay
CA 94019
p 650–726–7177
f 650–726–8261
hmbcity.com

REGISTERED PROFESSIONAL ENGINEER MAZIAR BOZORGINIA NO. 76723 EXP. 12/31/24 CIVIL STATE OF CALIFORNIA

APPROVED BY:
CITY OF HALF MOON BAY

MAZIAR BOZORGINIA — DATE
CITY ENGINEER

REVISIONS	BY
35% SUBMITTAL	CG

DATE	09–13–2024
SCALE	AS SHOWN
DRAWN	CG
JOB NO.	276005
DWG	
SHEET	C6.0

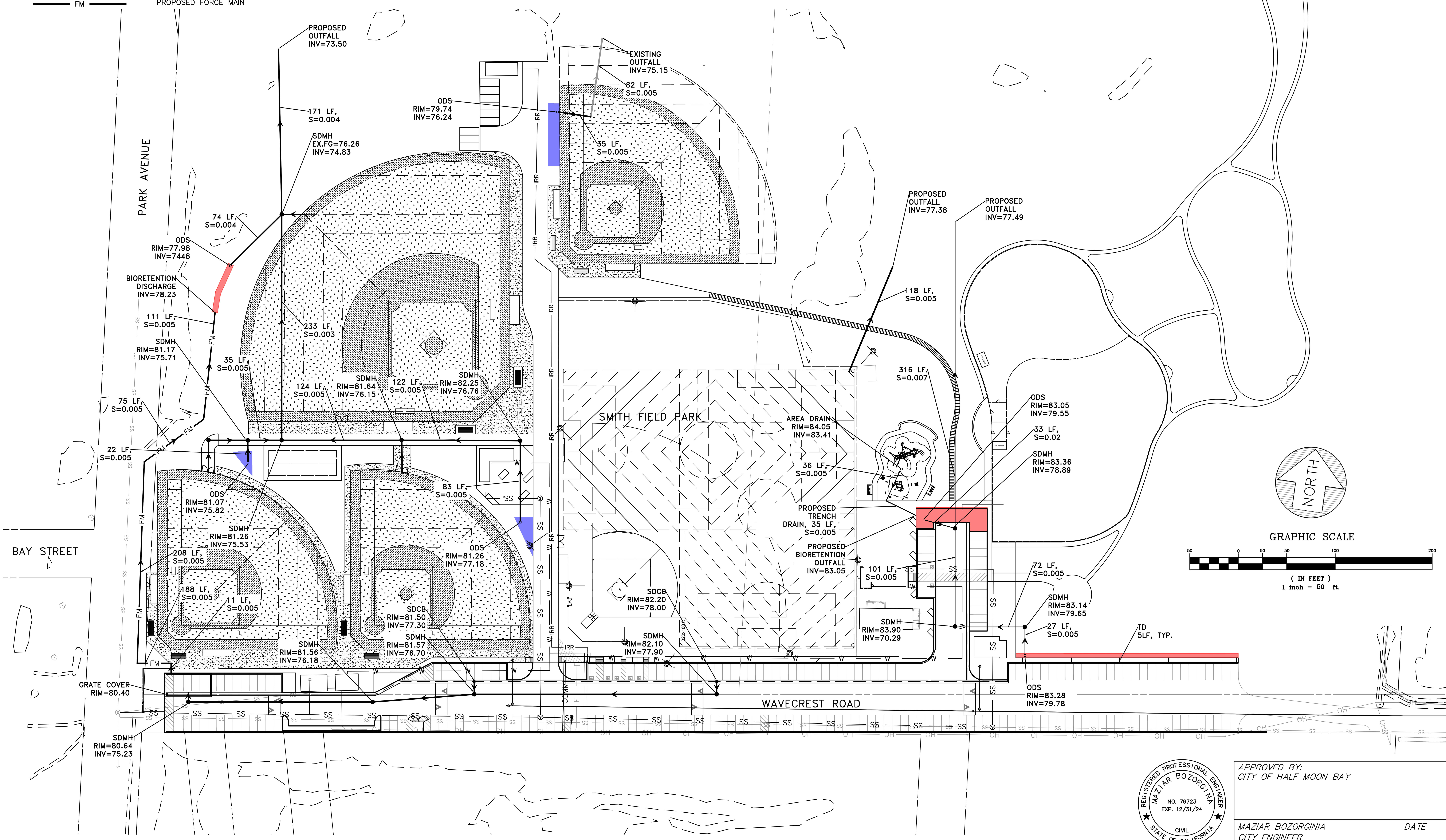
of 12 SHEETS

LEGEND

(red fill)	PHASE I – BIORETENTION AREA REQUIRED
(blue fill)	PHASE II – BIORETENTION AREA REQUIRED
— — —	PROPERTY LINE
– – – –	WETLAND AREA
— W —	PROPOSED WATER LINE
— IRR —	PROPOSED IRRIGATION LINE
— SS —	PROPOSED SEWER LINE
— FM —	PROPOSED FORCE MAIN
— COMM —	PROPOSED COMMUNICATIONS LINE
——	PROPOSED STORM DRAIN LINE
— E —	PROPOSED ELECTRICAL LINE
– – –	PROPOSED PERFORATED PIPE
— SS —	EXISTING SEWER LINE
— OH —	EXISTING OVERHEAD UTILITY LINE

NOTES

1. REFER TO LANDSCAPE PLANS FOR SCORELINES, PLANTING, AND SITE FURNISHING PLACEMENT INCLUDING PICNIC TABLES, BLEACHERS, TRASH BIN, AND SYMBOLS NOT SHOWN ON PLANS.



UTILITY PLAN

SMITH FIELD PARKING LOT PROJECT
Half Moon Bay, CA

NOT FOR CONSTRUCTION

REGISTERED PROFESSIONAL ENGINEER RICHARD LAURETA C-55783 Exp. 12/31/24 CIVIL STATE OF CALIFORNIA

FREYER & LAURETA, INC.
CIVIL ENGINEERS • SURVEYORS • CONSTRUCTION MANAGERS

THE CITY OF HALF MOON BAY CALIFORNIA

City of Half Moon Bay
501 Main Street
Half Moon Bay
CA 94019
p 650-726-7177
f 650-726-8261
hmbcity.com

REVISIONS	BY
35% SUBMITTAL	CG

DATE 09-13-2024
SCALE AS SHOWN
DRAWN CG
JOB NO. 276005
DWG

SHEET C7.0
OF 12 SHEETS

REGISTERED PROFESSIONAL ENGINEER MAZIAR BOZORGINIA NO. 76723 EXP. 12/31/24 CIVIL STATE OF CALIFORNIA

APPROVED BY:
CITY OF HALF MOON BAY

MAZIAR BOZORGINIA
CITY ENGINEER
DATE

LEGEND

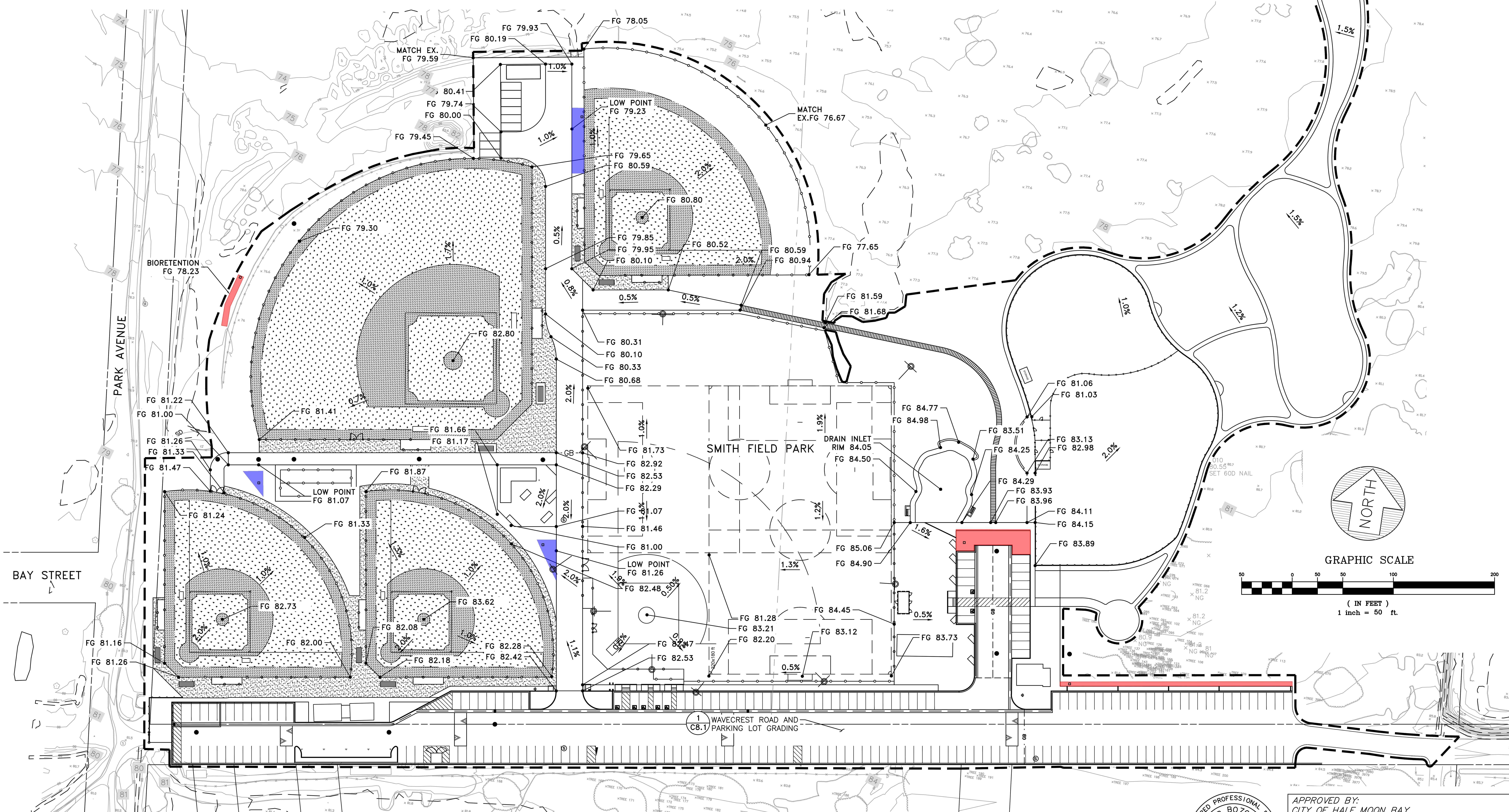
(red fill)	PHASE I – BIORETENTION AREA REQUIRED
(blue fill)	PHASE II – BIORETENTION AREA REQUIRED
(line)	PROPERTY LINE
(dashed line)	WETLAND AREA
74	EXISTING CONTOUR
1.0%	SLOPE AND DIRECTION
FG 82.29	GRADE

NOTES

1. REFER TO LANDSCAPE PLANS FOR SCORELINES, PLANTING, AND SITE FURNISHING PLACEMENT INCLUDING PICNIC TABLES, BLEACHERS, TRASH BIN, AND SYMBOLS NOT SHOWN ON PLANS.

ABBREVIATIONS

EX	EXISTING
FG	FINISHED GRADE



APPROVED BY:
CITY OF HALF MOON BAY

MAZIAR BOZORGINIA
CITY ENGINEER

DATE

REGISTERED PROFESSIONAL ENGINEER
MAZIAR BOZORGINIA
NO. 76723
EXP. 12/31/24
CIVIL
STATE OF CALIFORNIA

GRADING PLAN

SMITH FIELD PARKING LOT PROJECT
Half Moon Bay, CA

FREYER & LAURETA, INC.
CIVIL ENGINEERS • SURVEYORS • CONSTRUCTION MANAGERS

THE CITY OF HALF MOON BAY CALIFORNIA

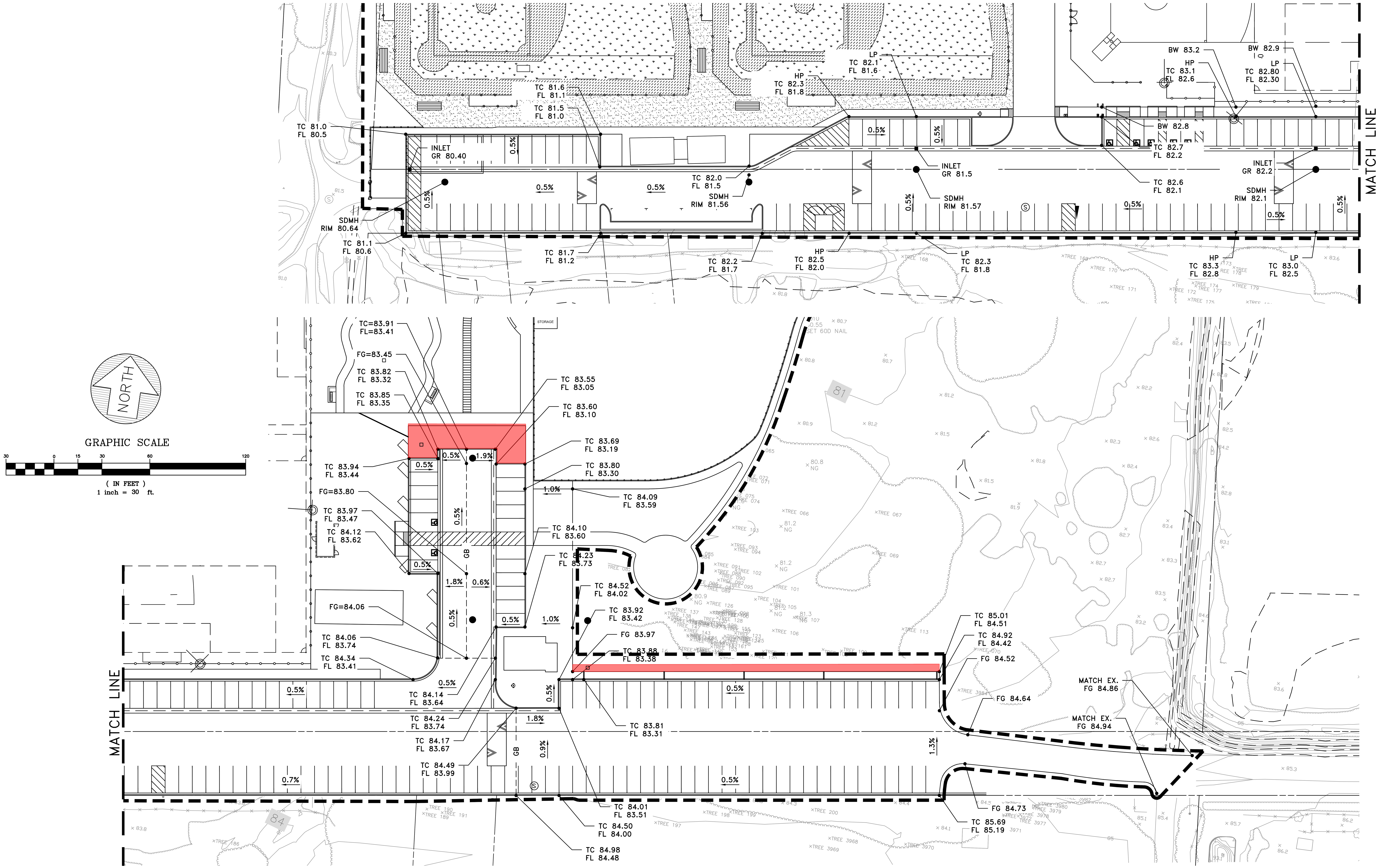
City of
Half Moon Bay

501 Main Street
Half Moon Bay
CA 94019

p 650-726-7177
f 650-726-8261
hmbcity.com

REVISIONS	BY
35% SUBMITTAL	CG

DATE 09-13-2024
SCALE AS SHOWN
DRAWN CG
JOB NO. 276005
DWG
SHEET C8.0
of 12 SHEETS



GRADING PLAN DETAIL

SMITH FIELD PARKING LOT PROJECT
Half Moon Bay, CA

FREYER & LAURETA, INC.
CIVIL ENGINEERS • SURVEYORS • CONSTRUCTION MANAGERS

THE CITY OF HALF MOON BAY CALIFORNIA

City of
Half Moon Bay

501 Main Street
Half Moon Bay
CA 94019

p 650-726-7177
f 650-726-8261
hmbcity.com

REVISIONS	BY
35% SUBMITTAL	CG

DATE 09-13-2024
SCALE AS SHOWN
DRAWN CG
JOB NO. 276005
DWG
SHEET C8.1
of 12 SHEETS

REGISTERED PROFESSIONAL ENGINEER
MAZIAR BOZORGINIA
NO. 76723
EXP. 12/31/24
CIVIL
STATE OF CALIFORNIA

APPROVED BY:
CITY OF HALF MOON BAY

MAZIAR BOZORGINIA DATE
CITY ENGINEER

LEGEND

(red fill)	PHASE I – BIORETENTION AREA REQUIRED
(blue fill)	PHASE II – BIORETENTION AREA REQUIRED
	PROPOSED PERVIOUS AREA
	PROPOSED IMPERVIOUS AREA
	PROPOSED STORM DRAIN LINE
	WETLAND AREA
	PROPOSED STORM DRAIN LINE
FM	PROPOSED FORCE MAIN

AREA SUMMARY TABLE

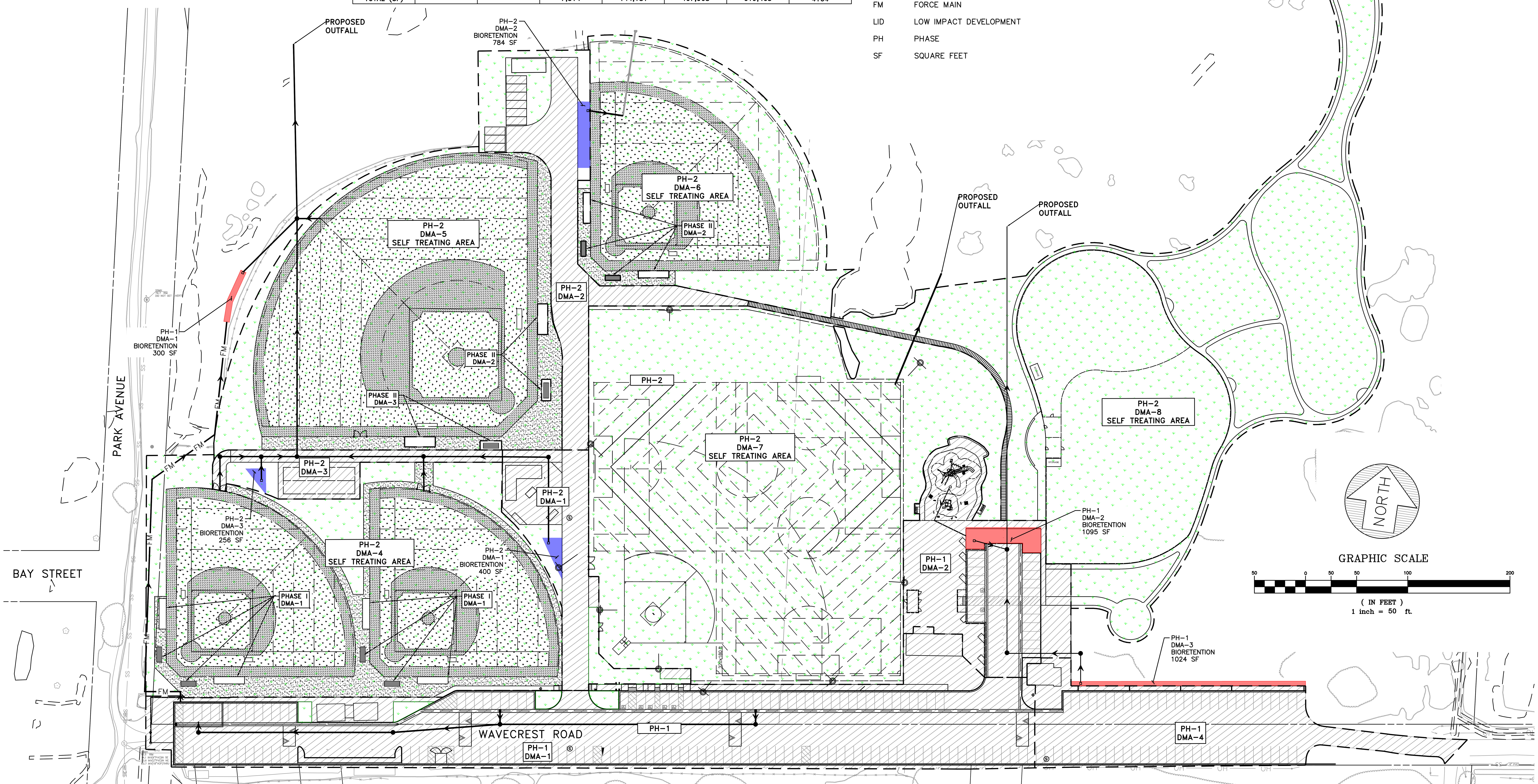
BOUNDARY		BMP ID	CONVENTIONAL SURFACES			TOTAL (SF)	REQUIRED LID/BMPs (SF)
			IMPERVIOUS		PERVIOUS		
			ROOF (SF)	PAVEMENT (SF)	LANDSCAPE (SF)		
PHASE 1	DMA–1	BB	1,809	66,754	1,350	69,913	300
	DMA–2	BP	1,163	21,695	0	22,858	1,400
			681	24,109	0	24,790	1,024
PHASE 2	DMA–1	BB	925	10,009	3,049	13,983	400
	DMA–2	BB	2,526	14,767	4,879	22,172	784
	DMA–3	BP	210	6,847	1,089	8,146	256
	DMA–4	SELF TREATING	0	0	82,418	82,418	–
	DMA–5	SELF TREATING	0	0	79,291	79,291	–
	DMA–6	SELF TREATING	0	0	51,073	51,073	–
	DMA–7	SELF TREATING	0	0	117,982	117,982	–
	DMA–8	SELF TREATING	0	0	126,837	126,837	–
TOTAL (SF)	–	–	7,314	144,181	467,968	619,463	4164

CALCULATION SUMMARY:

1. ALL CALCULATIONS AND METHODOLOGIES TO SIZE THE BMPS WERE BASED ON THE SAN MATEO COUNTYWIDE WATER POLLUTION PREVENTION PROGRAM C.3 REGULATED PROJECTS GUIDE (VERSION 2.0).

ABBREVIATIONS

BB	BIORETENTION BASIN
BMP	BEST MANAGEMENT PRACTICES
BP	BIORETENTION PLANTER
DMA	DRAINAGE MANAGEMENT AREA
FM	FORCE MAIN
LID	LOW IMPACT DEVELOPMENT
PH	PHASE
SF	SQUARE FEET



REGISTERED PROFESSIONAL ENGINEER
MAZIAR BOZORGINIA
NO. 76723
EXP. 12/31/24
CIVIL
STATE OF CALIFORNIA

APPROVED BY:
CITY OF HALF MOON BAY

MAZIAR BOZORGINIA
CITY ENGINEER

DATE

STORMWATER MANAGEMENT PLAN

SMITH FIELD PARKING LOT PROJECT
Half Moon Bay, CA

NOT FOR CONSTRUCTION

REGISTERED PROFESSIONAL ENGINEER
RICHARD J. LAURETA
C–055783
Exp.12/31/24
CIVIL
STATE OF CALIFORNIA

FREYER & LAURETA, INC.
CIVIL ENGINEERS • SURVEYORS • CONSTRUCTION MANAGERS
150 Executive Park Blvd • Suite 4200 • San Francisco, CA 94134
(415) 534-7070 • www.freyerlaureta.com

THE CITY OF HALF MOON BAY
CALIFORNIA

City of
Half Moon Bay

501 Main Street
Half Moon Bay
CA 94019

p 650–726–7177
f 650–726–8261
hmbcity.com

REVISIONS	BY
35% SUBMITTAL	CG

DATE	09–13–2024
SCALE	AS SHOWN
DRAWN	CG
JOB NO.	276005
DWG	
SHEET	C9.0

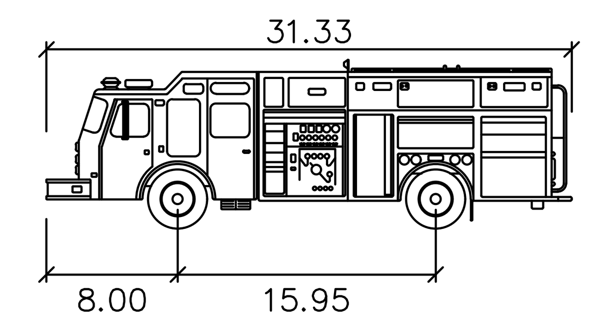
OF 12 SHEETS

LEGEND

———— — — ————	PROPERTY LINE
— — — — — —	WETLAND AREA

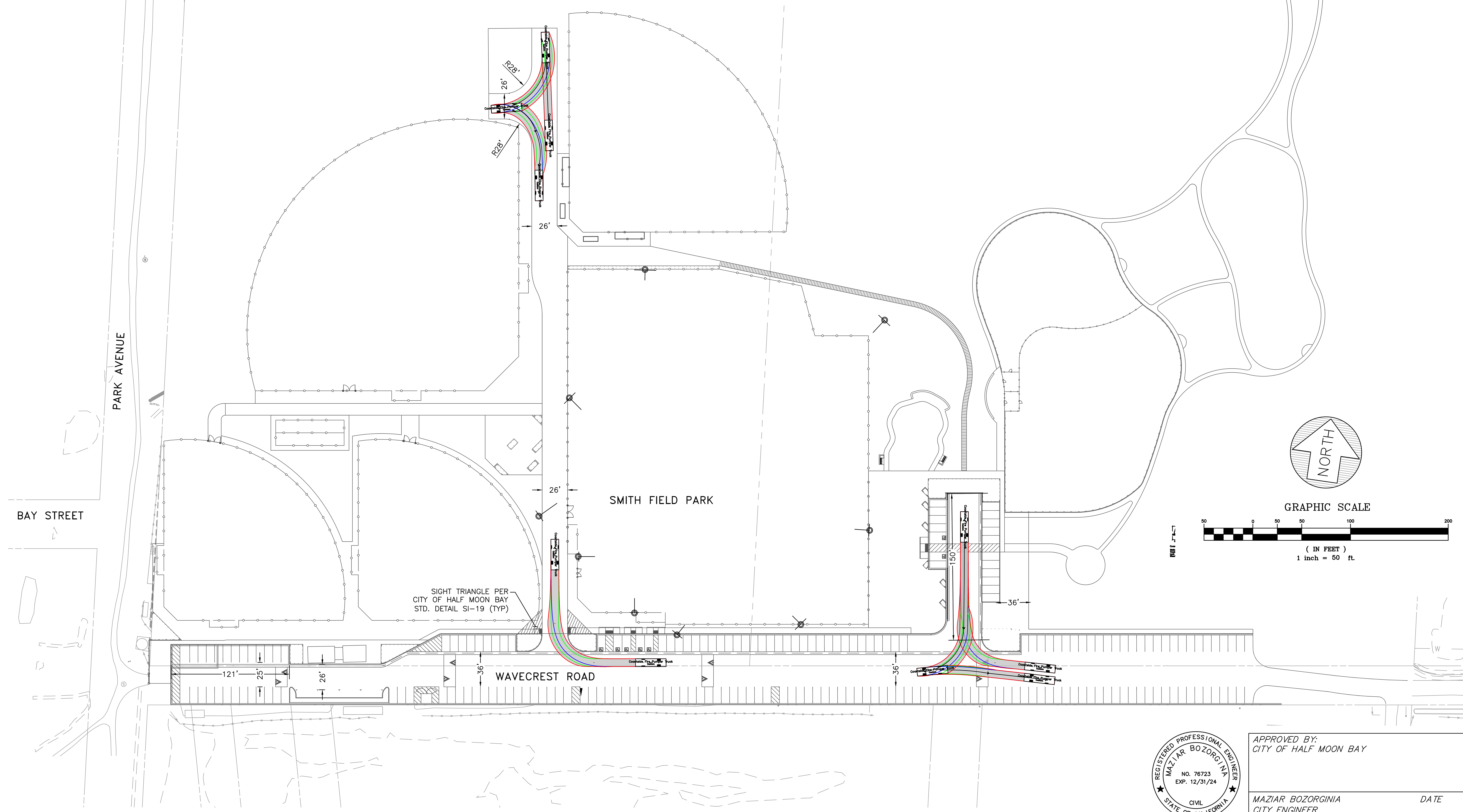
NOTES

1. STREET LENGTHS, WIDTHS AND HAMMERHEAD DIMENSIONS TO BE IN COMPLIANCE WITH COASTSIDE FIRE PROTECTION DISTRICT STANDARD R-001.



Coastside Fire Pumper Truck

Width	: 8.00
Track	: 8.00
Lock to Lock Time	: 6.0
Steering Angle	: 37.8



REGISTERED PROFESSIONAL ENGINEER
MAZIAR BOZORGINIA
NO. 76723
EXP. 12/31/24
CIVIL
STATE OF CALIFORNIA

APPROVED BY:
CITY OF HALF MOON BAY

MAZIAR BOZORGINIA DATE
CITY ENGINEER

FIRE TRUCK TURNING

SMITH FIELD PARKING LOT PROJECT
Half Moon Bay, CA

NOT FOR CONSTRUCTION

REGISTERED PROFESSIONAL ENGINEER
C-65783
Exp. 12/31/24
CIVIL
STATE OF CALIFORNIA

FREYER & LAURETA, INC.
CIVIL ENGINEERS • SURVEYORS • CONSTRUCTION MANAGERS

THE CITY OF HALF MOON BAY CALIFORNIA

City of
Half Moon Bay

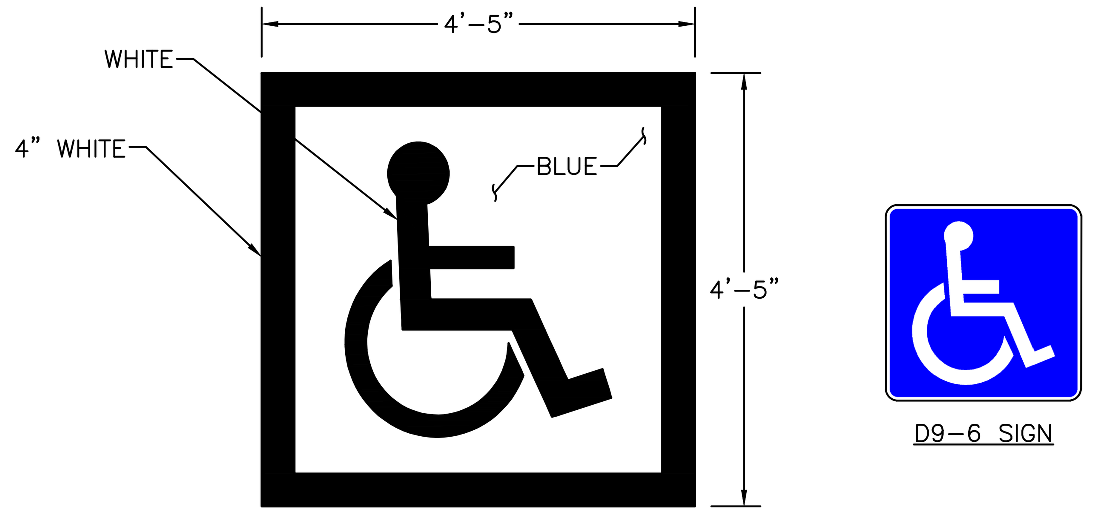
501 Main Street
Half Moon Bay
CA 94019

p 650-726-7177
f 650-726-8261
hmbcity.com

REVISIONS	BY
35% SUBMITTAL	CG

DATE 09-13-2024
SCALE AS SHOWN
DRAWN CG
JOB NO. 276005
DWG

SHEET C10.0
OF 12 SHEETS

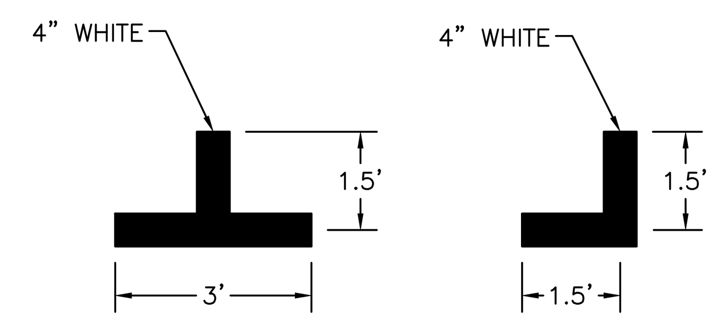


NOTES:

1. INTERNATIONAL SYMBOL OF ACCESSIBILITY (ISA) MARKING PER THE CALTRANS STANDARD PLANS, PAGE A24C.

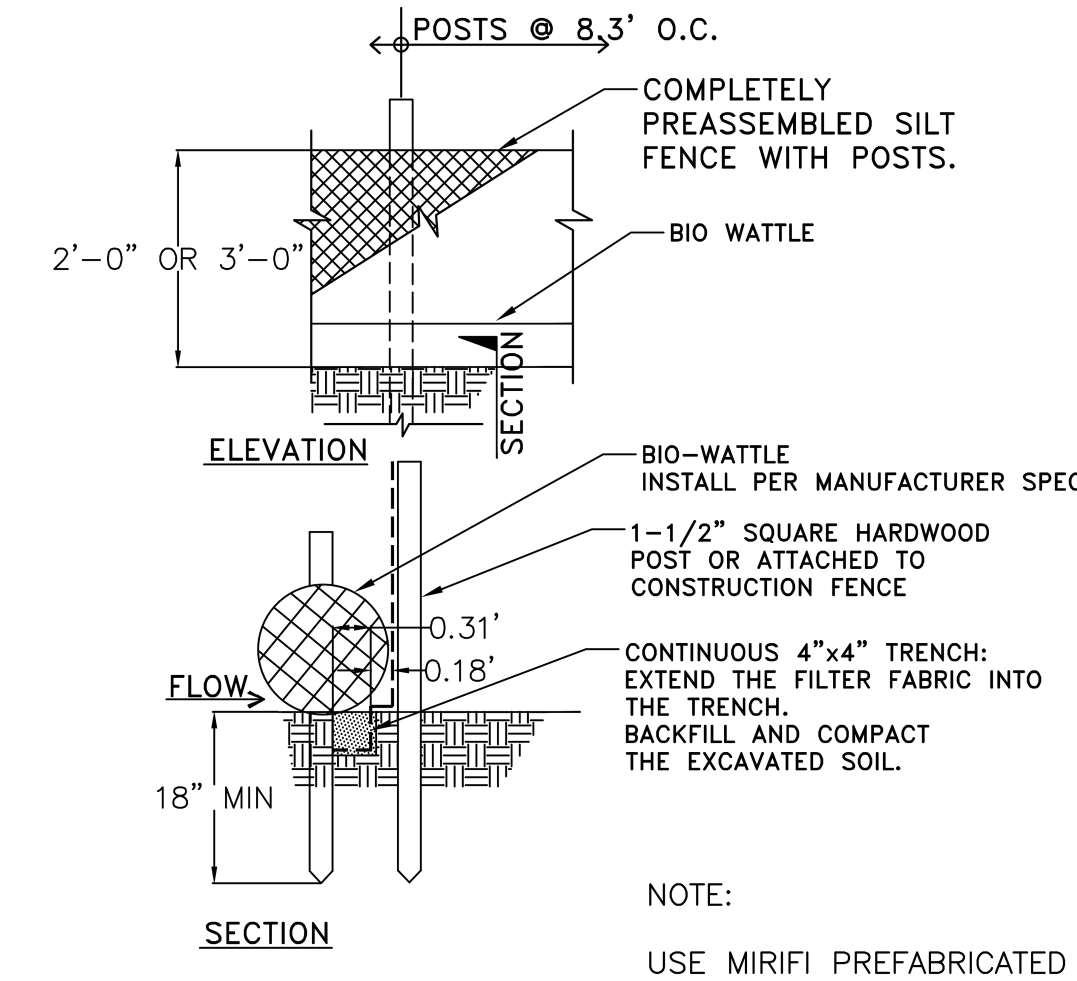
1 - PARKING ADA STALL

SCALE: NO SCALE



2 - PARALLEL STALL MARKING

SCALE: NO SCALE

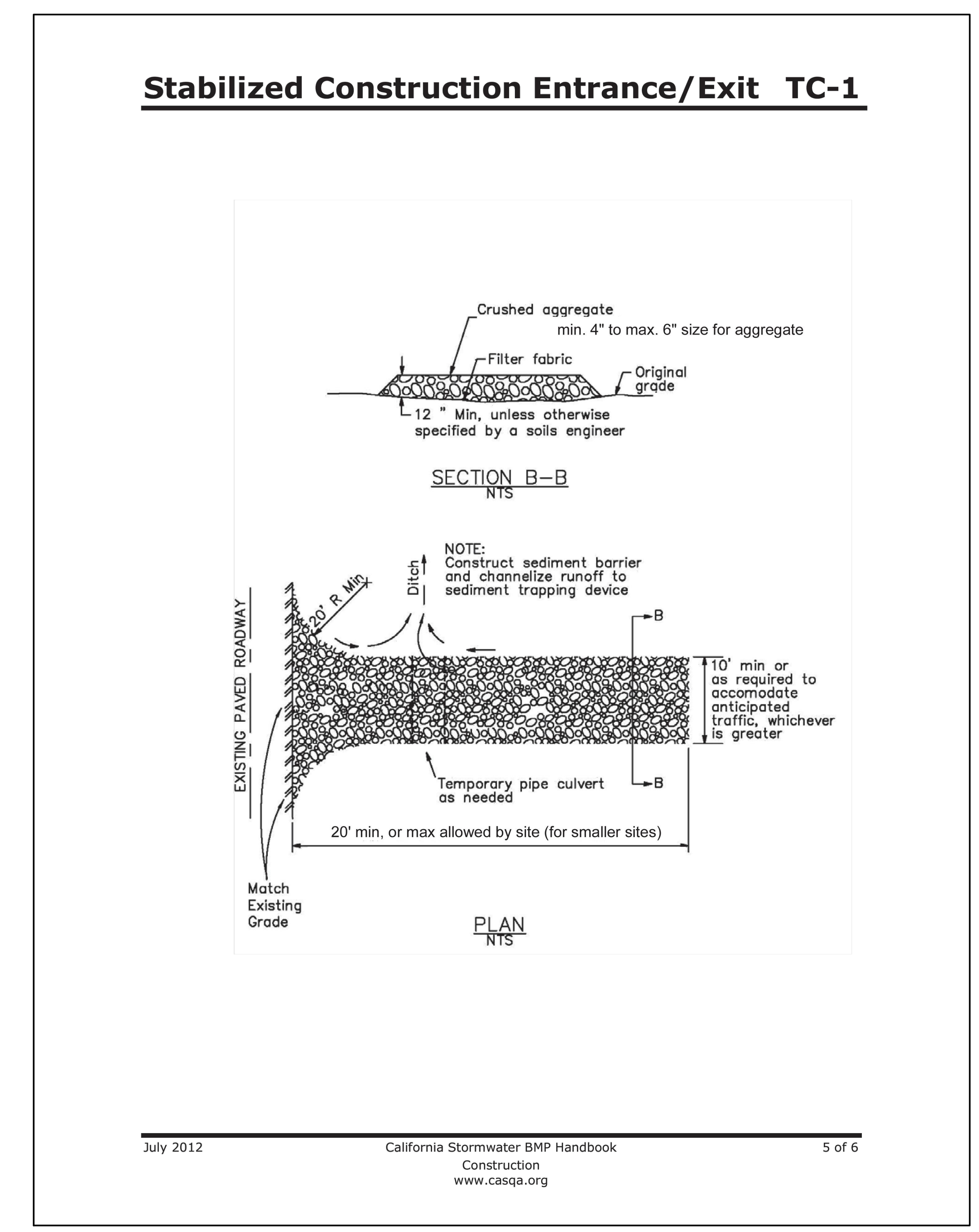


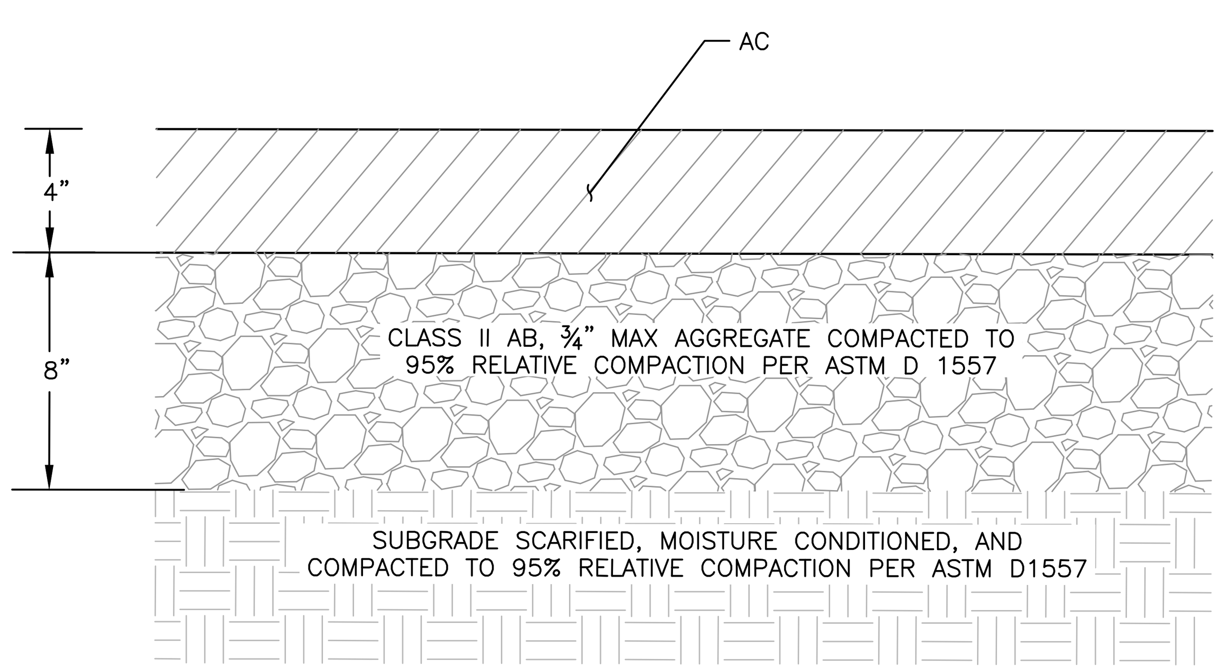
NOTE:

USE MIRIFI PREFABRICATED SILT FENCE BY MIRIFI INC. OR EQUAL COMPLETELY PREASSEMBLED SILT FENCE WITH POSTS.

3 - SILT FENCE AND FIBER ROLL

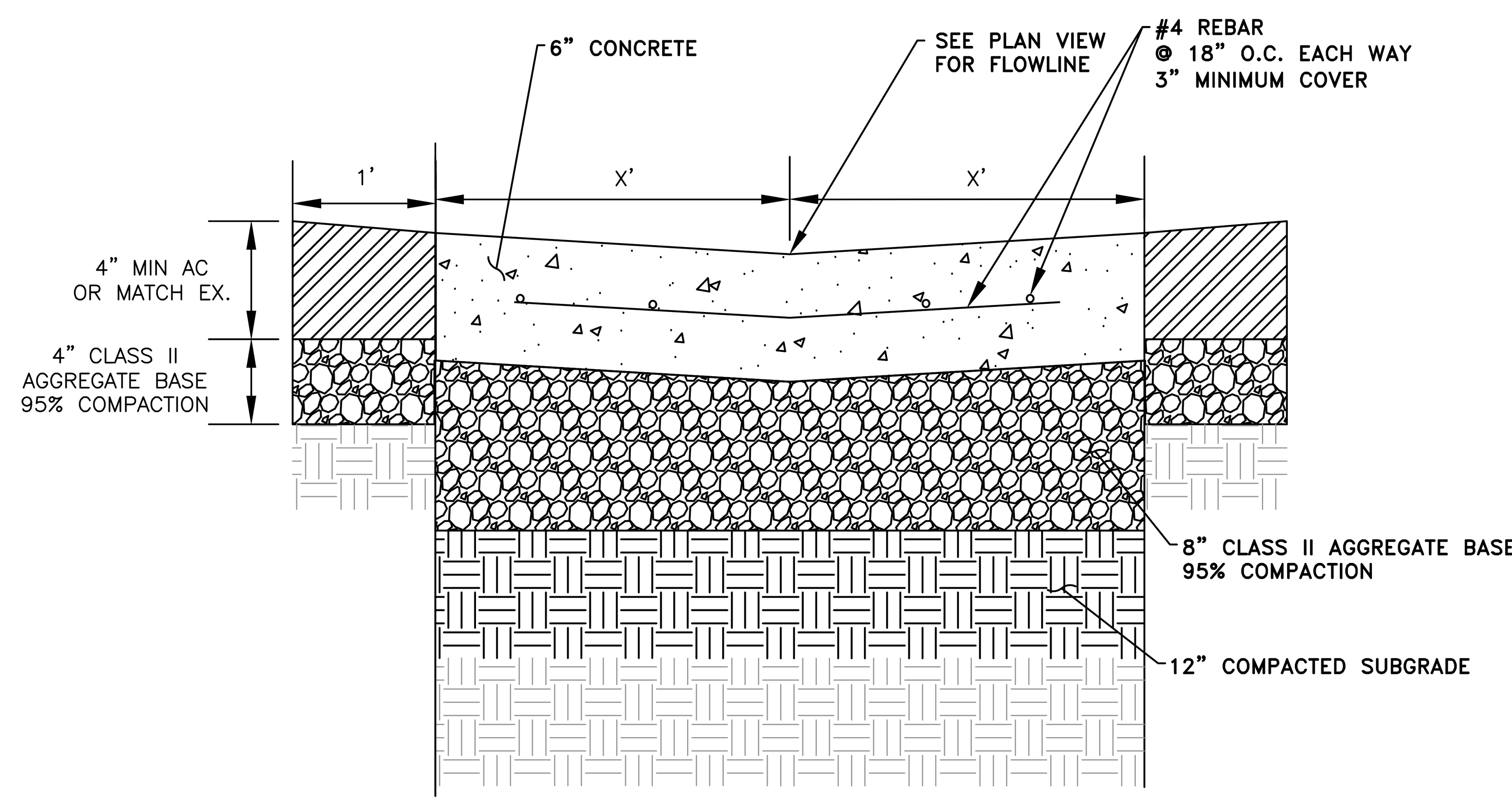
SCALE: NO SCALE





4 - AC PAVEMENT

SCALE: NO SCALE



5 - VALLEY GUTTER CROSS SECTION

SCALE: NO SCALE

REGISTERED PROFESSIONAL ENGINEER
MAZIAR BOZORGINIA
NO. 76723
EXP. 12/31/24
CIVIL
STATE OF CALIFORNIA

APPROVED BY:
CITY OF HALF MOON BAY

MAZIAR BOZORGINIA — DATE
CITY ENGINEER

DETAILS

SMITH FIELD PARKING LOT PROJECT
Half Moon Bay, CA

NOT FOR CONSTRUCTION

FREYER & LAURETA, INC.
CIVIL ENGINEERS • SURVEYORS • CONSTRUCTION MANAGERS

THE CITY OF HALF MOON BAY CALIFORNIA

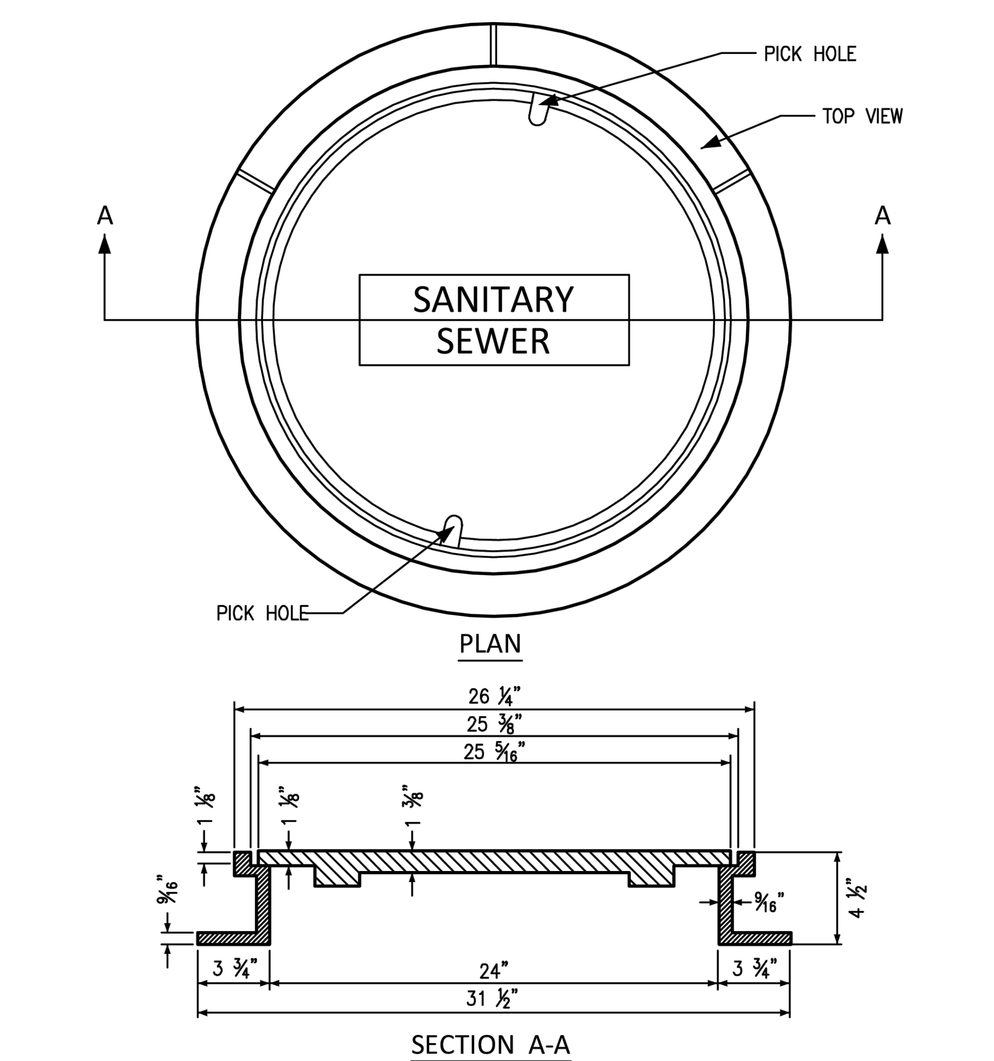
City of Half Moon Bay

501 Main Street
Half Moon Bay
CA 94019

p 650-726-7177
f 650-726-8261
hmbcity.com

REVISIONS	BY
35% SUBMITTAL	CG

DATE 09-13-2024
SCALE AS SHOWN
DRAWN CG
JOB NO. 276005
DWG
SHEET C11.0
OF 12 SHEETS

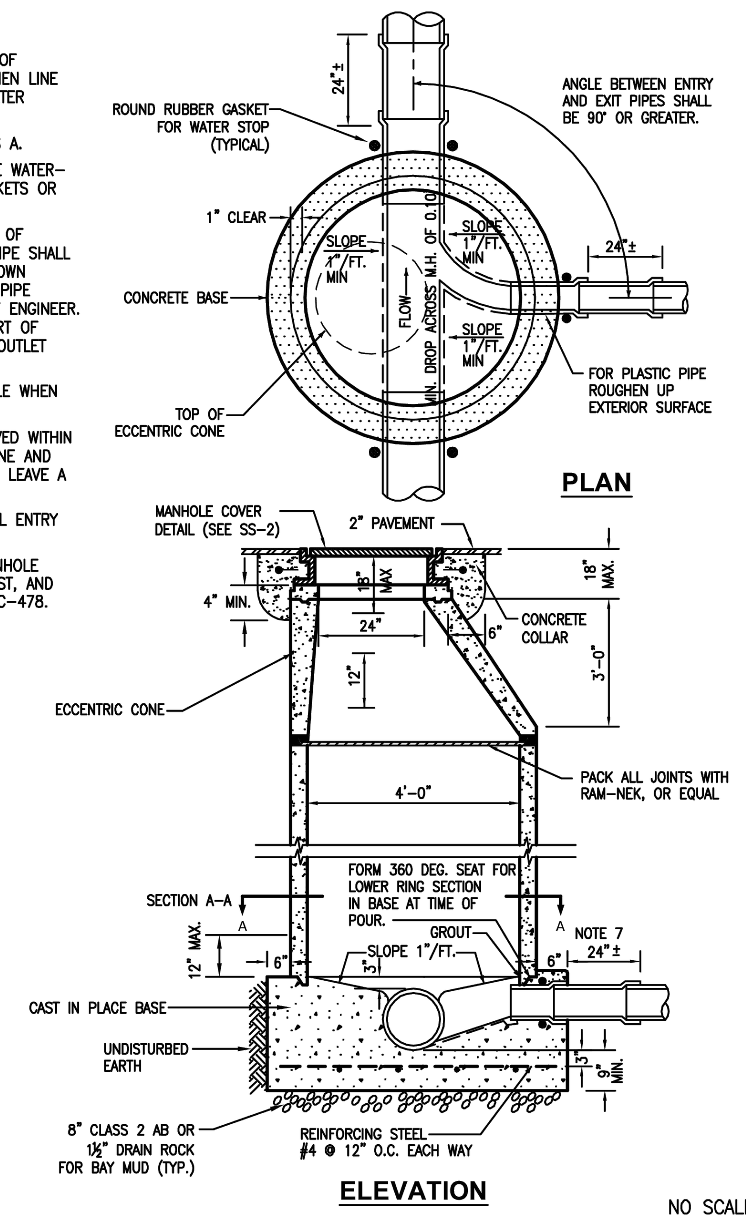


NOTES:
1. ALL MATERIAL USED IN MANUFACTURING SHALL CONFORM TO A.S.T.M. A48, CLASS 30.
2. ALL CASTINGS TO BE COMPLETELY CLEANED AND PAINTED WITH ASPHALTIC VARNISH, AFTER MANUFACTURE.
3. USE PHOENIX P-1090, D&L SUPPLY A-1024, OR EQUAL.

NO SCALE

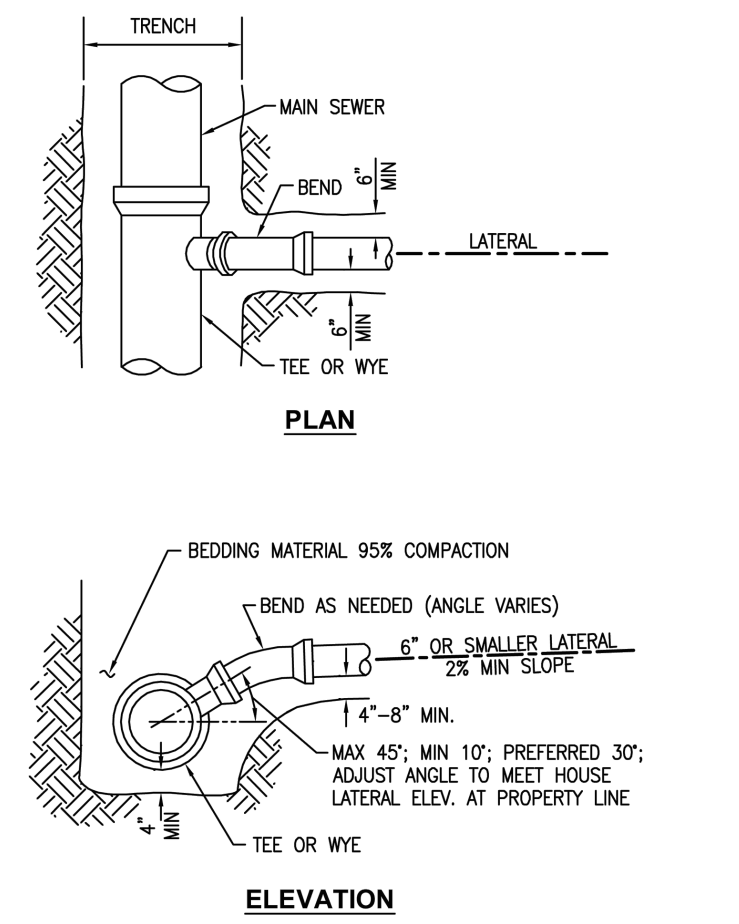
CITY OF HALF MOON BAY, CALIFORNIA STANDARD DETAIL
APPROVED BY: PEYKAN ABBASSI, P.E. CITY ENGINEER DATE: JULY 19, 2016
SEWER MANHOLE COVER
STD. DETAIL No. SS-2

NOTES:
1. PROVIDE A MINIMUM DROP OF 0.10' ACROSS MANHOLE WHEN LINE BENDS AND/OR PIPE DIAMETER CHANGES.
2. CONCRETE SHALL BE CLASS A.
3. ALL JOINTS SHALL BE MADE WATER-TIGHT WITH NEOPRENE GASKETS OR RAM-NECK.
4. MINIMUM CROWN ELEVATION OF SMALLER DIAMETER INLET PIPE SHALL BE NO LESS THAN THE CROWN ELEVATION OF THE OUTLET PIPE WITHOUT APPROVAL OF CITY ENGINEER. MAXIMUM DROP FROM INVERT OF INLET PIPE TO CROWN OF OUTLET PIPE SHALL BE 1'-0".
5. LAY PIPE THROUGH MANHOLE WHEN POSSIBLE.
6. TOP OF PIPE TO BE REMOVED WITHIN MANHOLE. TRIM TO NEAT LINE AND FINISH OFF WITH GROUT TO LEAVE A SMOOTH FINISH.
7. PROVIDE TWO JOINTS AT ALL ENTRY POINTS TO MANHOLES.
8. REINFORCED CONCRETE MANHOLE SECTIONS SHALL BE PRECAST, AND SHALL CONFORM TO ASTM C-478.



NO SCALE

CITY OF HALF MOON BAY, CALIFORNIA STANDARD DETAIL
APPROVED BY: PEYKAN ABBASSI, P.E. CITY ENGINEER DATE: JULY 19, 2016
TYPE I MANHOLE (PIPES 6" TO 21" DIAMETER)
STD. DETAIL No. SS-3



NOTES:
1. TEES OR WYES AT VERTICAL ANGLES GREATER THAN 45°, ONLY AT PROPERTY LINE (SEE DETAIL SS-7)
2. EXTRA CARE SHALL BE TAKEN IN PLACING & COMPACTING MATERIAL FOR TEE SUPPORT, TAMP UNDER & AROUND ALL FITTINGS.
3. TYPE "A" 3/8" MINUS PER UTILITY TRENCH DETAIL UT-1. (24" ABOVE PIPE IF TYPE D MATERIAL IS USED IN INTERMEDIATE ZONE.

NO SCALE

CITY OF HALF MOON BAY, CALIFORNIA STANDARD DETAIL
APPROVED BY: PEYKAN ABBASSI, P.E. CITY ENGINEER DATE: JULY 19, 2016
SEWER TEE DETAIL
STD. DETAIL No. SS-11

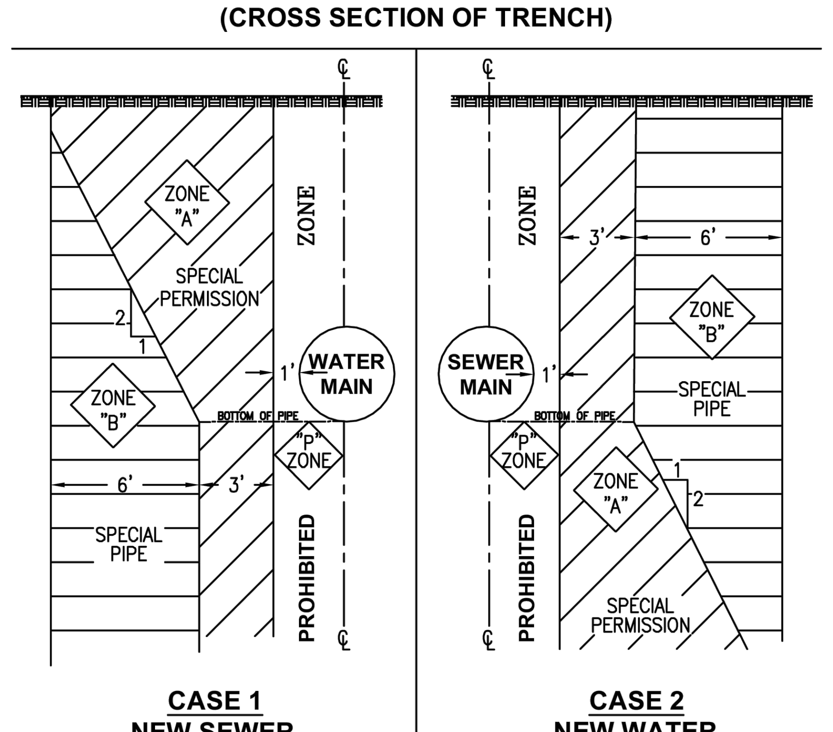
CITY OF HALF MOON BAY
DEPARTMENT OF PUBLIC WORKS
STANDARD SPECIFICATIONS

GENERAL NOTES

1. ALL REFERENCES TO "DISTRICT" IN THESE GENERAL NOTES SHALL MEAN THE APPROPRIATE CITY SEWER OR SEWER AUTHORITY MID-COASTSIDE (SAM).
2. THE APPROVAL OF THESE PLANS BY THE CITY SHALL BE INTERPRETED TO MEAN THAT THE SANITARY SEWER DESIGN SHOWN ON THESE PLANS MEETS THE CITY'S STANDARDS. THE CITY'S APPROVAL IN NO WAY GUARANTEES ANY OTHER ASPECT OF THIS PLAN OR ITS ACCURACY RELATIVE TO ACTUAL FIELD CONDITIONS.
3. THE CONTRACTOR SHALL CONTACT THE CITY AT (650) 726-8260 TWO (2) WORKING DAYS IN ADVANCE OF BEING ANY SANITARY SEWER WORK. THE CONTRACTOR SHALL THEREAFTER KEEP THE INSPECTOR FOR HE CITY INFORMED OF SCHEDULE FOR SANITARY SEWER WORK.
4. ALL SANITARY SEWER WORK CONSTRUCTED WITHOUT INSPECTION BY THE CITY OR SAM SHALL BE REMOVED AND RECONSTRUCTED WITH INSPECTION.
5. THE CONTRACTOR SHALL CONTACT UNDERGROUND SERVICE ALERT FORTY-EIGHT (48) HOURS IN ADVANCE OF BEGINNING ANY WORK.
6. THE CONTRACTOR SHALL FIELD VERIFY THE LOCATION OF ALL UTILITIES BEFORE BEGINNING ANY EXCAVATING.
7. THE CONTRACTOR SHALL OBTAIN ANY AND ALL PERMITS REQUIRED BY THE CITY BEFORE BEGINNING ANY SANITARY SEWER WORK.
8. UPON THE COMPLETION OF CONSTRUCTION A COMPLETE SET OF REPRODUCIBLE MYLAR "AS-CONSTRUCTED" PLANS SHALL BE PROVIDED TO THE CITY.
9. SANITARY SEWER SERVICE SHALL BE MAINTAINED AT ALL TIMES. THE CONTRACTOR SHALL USE WHATEVER MEANS ARE NECESSARY (E.G. PUMPS, ETC.) TO MAINTAIN THIS SERVICE DURING CONSTRUCTION.
10. PRIOR TO COMMENCING ANY SANITARY SEWER WORK IN OFF-SITE EASEMENTS THE CONTRACTOR SHALL PROVIDE THE CITY WITH ADEQUATE EVIDENCE THAT ALL AFFECTED PROPERTY OWNERS (AND TENANTS WHERE APPLICABLE) WERE NOTIFIED WELL IN ADVANCE OF THE DATE WORK IN THESE EASEMENTS WAS TO BEGIN AND THAT THEY HAVE UPDATED THAT NOTICE IN A TIMELY MANNER WHEN THOSE DATES HAVE CHANGED.

CITY OF HALF MOON BAY, CALIFORNIA STANDARD DETAIL
APPROVED BY: PEYKAN ABBASSI, P.E. CITY ENGINEER DATE: JULY 19, 2016
GENERAL NOTES FOR SANITARY SEWER PLANS
STD. DETAIL No. SS-14

PARALLEL CONSTRUCTION
(CROSS SECTION OF TRENCH)

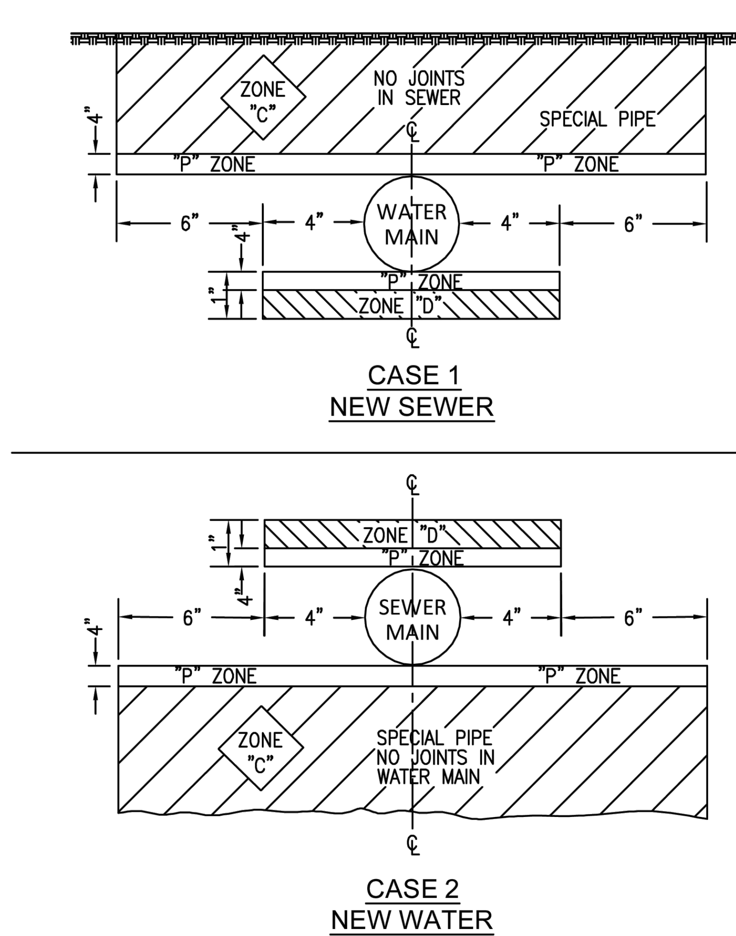


NOTES:
1. ZONES ARE IDENTICAL ON EITHER SIDE OF CENTER LINES.
2. "P" ZONE IS A PROHIBITED CONSTRUCTION ZONE PER SECTION 64630, TITLE 22, CALIFORNIA ADMINISTRATIVE CODE.
3. ZONE "A" SPECIAL PERMISSION (ALL ZONES REQUIRE REVIEW BY CITY ENGINEER).
4. ZONE "B" SPECIAL PIPE REQUIRED.
5. NO JOINTS TO BE WITHIN 10' OF EDGE OF WATER MAIN EXCEPT AS APPROVED BY CITY ENGINEER.

NO SCALE

CITY OF HALF MOON BAY, CALIFORNIA STANDARD DETAIL
APPROVED BY: PEYKAN ABBASSI, P.E. CITY ENGINEER DATE: JULY 19, 2016
SANITARY SEWER & WATER MAIN SEPARATION DETAILS (PARALLEL)
STD. DETAIL No. SS-10A

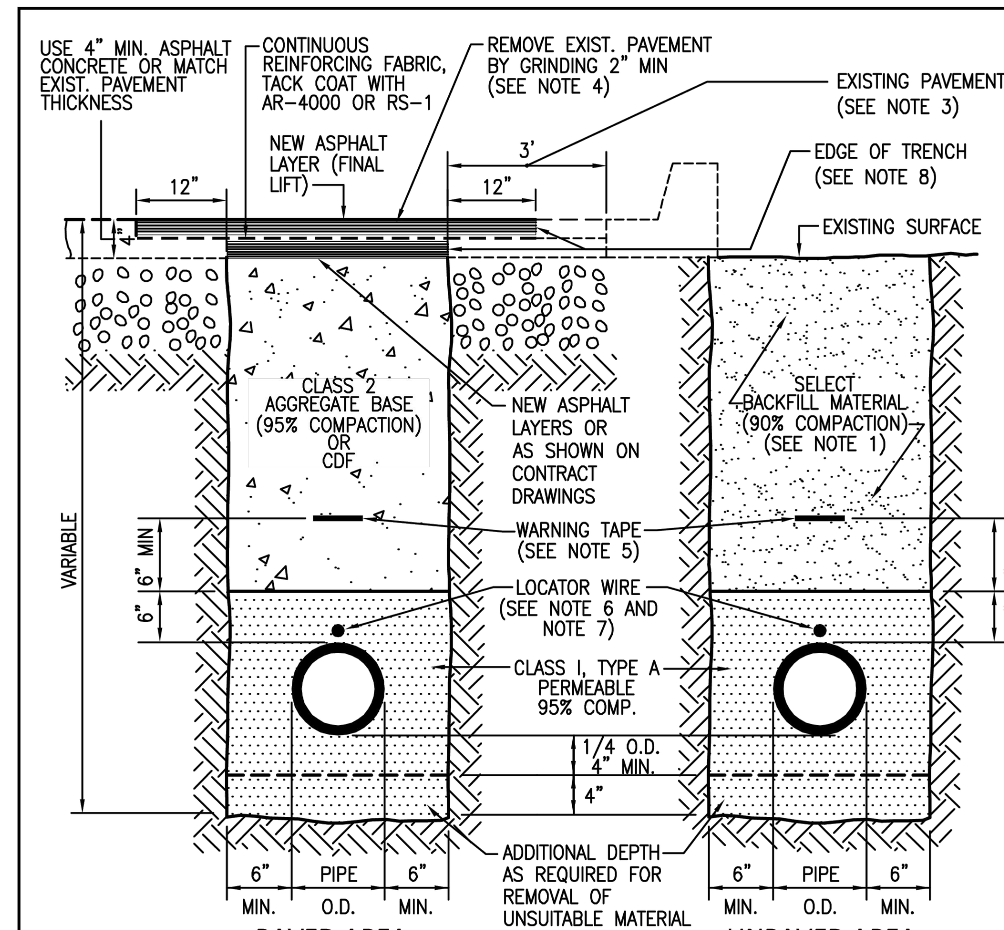
WATER & SEWER MAIN CROSSINGS



NOTES:
1. "P" ZONE IS A PROHIBITED CONSTRUCTION ZONE PER SECTION 64630, TITLE 22, CALIFORNIA ADMINISTRATIVE CODE.
2. ZONE "C" SPECIAL PIPE, NO JOINTS.
3. ZONE "D" SPECIAL PIPE, NO JOINTS.
4. NO JOINTS TO BE WITHIN 10' OF EDGE OF WATER MAIN, EXCEPT AS APPROVED BY CITY ENGINEER.

NO SCALE

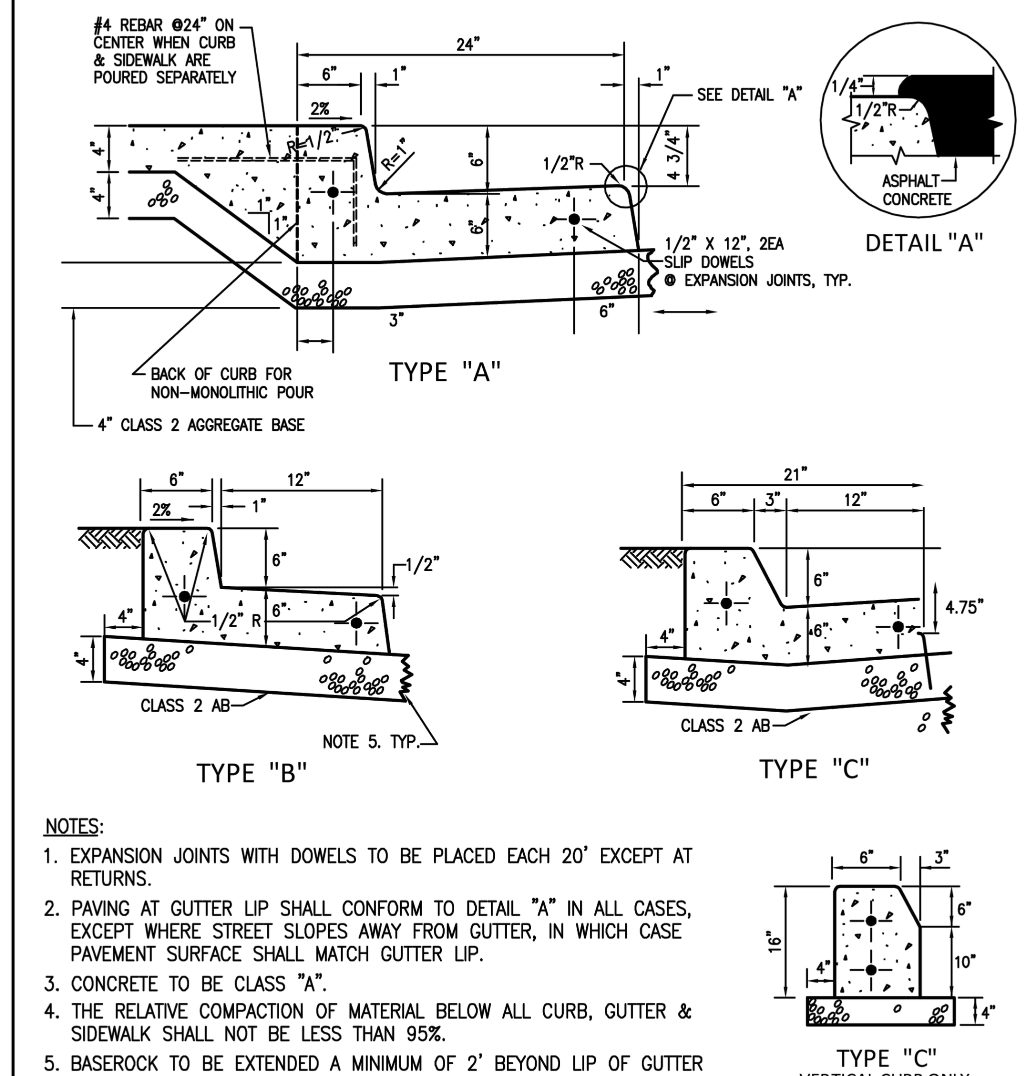
CITY OF HALF MOON BAY, CALIFORNIA STANDARD DETAIL
APPROVED BY: PEYKAN ABBASSI, P.E. CITY ENGINEER DATE: JULY 19, 2016
SANITARY SEWER & WATER MAIN SEPARATION DETAILS (CROSSING)
STD. DETAIL No. SS-10B



NOTES:
1. SELECT BACKFILL MATERIAL - MATERIAL FROM EXCAVATION, FREE FROM STONES OR LUMPS EXCEEDING 3" IN GREATEST DIMENSION, VEGETABLE MATTER OR UNSATISFACTORY MATERIAL. (SEE SPECIFICATIONS)
2. FOR NEW STREETS USE DESIGN STRUCTURAL SECTION AS SHOWN ON PLANS.
3. IF THE EDGE OF THE TRENCH FALLS WITHIN 3' OF THE GUTTER, THE ENTIRE PAVEMENT SHALL BE REMOVED.
4. IF EXISTING PAVEMENT IS LESS THAN 3" THICK, PAVEMENT EDGE SHALL BE SAWCUT TO FULL DEPTH IN LIEU OF GRINDING.
5. PLACE WARNING TAPE 14" ABOVE PIPE.
6. PLACE LOCATOR WIRE AT TOP OF PIPE. (FOR WATER PIPES AND SANITARY SEWER FORCE MAIN PIPES ONLY)
7. FOR NEW SANITARY SEWER AND STORM DRAIN PROJECTS, LOCATOR WIRE IS NO LONGER NEEDED.
8. IF IN LIEU OF GRINDING, THE T-TRENCH IS CUT THE FULL DEPTH OF THE PAVEMENT THEN THE EDGE OF THE T-TRENCH SHALL BE CONSIDERED THE NEW EDGE OF TRENCH.

NO SCALE

CITY OF HALF MOON BAY, CALIFORNIA STANDARD DETAIL
APPROVED BY: PEYKAN ABBASSI, P.E. CITY ENGINEER DATE: JULY 19, 2016
UTILITY TRENCH DETAIL
STD. DETAIL No. UT-1



NOTES:
1. EXPANSION JOINTS WITH DOWELS TO BE PLACED EACH 20' EXCEPT AT RETURNS.
2. PAVING AT GUTTER LIP SHALL CONFORM TO DETAIL "A" IN ALL CASES, EXCEPT WHERE STREET SLOPES AWAY FROM GUTTER, IN WHICH CASE PAVEMENT SURFACE SHALL MATCH GUTTER LIP.
3. CONCRETE TO BE CLASS "A".
4. THE RELATIVE COMPACTION OF MATERIAL BELOW ALL CURB, GUTTER & SIDEWALK SHALL NOT BE LESS THAN 95%.
5. BASEROCK TO BE EXTENDED A MINIMUM OF 2' BEYOND LIP OF GUTTER PRIOR TO POURING CONCRETE.
6. WHERE NEW CURB AND GUTTER IS TO BE POURED IN EXISTING STREETS REMOVE A 12" WIDE SECTION OF ASPHALT AND REPLACE WITH DEEP LIFT ASPHALT.

NO SCALE

CITY OF HALF MOON BAY, CALIFORNIA STANDARD DETAIL
APPROVED BY: PEYKAN ABBASSI, P.E. CITY ENGINEER DATE: JULY 19, 2016
CURBS AND GUTTERS
STD. DETAIL No. SI-2

DETAILS
SMITH FIELD PARKING LOT PROJECT
Half Moon Bay, CA

REGISTERED PROFESSIONAL ENGINEER RICHARD J. LAURETA C 55783 Exp. 12/31/24 CIVIL STATE OF CALIFORNIA
CONSTRUCTION

FREYER & LAURETA, INC.
CIVIL ENGINEERS • SURVEYORS • CONSTRUCTION MANAGERS

THE CITY OF HALF MOON BAY CALIFORNIA
City of Half Moon Bay
501 Main Street
Half Moon Bay
CA 94019
p 650-726-7177
f 650-726-8261
hmbcity.com

REVISIONS	BY
35% SUBMITTAL	CG

DATE 09-13-2024
SCALE AS SHOWN
DRAWN CG
JOB NO. 276005
DWG
SHEET C12.0 OF 12 SHEETS

REGISTERED PROFESSIONAL ENGINEER MAZIAR BOZORGINIA NO. 76723 EXP. 12/31/24 CIVIL STATE OF CALIFORNIA

APPROVED BY:
CITY OF HALF MOON BAY

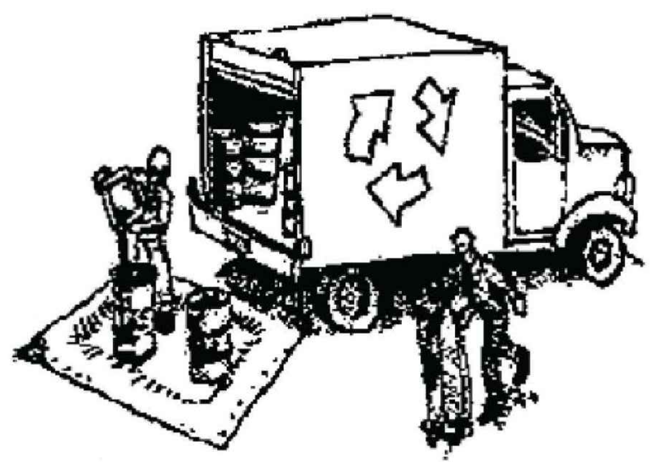
MAZIAR BOZORGINIA DATE
CITY ENGINEER

SAN MATEO COUNTYWIDE
Water Pollution Prevention Program
Clean Water. Healthy Community.

Construction Best Management Practices (BMPs)

Construction projects are required to implement the stormwater best management practices (BMP) on this page, as they apply to your project, all year long.

Materials & Waste Management



Non-Hazardous Materials
- ❑ Berm and cover stockpiles of sand, dirt or other construction material with tarps when rain is forecast or if not actively being used within 14 days.
- ❑ Use (but don't overuse) reclaimed water for dust control.

Hazardous Materials
- ❑ Label all hazardous materials and hazardous wastes (such as pesticides, paints, thinners, solvents, fuel, oil, and antifreeze) in accordance with city, county, state and federal regulations.
- ❑ Store hazardous materials and wastes in water tight containers, store in appropriate secondary containment, and cover them at the end of every work day or during wet weather or when rain is forecast.
- ❑ Follow manufacturer's application instructions for hazardous materials and be careful not to use more than necessary. Do not apply chemicals outdoors when rain is forecast within 24 hours.
- ❑ Arrange for appropriate disposal of all hazardous wastes.

Waste Management
- ❑ Cover waste disposal containers securely with tarps at the end of every work day and during wet weather.
- ❑ Check waste disposal containers frequently for leaks and to make sure they are not overfilled. Never hose down a dumpster on the construction site.
- ❑ Clean or replace portable toilets, and inspect them frequently for leaks and spills.
- ❑ Dispose of all wastes and debris properly. Recycle materials and wastes that can be recycled (such as asphalt, concrete, aggregate base materials, wood, gyp board, pipe, etc.)
- ❑ Dispose of liquid residues from paints, thinners, solvents, glues, and cleaning fluids as hazardous waste.

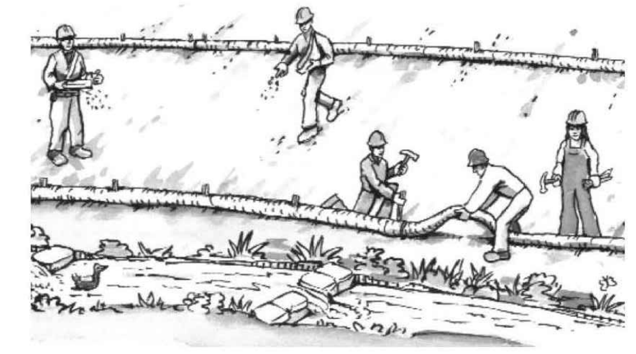
Construction Entrances and Perimeter
- ❑ Establish and maintain effective perimeter controls and stabilize all construction entrances and exits to sufficiently control erosion and sediment discharges from site and tracking off site.
- ❑ Sweep or vacuum any street tracking immediately and secure sediment source to prevent further tracking. Never hose down streets to clean up tracking.

Equipment Management & Spill Control

Maintenance and Parking
- ❑ Designate an area, fitted with appropriate BMPs, for vehicle and equipment parking and storage.
- ❑ Perform major maintenance, repair jobs, and vehicle and equipment washing off site.
- ❑ If refueling or vehicle maintenance must be done onsite, work in a bermed area away from storm drains and over a drip pan or drop cloths big enough to collect fluids. Recycle or dispose of fluids as hazardous waste.
- ❑ If vehicle or equipment cleaning must be done onsite, clean with water only in a bermed area that will not allow rinse water to run into gutters, streets, storm drains, or surface waters.
- ❑ Do not clean vehicle or equipment onsite using soaps, solvents, degreasers, or steam cleaning equipment.

Spill Prevention and Control
- ❑ Keep spill cleanup materials (e.g., rags, absorbents and cat litter) available at the construction site at all times.
- ❑ Inspect vehicles and equipment frequently for and repair leaks promptly. Use drip pans to catch leaks until repairs are made.
- ❑ Clean up spills or leaks immediately and dispose of cleanup materials properly.
- ❑ Do not hose down surfaces where fluids have spilled. Use dry cleanup methods (absorbent materials, cat litter, and/or rags).
- ❑ Sweep up spilled dry materials immediately. Do not try to wash them away with water, or bury them.
- ❑ Clean up spills on dirt areas by digging up and properly disposing of contaminated soil.
- ❑ Report significant spills immediately. You are required by law to report all significant releases of hazardous materials, including oil. To report a spill: 1) Dial 911 or your local emergency response number, 2) Call the Governor's Office of Emergency Services Warning Center, (800) 852-7550 (24 hours).

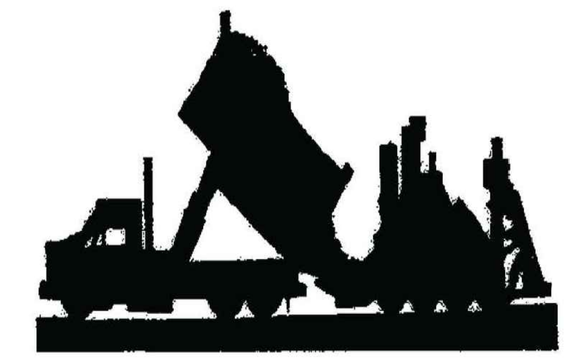
Earthmoving



- ❑ Schedule grading and excavation work during dry weather.
- ❑ Stabilize all denuded areas, install and maintain temporary erosion controls (such as erosion control fabric or bonded fiber matrix) until vegetation is established.
- ❑ Remove existing vegetation only when absolutely necessary, and seed or plant vegetation for erosion control on slopes or where construction is not immediately planned.
- ❑ Prevent sediment from migrating offsite and protect storm drain inlets, gutters, ditches, and drainage courses by installing and maintaining appropriate BMPs, such as fiber rolls, silt fences, sediment basins, gravel bags, berms, etc.
- ❑ Keep excavated soil on site and transfer it to dump trucks on site, not in the streets.

Contaminated Soils
- ❑ If any of the following conditions are observed, test for contamination and contact the Regional Water Quality Control Board:
  - Unusual soil conditions, discoloration, or odor.
  - Abandoned underground tanks.
  - Abandoned wells
  - Buried barrels, debris, or trash.

Paving/Asphalt Work



- ❑ Avoid paving and seal coating in wet weather or when rain is forecast, to prevent materials that have not cured from contacting stormwater runoff.
- ❑ Cover storm drain inlets and manholes when applying seal coat, tack coat, slurry seal, fog seal, etc.
- ❑ Collect and recycle or appropriately dispose of excess abrasive gravel or sand. Do NOT sweep or wash it into gutters.
- ❑ Do not use water to wash down fresh asphalt concrete pavement.

Sawcutting & Asphalt/Concrete Removal
- ❑ Protect nearby storm drain inlets when saw cutting. Use filter fabric, catch basin inlet filters, or gravel bags to keep slurry out of the storm drain system.
- ❑ Shovel, abosorb, or vacuum saw-cut slurry and dispose of all waste as soon as you are finished in one location or at the end of each work day (whichever is sooner!).
- ❑ If sawcut slurry enters a catch basin, clean it up immediately.

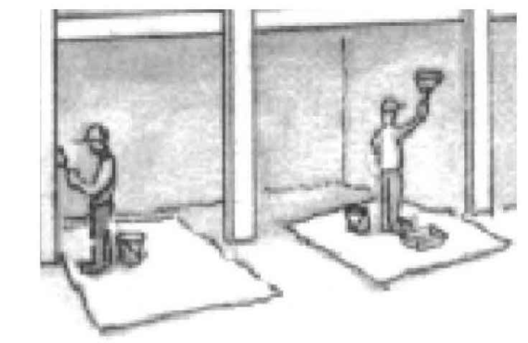
Concrete, Grout & Mortar Application

- ❑ Store concrete, grout, and mortar away from storm drains or waterways, and on pallets under cover to protect them from rain, runoff, and wind.
- ❑ Wash out concrete equipment/trucks offsite or in a designated washout area, where the water will flow into a temporary waste pit, and in a manner that will prevent leaching into the underlying soil or onto surrounding areas. Let concrete harden and dispose of as garbage.
- ❑ When washing exposed aggregate, prevent washwater from entering storm drains. Block any inlets and vacuum gutters, hose washwater onto dirt areas, or drain onto a bermed surface to be pumped and disposed of properly.

Landscaping

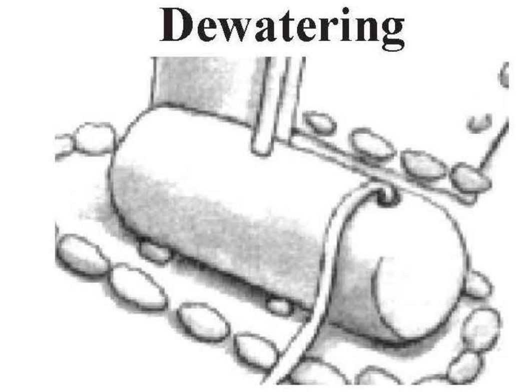
- ❑ Protect stockpiled landscaping materials from wind and rain by storing them under tarps all year-round.
- ❑ Stack bagged material on pallets and under cover.
- ❑ Discontinue application of any erodible landscape material within 2 days before a forecast rain event or during wet weather.

Painting & Paint Removal



Painting Cleanup and Removal
- ❑ Never clean brushes or rinse paint containers into a street, gutter, storm drain, or stream.
- ❑ For water-based paints, paint out brushes to the extent possible, and rinse into a drain that goes to the sanitary sewer. Never pour paint down a storm drain.
- ❑ For oil-based paints, paint out brushes to the extent possible and clean with thinner or solvent in a proper container. Filter and reuse thinners and solvents. Dispose of excess liquids as hazardous waste.
- ❑ Paint chips and dust from non-hazardous dry stripping and sand blasting may be swept up or collected in plastic drop cloths and disposed of as trash.
- ❑ Chemical paint stripping residue and chips and dust from marine paints or paints containing lead, mercury, or tributyltin must be disposed of as hazardous waste. Lead based paint removal requires a state-certified contractor.

Dewatering



- ❑ Discharges of groundwater or captured runoff from dewatering operations must be properly managed and disposed. When possible send dewatering discharge to landscaped area or sanitary sewer. If discharging to the sanitary sewer call your local wastewater treatment plant.
- ❑ Divert run-on water from offsite away from all disturbed areas.
- ❑ When dewatering, notify and obtain approval from the local municipality before discharging water to a street gutter or storm drain. Filtration or diversion through a basin, tank, or sediment trap may be required.
- ❑ In areas of known or suspected contamination, call your local agency to determine whether the ground water must be tested. Pumped groundwater may need to be collected and hauled off-site for treatment and proper disposal.

Storm drain polluters may be liable for fines of up to $10,000 per day!

REGISTERED PROFESSIONAL ENGINEER
MAZIAR BOZORGINIA
NO. 76723
EXP. 12/31/24
CIVIL
STATE OF CALIFORNIA

APPROVED BY:
CITY OF HALF MOON BAY

MAZIAR BOZORGINIA — DATE
CITY ENGINEER

CONSTRUCTION BEST MANAGEMENT PRACTICES (BMPs)
SMITH FIELD PARKING LOT PROJECT
Half Moon Bay, CA

REGISTERED PROFESSIONAL ENGINEER
RICHARD J. LAURETA
C 65783
Exp. 12/31/24
CIVIL
STATE OF CALIFORNIA
CONSTRUCTION

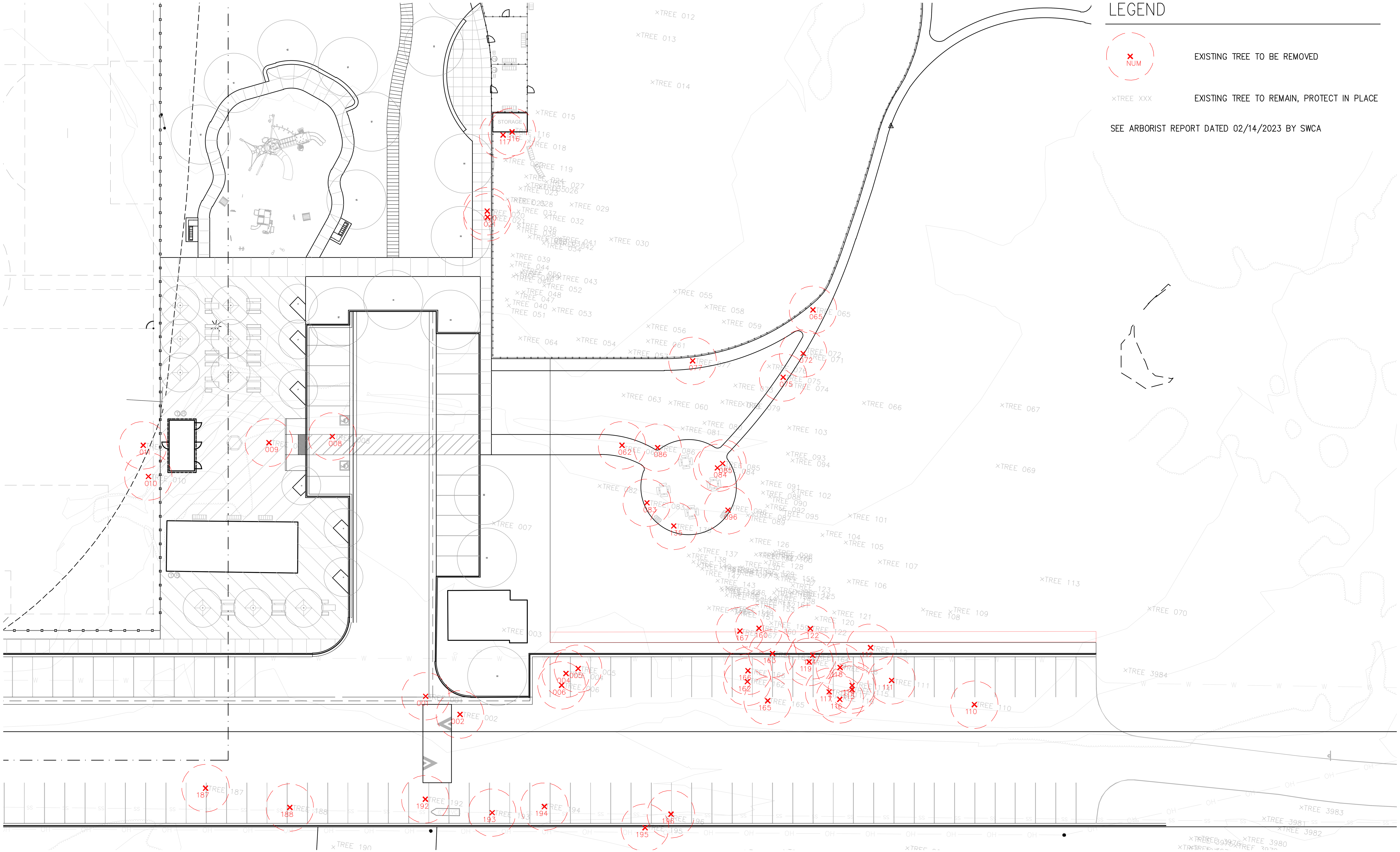
FREYER & LAURETA, INC.
CIVIL ENGINEERS • SURVEYORS • CONSTRUCTION MANAGERS

THE CITY OF HALF MOON BAY CALIFORNIA

City of Half Moon Bay
501 Main Street
Half Moon Bay
CA 94019
p 650-726-7177
f 650-726-8261
hmbcity.com

REVISIONS	BY
35% SUBMITTAL	CG

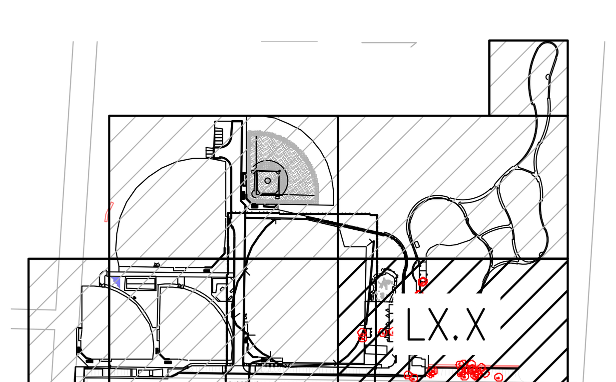
DATE 09-13-2024
SCALE AS SHOWN
DRAWN CG
JOB NO. 276005
DWG
SHEET C13.0
OF 12 SHEETS



LEGEND

NUM	EXISTING TREE TO BE REMOVED
×TREE XXX	EXISTING TREE TO REMAIN, PROTECT IN PLACE

SEE ARBORIST REPORT DATED 02/14/2023 BY SWCA



SMITH FIELD PARKING LOT PROJECT

TREE DISPOSITION PLAN

HALF MOON BAY, CA

City of Half Moon Bay

501 Main Street
Half Moon Bay
CA 94019

p 650-726-7177
f 650-726-8261
hmbcity.com

REVISIONS	BY

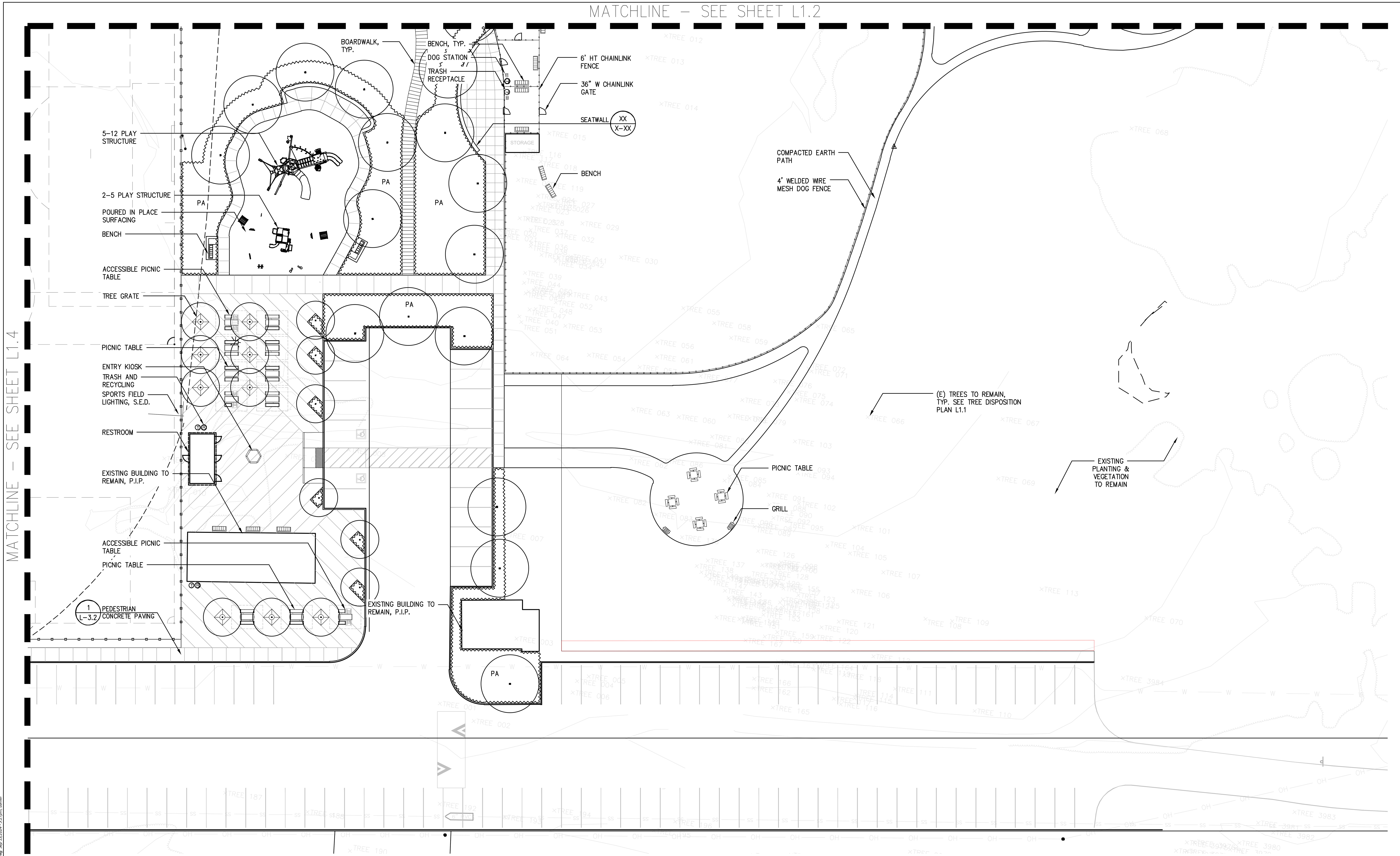
APPROVED BY:
CITY OF HALF MOON BAY

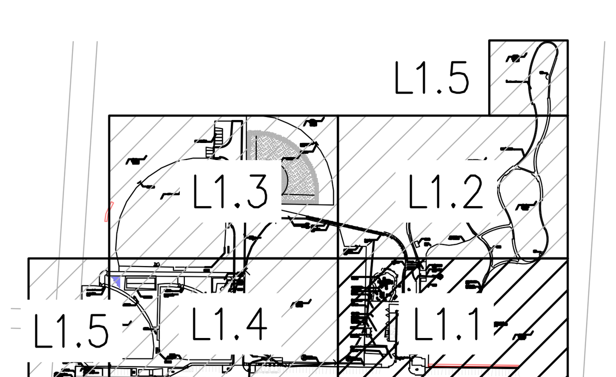
MAZIAR BOZORGINIA
CITY ENGINEER

DATE

DATE	9-13-2024
SCALE	1"=20'-0"
DRAWN	DSS
JOB NO.	276005
DWG	
SHEET	L0.1

OF # SHEETS





SMITH FIELD PARKING LOT PROJECT

LAYOUT PLAN

HALF MOON BAY, CA

City of Half Moon Bay

501 Main Street
Half Moon Bay
CA 94019

p 650-726-7177
f 650-726-8261
hmbcity.com

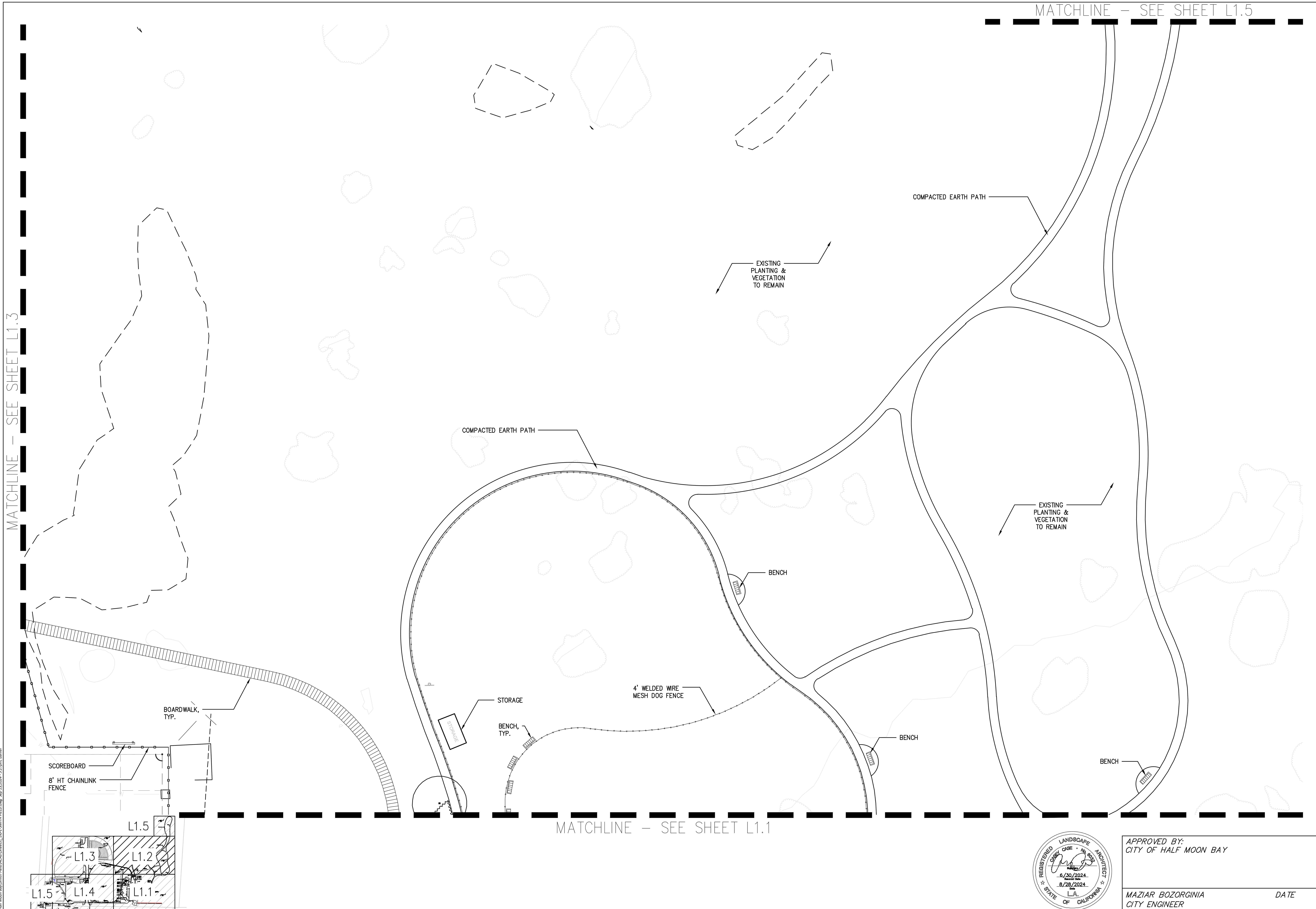
REVISIONS	BY

REGISTERED LANDSCAPE ARCHITECT — STATE OF CALIFORNIA — 6/30/2024 — 8/28/2024

APPROVED BY:
CITY OF HALF MOON BAY

MAZIAR BOZORGINIA — DATE
CITY ENGINEER

DATE 9-13-2024
SCALE 1"=20'-0"
DRAWN DSS
JOB NO. 276005
DWG
SHEET L1.1
OF # SHEETS



APPROVED BY:
CITY OF HALF MOON BAY

MAZIAR BOZORGINIA DATE
CITY ENGINEER

SMITH FIELD PARKING LOT PROJECT
LAYOUT PLAN
HALF MOON BAY, CA

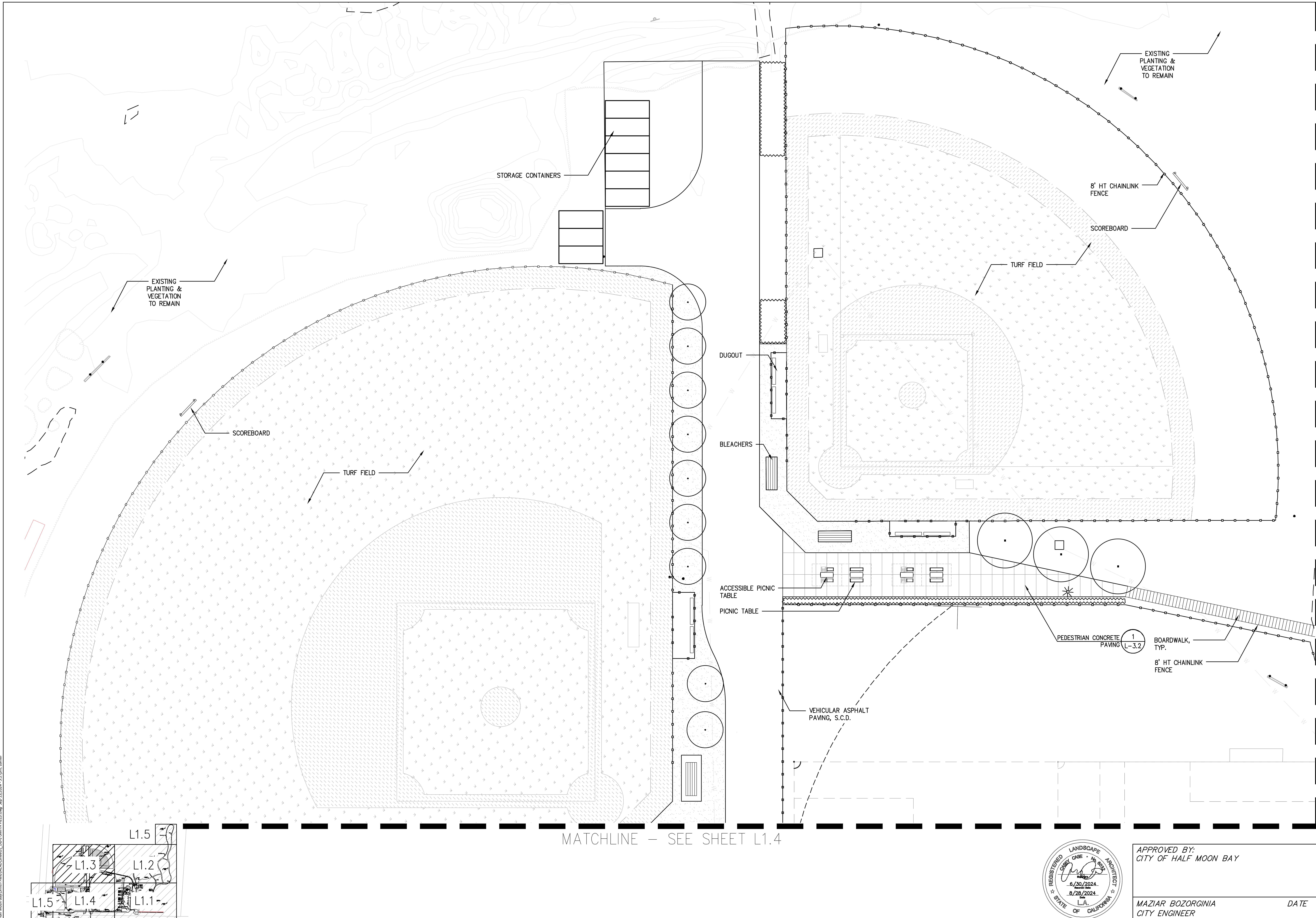
City of
Half Moon Bay

501 Main Street
Half Moon Bay
CA 94019

p 650-726-7177
f 650-726-8261
hmbcity.com

REVISIONS	BY

DATE 9-13-2024
SCALE 1"=20'-0"
DRAWN DSS
JOB NO. 276005
DWG
SHEET L1.2
OF # SHEETS



APPROVED BY:
CITY OF HALF MOON BAY

MAZIAR BOZORGINIA DATE
CITY ENGINEER

SMITH FIELD PARKING LOT PROJECT
LAYOUT PLAN
HALF MOON BAY, CA

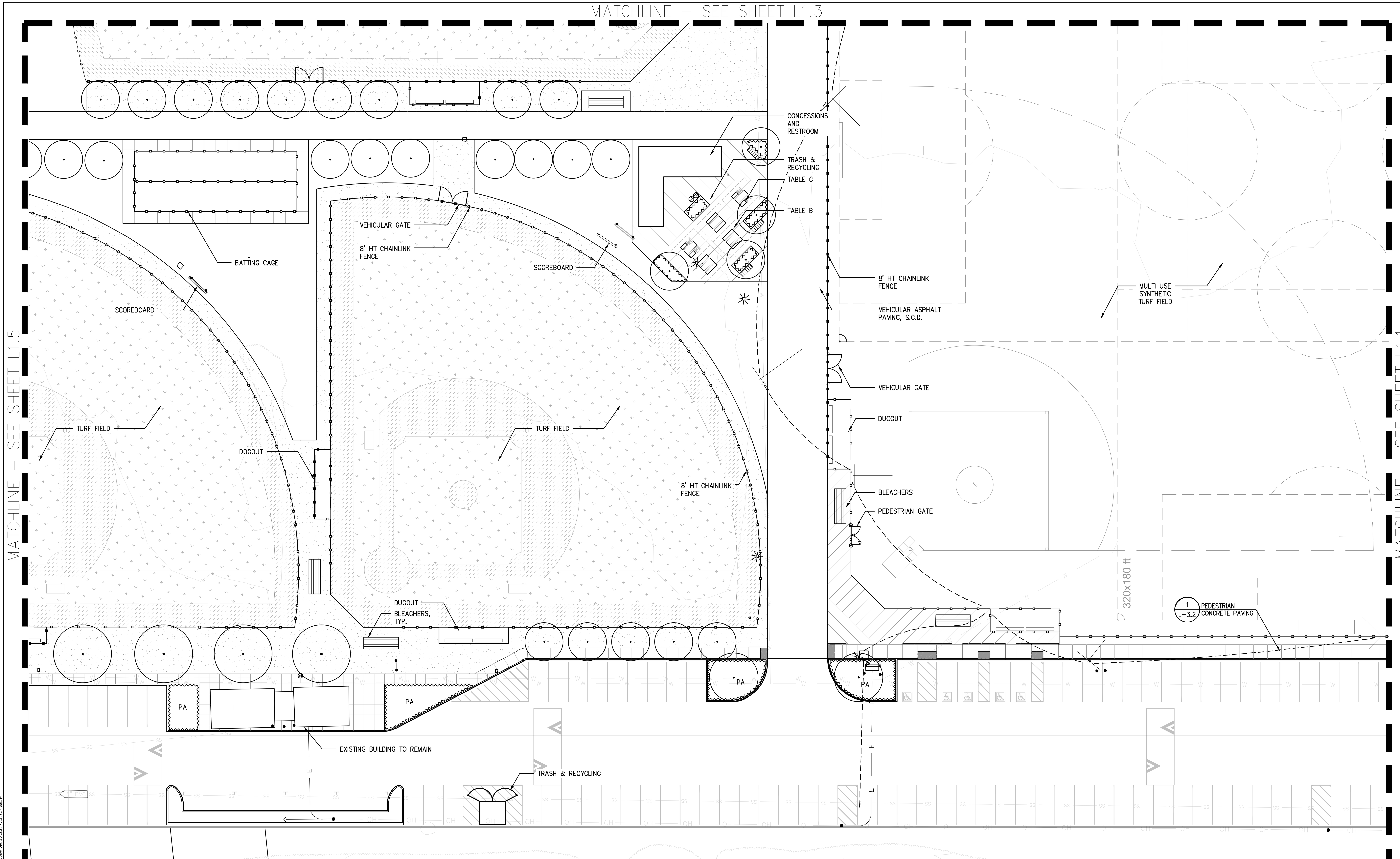
City of Half Moon Bay

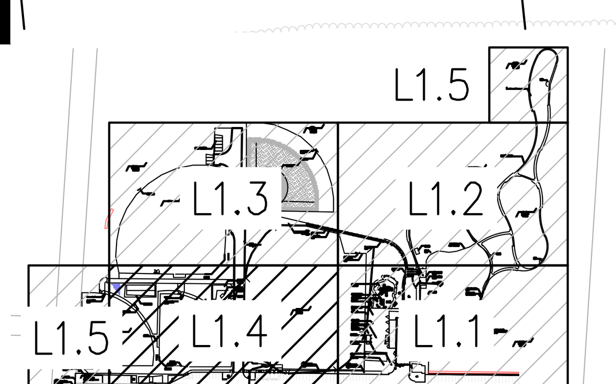
501 Main Street
Half Moon Bay
CA 94019

p 650-726-7177
f 650-726-8261
hmbcity.com

REVISIONS	BY

DATE 9-13-2024
SCALE 1"=20'-0"
DRAWN DSS
JOB NO. 276005
DWG
SHEET L1.3
OF # SHEETS





REGISTERED LANDSCAPE ARCHITECT
6/30/2024
8/28/2024
STATE OF CALIFORNIA

APPROVED BY:
CITY OF HALF MOON BAY

MAZIAR BOZORGINIA DATE
CITY ENGINEER

SMITH FIELD PARKING LOT PROJECT
LAYOUT PLAN
HALF MOON BAY, CA

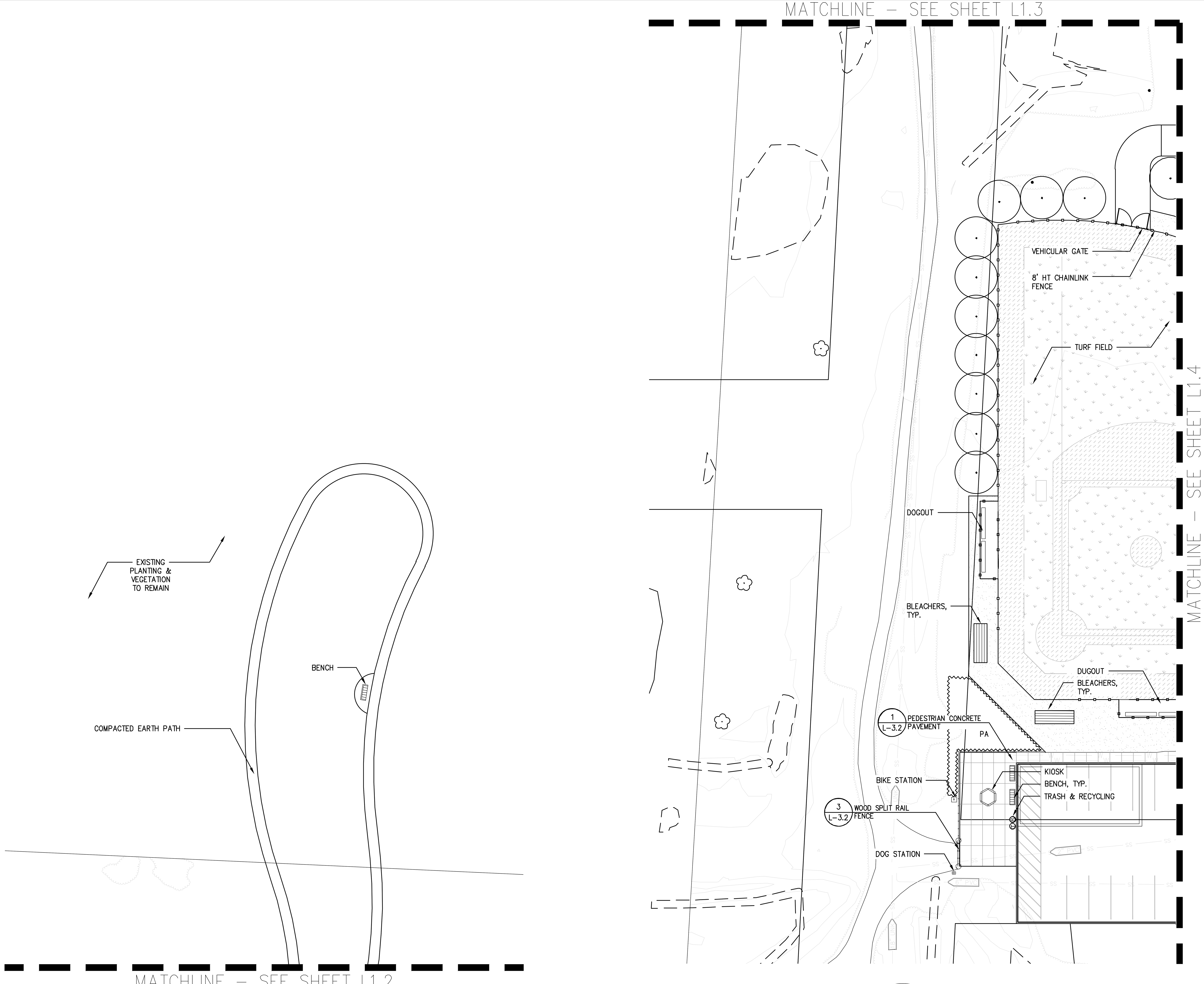
City of
Half Moon Bay

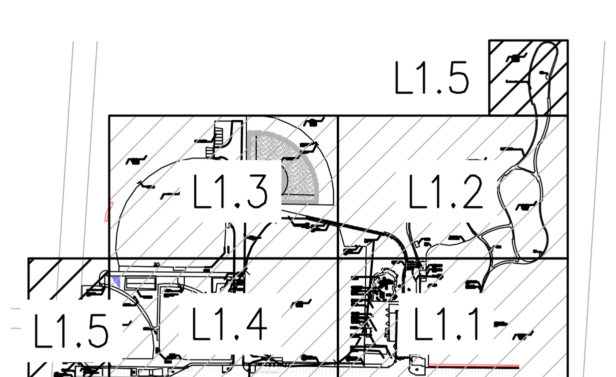
501 Main Street
Half Moon Bay
CA 94019

p 650-726-7177
f 650-726-8261
hmbcity.com

REVISIONS	BY

DATE 9-13-2024
SCALE 1"=20'-0"
DRAWN DSS
JOB NO. 276005
DWG
SHEET L1.4
OF SHEETS





SMITH FIELD PARKING LOT PROJECT
LAYOUT PLAN
HALF MOON BAY, CA

City of Half Moon Bay

501 Main Street
Half Moon Bay
CA 94019

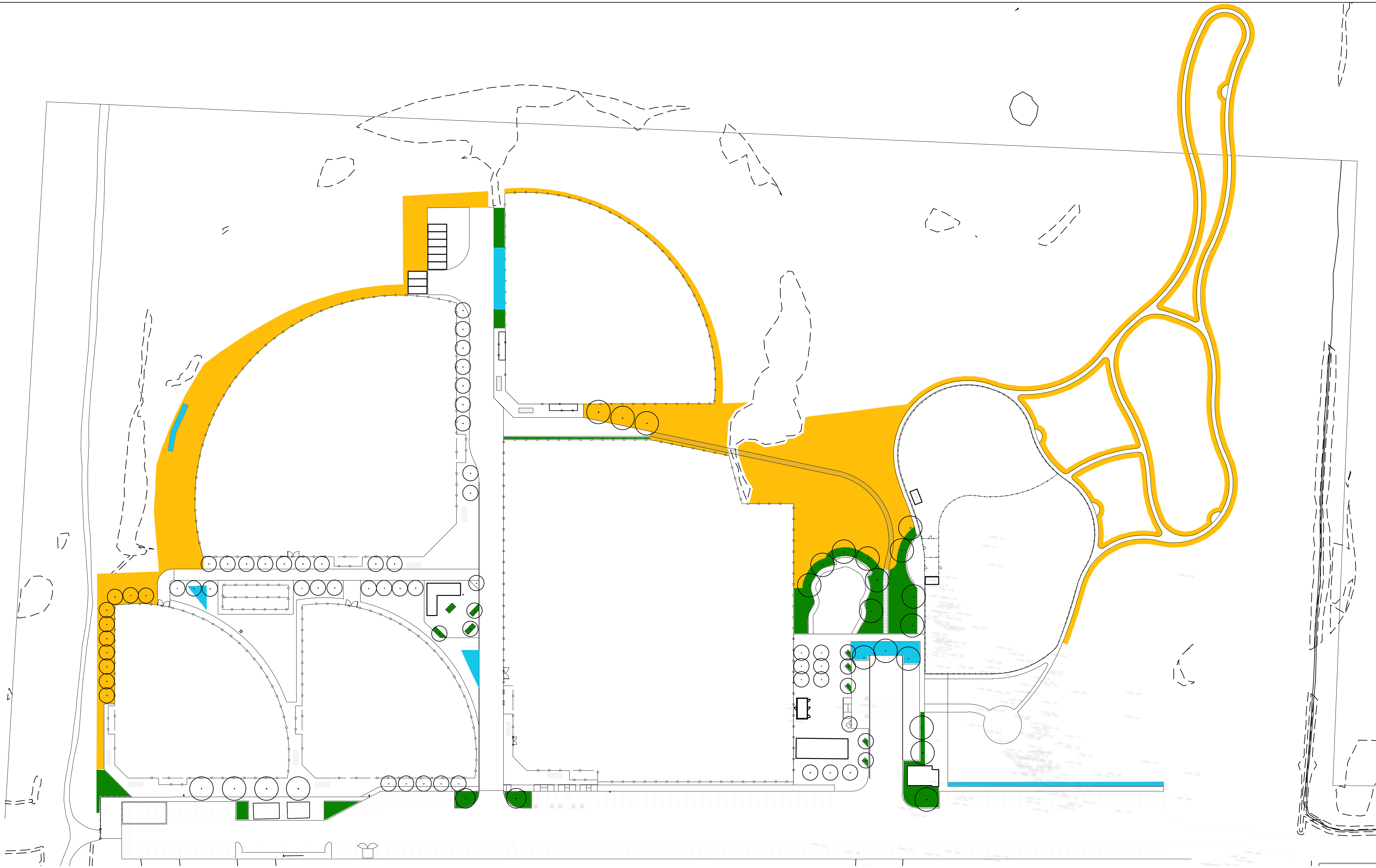
p 650-726-7177
f 650-726-8261
hmbcity.com

REVISIONS	BY

APPROVED BY:
CITY OF HALF MOON BAY

MAZIAR BOZORGINIA — DATE
CITY ENGINEER

DATE 9-13-2024
SCALE 1"=20'-0"
DRAWN DSS
JOB NO. 276005
DWG
SHEET L1.5
OF # SHEETS



PLANTING LEGEND

SEE SHEET L2.2,L2.3 FOR FULL PLANT LIST

- LANDSCAPE PLANTING AREA
- RESTORATION HYDROSEED AREA
- BIORETENTION AREA
- NEW TREE
- WETLAND ZONE – NO DISTURBANCE PERMITTED

SMITH FIELD PARKING LOT PROJECT

PLANTING ZONE PLAN

HALF MOON BAY, CA

City of
Half Moon Bay

501 Main Street
Half Moon Bay
CA 94019

p 650-726-7177
f 650-726-8261
hmbcity.com

REVISIONS	BY

REGISTERED LANDSCAPE ARCHITECT
CASEY CASE · No. 6032
Signature
6/30/2024
Renewal Date
8/28/2024
Date
L.A.
STATE OF CALIFORNIA

APPROVED BY:
CITY OF HALF MOON BAY

MAZIAR BOZORGINIA DATE
CITY ENGINEER

DATE 9-13-2024
SCALE 1"=20'-0"
DRAWN DSS
JOB NO. 276005
DWG
SHEET L2.1
OF # SHEETS

TREES


ARBUTUS MARINA
STRAWBERRY TREE


HESPEROCYPARIS MACROCARPA
MONTEREY CYPRESS


MAYTENUS BOARIA
MAYTEN TREE

LANDSCAPE PLANTING


ACHILLEA MILLIEFOLIUM
YARROW


ARCTOSTAPHYLOS SP.
MANZANITA


ARTEMISIA CALIFORNICA
CALIFORNIA SAGE


ARTEMISIA DOUGLASIANA
MUGWORT


BACCHARIS PILULARIS
COYOTE BRUSH


BROMUS SITCHENSIS VAR. CARINATUS
CALIFORNIA BROME


CEANOTHUS THRYSIFLORUS VAR. THRYSIFLORUS
BLUE BLOSSOM


DANTHONIA CALIFORNICA
CALIFORNIA OATGRASS


DIPLACUS AURANTIACUS
STICKY MONKEY FLOWER


ELYMUS GLAUCUS
BLUE WILDRYE


EPILOBIUM CANUM
CALIFORNIA FUCHSIA


ERIOPHYLLUM CONFERTIFLORUM VAR. CONFERTIFLORUM
GOLDEN YARROW


ERIOPHYLLUM STAECHADIFOLIUM
LIZARD TAIL


ESCHSCHOLZIA CALIFORNICA
CALIFORNIA POPPY


FESTUCA MICROSTACHYS
SMALL FESCUE


FRAGARIA CHILOENSIS
BEACH STRAWBERRY


FRANGULA CALIFORNICA SSP. CALIFORNICA
CALIFORNIA COFFEEBERRY


GARRYA ELLIPTICA
COAST SILK TASSEL


HETEROMELES ARBUTIFOLIA
TOYON


IRIS DOUGLASIANA
DOUGLAS IRIS


LEPECHINIA CALYCINA
PITCHER SAGE


LUPINUS ARBOREUS
COASTAL BUSH LUPINE


MORELLA CALIFORNICA
CALIFORNIA WAX MYRTLE


OENOTHERA ELATA SSP. HOOKERI
EVENING PRIMROSE


PSEUDOGNAPHALIUM CALIFORNICUM
LADIES TOBACCO


RIBES SANGUINEUM VAR. SANGUINEUM


SCROPHULARIA CALIFORNICA
BEE PLANT


SISYRINCHIUM BELLUM
BLUE EYED GRASS


STIPA PULCHRA
PURPLE NEEDLE GRASS

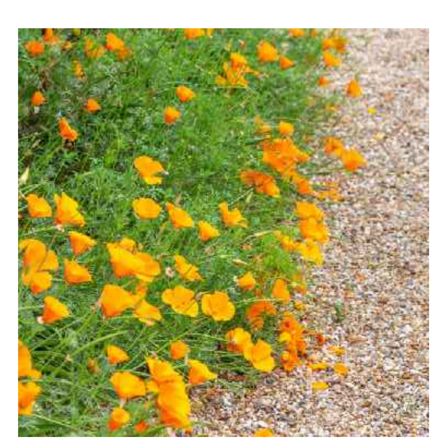

SYMPHYOTRICHUM CHILENSE
PACIFIC ASTER

RESTORATION HYDROSEED


BROMUS SITCHENSIS VAR. CARINATUS
CALIFORNIA BROME


DANTHONIA CALIFORNICA
CALIFORNIA OATGRASS


ELYMUS GLAUCUS
BLUE WILDRYE


ESCHSCHOLZIA CALIFORNICA
CALIFORNIA POPPY


FESTUCA MICROSTACHYS
SMALL FESCUE


SISYRINCHIUM BELLUM
BLUE EYED GRASS


STIPA PULCHRA
PURPLE NEEDLE GRASS

SMITH FIELD PARKING LOT PROJECT
PLANT PALETTE
HALF MOON BAY, CA

City of
Half Moon Bay

501 Main Street
Half Moon Bay
CA 94019

p 650-726-7177
f 650-726-8261
hmbcity.com

REVISIONS | BY

APPROVED BY:
CITY OF HALF MOON BAY

MAZIAR BOZORGINIA DATE
CITY ENGINEER

DATE 9-13-2024
SCALE 1"=20'-0"
DRAWN DSS
JOB NO. 276005
DWG
SHEET L2.2
OF SHEETS

BIORETENTION AREAS

ARTEMISIA DOUGLASIANA
CALIFORNIA MUGWORT

JUNCUS PATENS
CALIFORNIA GREY RUSH

EQUISETUM ARVENSE
COMMON HORSETAIL

REGISTERED LANDSCAPE ARCHITECT
CASEY CASE No. 6032
Signature
6/30/2024
Renewal Date
8/28/2024
Date
L.A.
STATE OF CALIFORNIA

APPROVED BY:
CITY OF HALF MOON BAY

MAZIAR BOZORGINIA — DATE
CITY ENGINEER

SMITH FIELD PARKING LOT PROJECT

PLANT PALETTE

HALF MOON BAY, CA

City of
Half Moon Bay

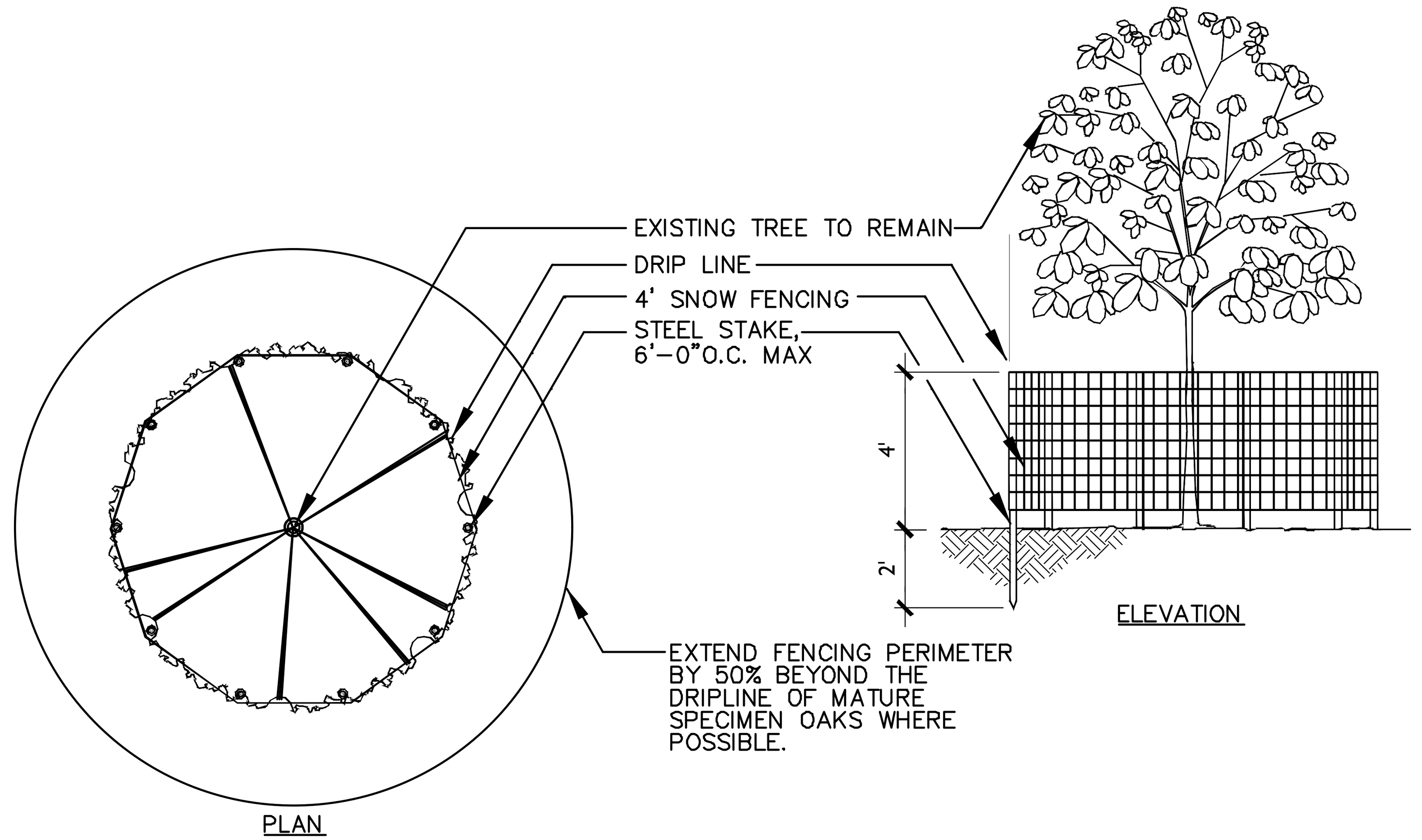
501 Main Street
Half Moon Bay
CA 94019

p 650-726-7177
f 650-726-8261
hmbcity.com

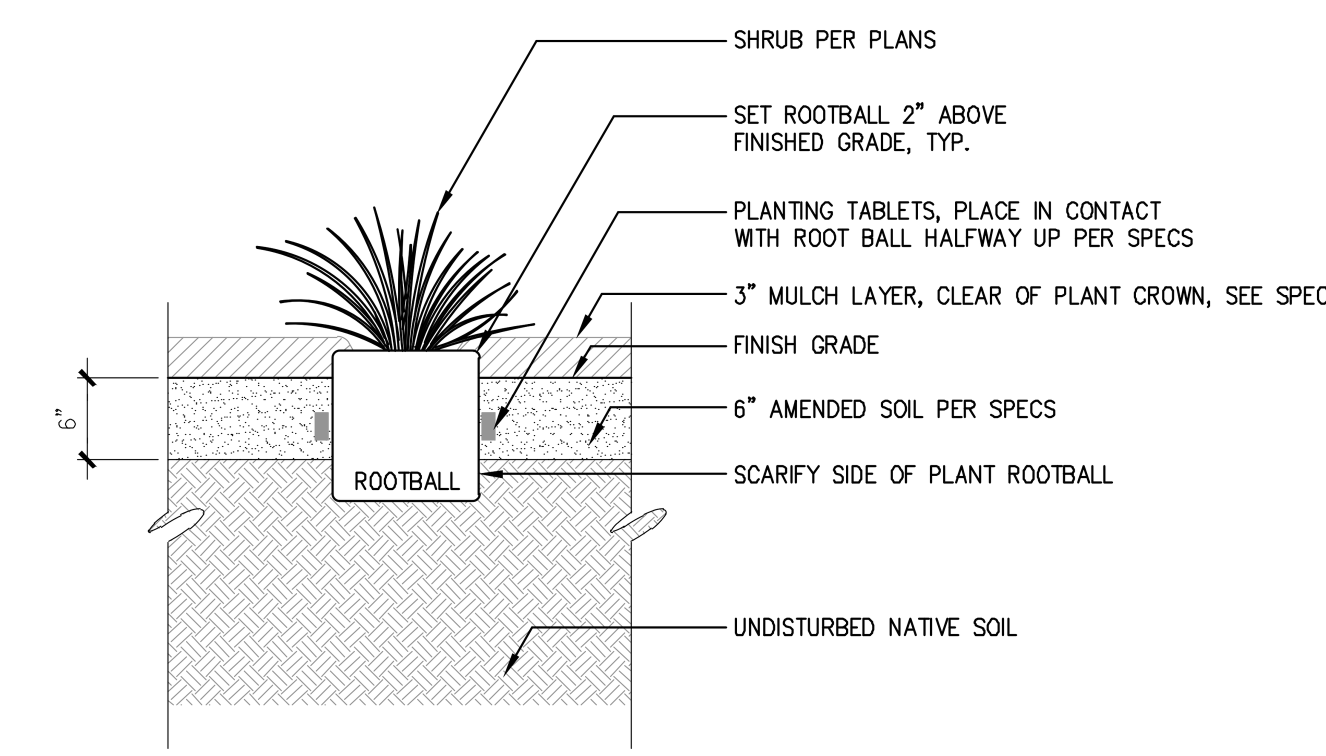
REVISIONS	BY

DATE 9-13-2024
SCALE 1"=20'-0"
DRAWN DSS
JOB NO. 276005
DWG
SHEET L2.3
OF # SHEETS

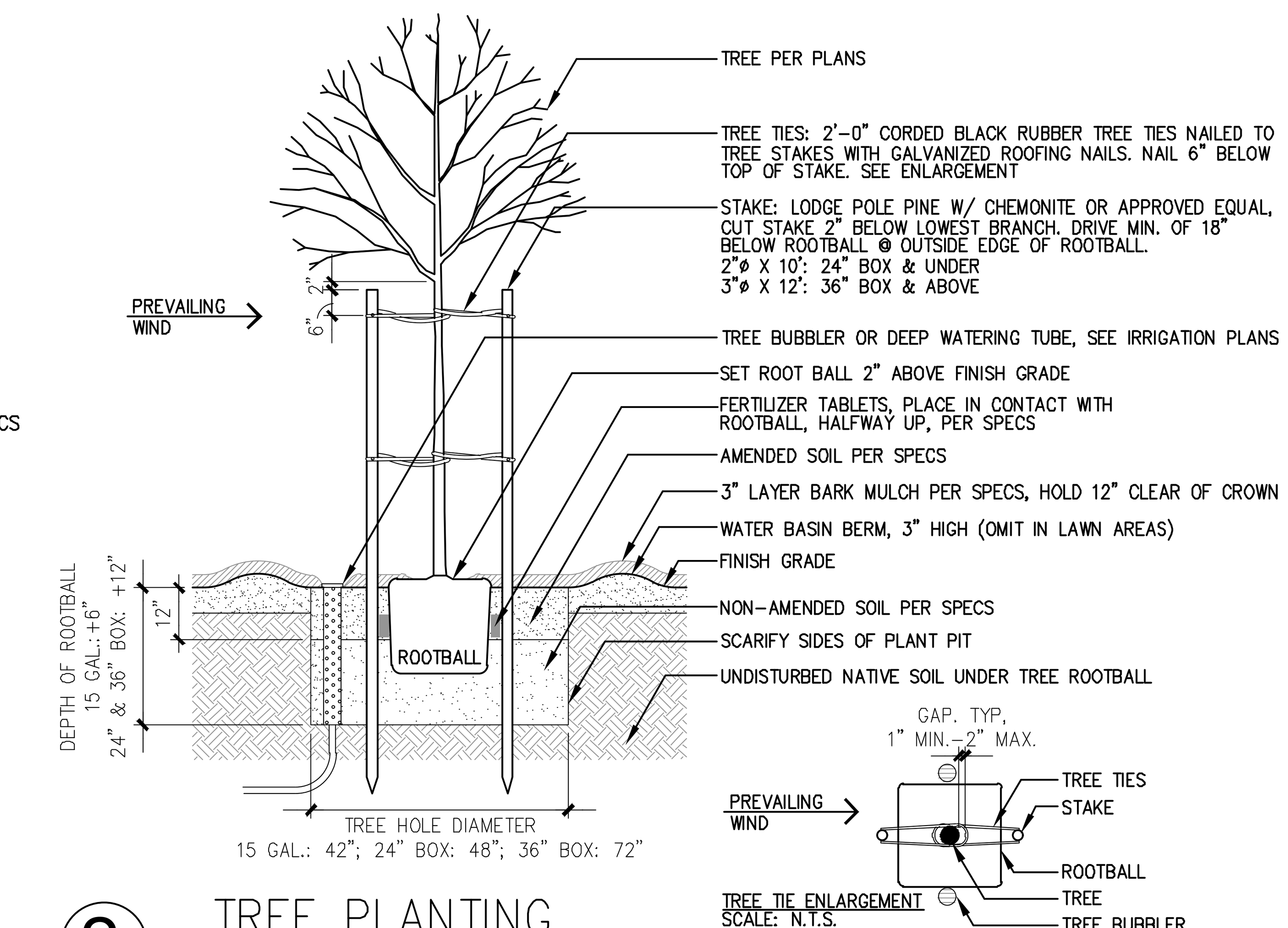
P:\Half Moon Bay\Smith Field\ACAD\Sheets_DG-P-SMITH FIELD.dwg Sep 13,2024 - 5:27pm, daniel



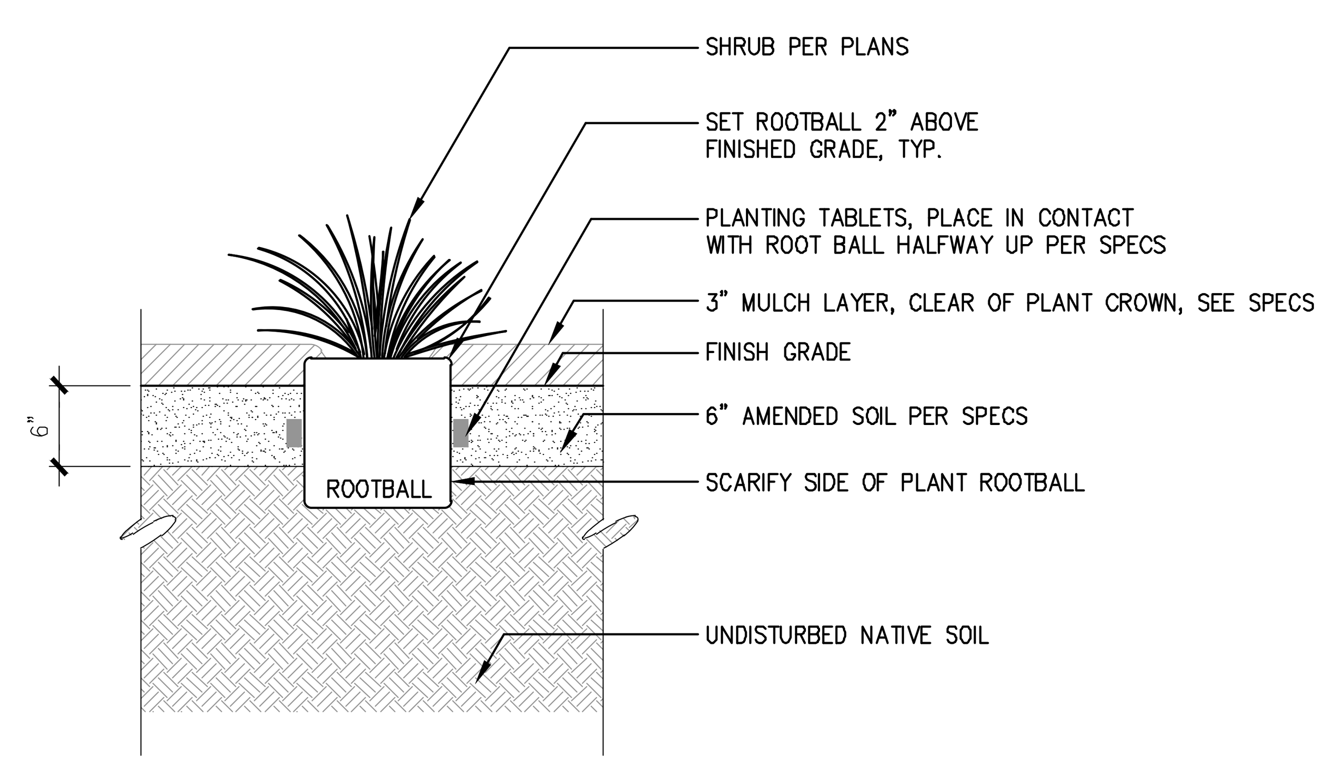
6 EXISTING TREE PROTECTIVE FENCING
SCALE: 1/4" = 1'-0"



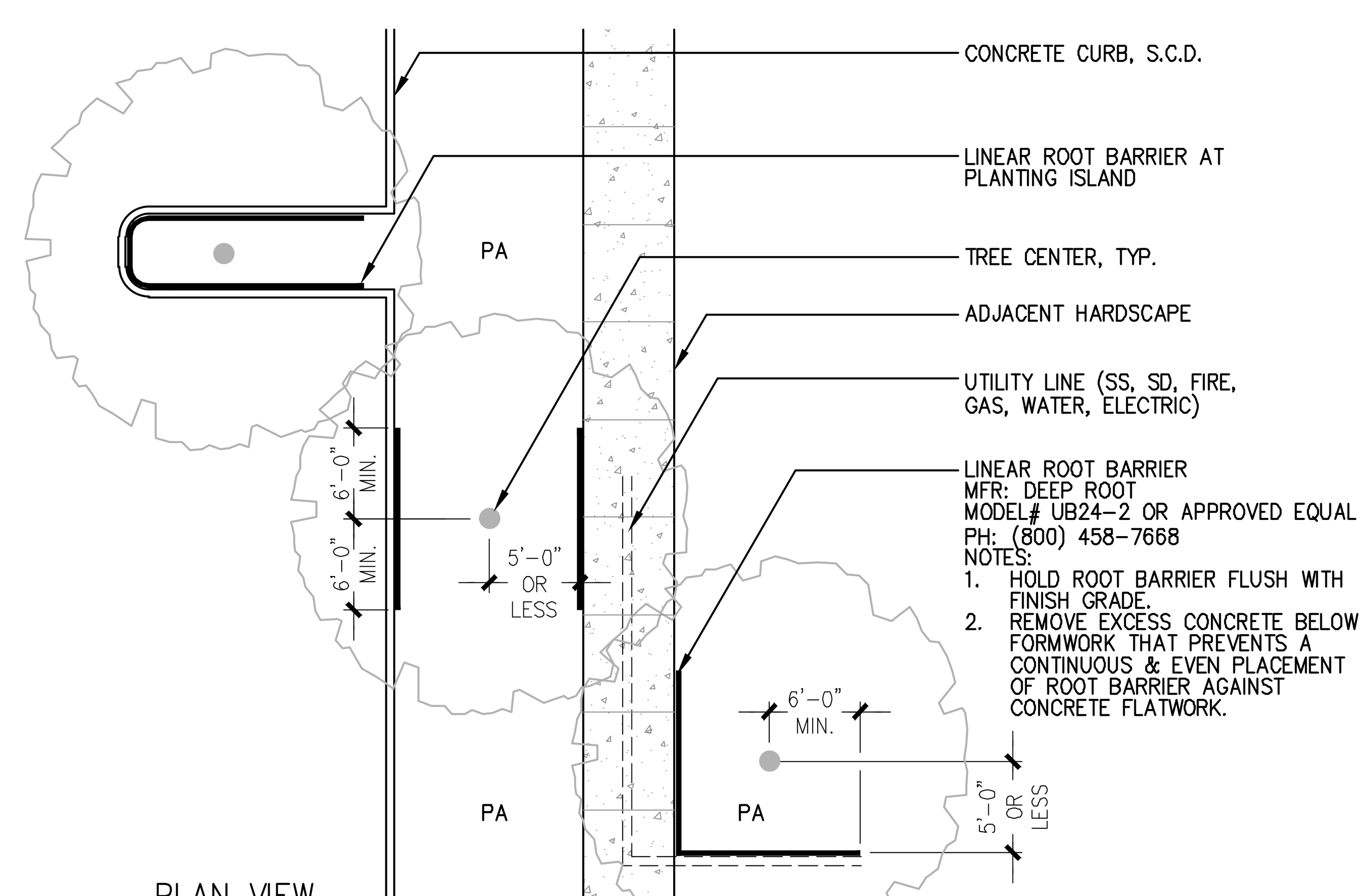
4 SHRUB PLANTING (NATIVE SOIL)
SCALE: 1" = 1'-0"



2 TREE PLANTING
SCALE: 3/8" = 1'-0"

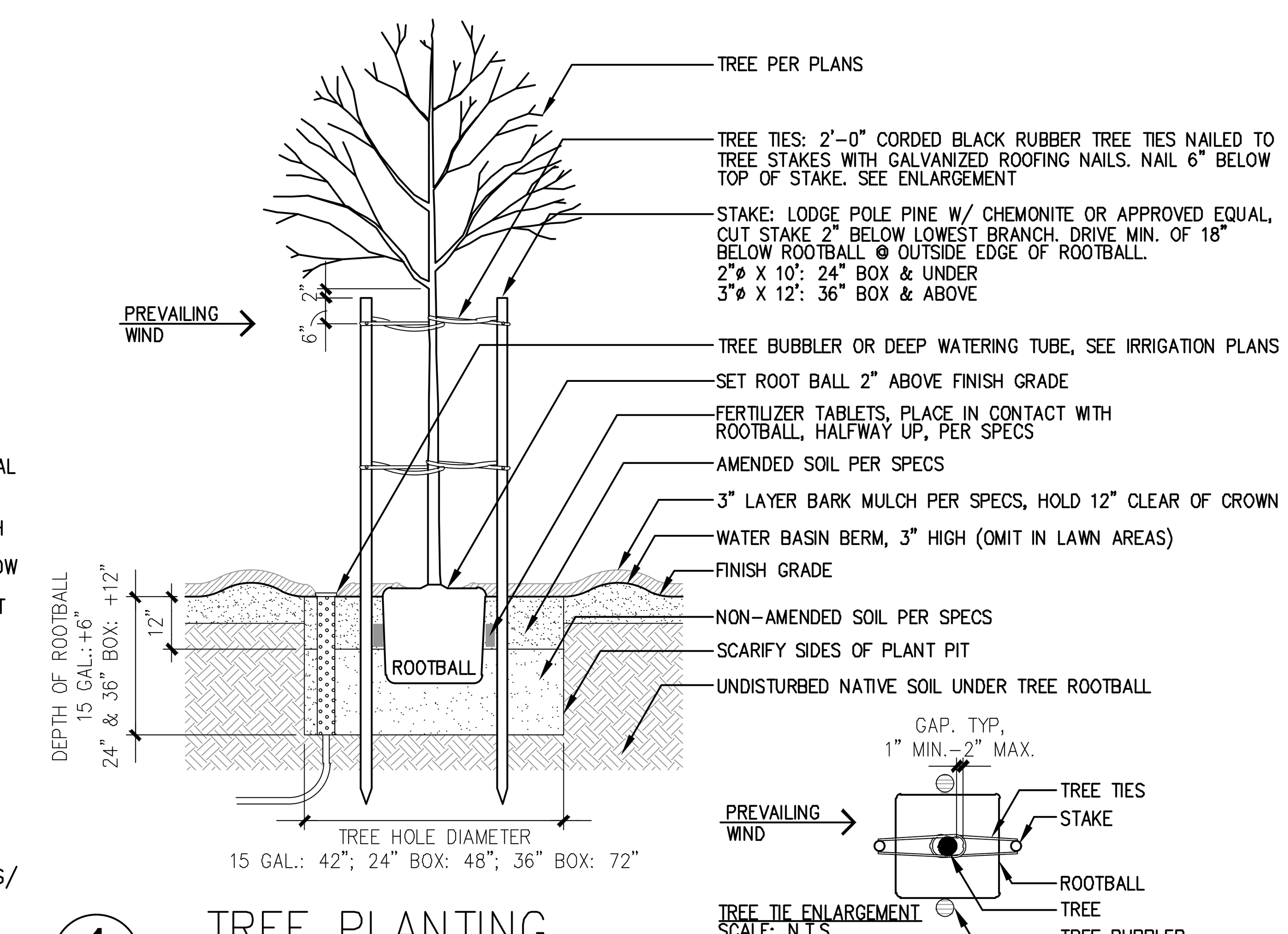


5 SHRUB PLANTING (NATIVE SOIL)
SCALE: 1" = 1'-0"



REF NOTE:
1. CHECK CITY STANDARD DETAILS/ NOTES FOR ROOT BARRIER MINIMUMS

3 LINEAR ROOT BARRIER
SCALE: 1" = 10'-0"



1 TREE PLANTING
SCALE: 3/8" = 1'-0"

REGISTERED LANDSCAPE ARCHITECT
CASEY CASE No. 6032
Signature
6/30/2024
Renewal Date
8/28/2024
Date
L.A.
STATE OF CALIFORNIA

APPROVED BY:
CITY OF HALF MOON BAY

MAZIAR BOZORGINIA DATE
CITY ENGINEER

SMITH FIELD PARKING LOT PROJECT

CONSTRUCTION DETAILS

HALFMOON BAY, CA

City of
Half Moon Bay

501 Main Street
Half Moon Bay
CA 94019

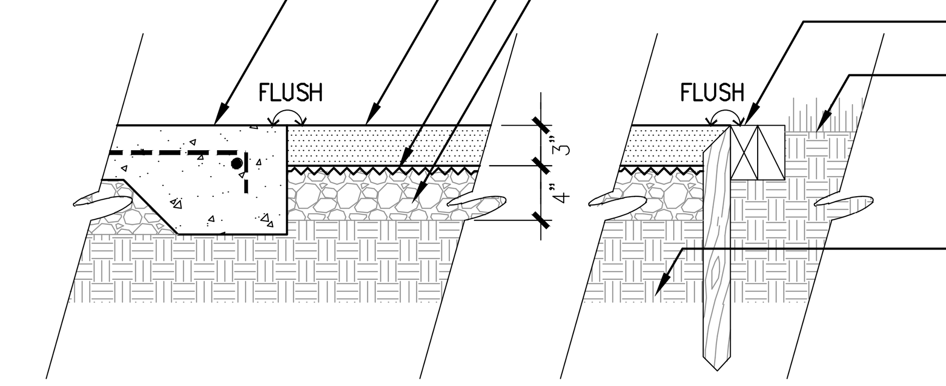
p 650-726-7177
f 650-726-8261
hmbcity.com

REVISIONS	BY

DATE 9-13-2024
SCALE 1"=20'-0"
DRAWN DSS
JOB NO. 276005
DWG
SHEET L3.1
OF # SHEETS

PATH: P:\HALF MOON BAY\SMITH FIELD\ACAD\SHEETS_DG-D-SMITH FIELD.DWG
PLOT DATE: 9/13/2024 5:27 PM
P:|Half Moon Bay|Smith Field|ACAD|Sheets|_DG-D-SMITH FIELD.dwg Sep 13,2024 - 5:27pm, daniel

NOTE:
1. CONTRACTOR TO PROVIDE 4'X4' MOCK UP OF DECOMPOSED GRANITE PAVING FOR REVIEW AND APPROVAL PRIOR TO INSTALLATION.



CONCRETE PAVING PER PLAN (X / LX.X)

DECOMPOSED GRANITE, SEE LEGEND LX.X
SIZE: FINE TO 1/4" PARTICLE SIZE
INSTALL IN 1 1/2" LAYERS, EACH LAYER COMPACTED 95% W/ TOP LAYER MIN. 75% DUST FINES ADD STABILIZER TECHNISOIL G3 PER MANUFACTURER SPECIFICATIONS AND RECOMMENDATIONS.

GEOTEXTILE FABRIC PER SPECS

CLASS II AGGREGATE BASE,
SEE GEOTECH REPORT FOR COMPACTION RATE AND DEPTH OF NON-EXPANSIVE FILLS.

REDWOOD HEADER (X / LX.X)

PLANTING AREA, TYP.

COMPACTED SUBGRADE PER GEOTECH REPORT

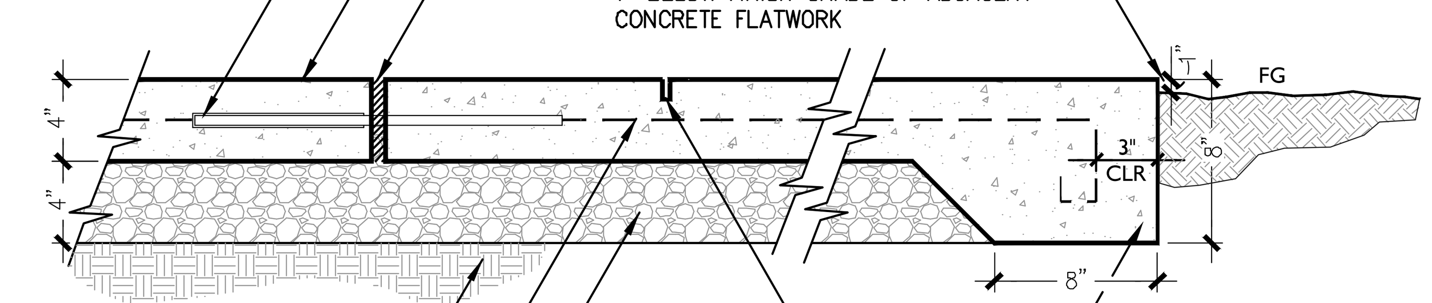
2 DECOMPOSED GRANITE PAVING
SCALE: 1" = 1'-0"

¼" EXPANSION JOINTS WITH ½" X 12" SLIP DOWELS

4" CLASS A CONCRETE

EXPANSION JOINT W/ ½" X 12" SLIP DOWELS. FOR NATURAL GREY CONCRETE, USE 1/2" WIDE FIBEROUS ASPHALTIC MATERIAL. FOR INTEGRAL COLOR CONCRETE USE 1/2" HOMEX, NON-ASPHALTIC JOINT W/ POLYSULFIDE BEAD. COLOR TO MATCH ADJACENT PAVING. HOMEX BY HOMASOTE, TRENTON, NJ 609-883-3300. ALL JOINTS TO OCCUR AT 20' O.C. MAX., AT MATERIAL INTERFACES, AND AS SHOWN ON DRAWINGS.

HOLD FINISH GRADE OF PLANTING AREAS 1" BELOW FINISH GRADE OF ADJACENT CONCRETE FLATWORK



COMPACTED SUBGRADE SEE SOILS REPORT

10 GAUGE 6x6 WWM CENTERED IN CONC. SLAB

4" CLASS 2 AGGREGATE

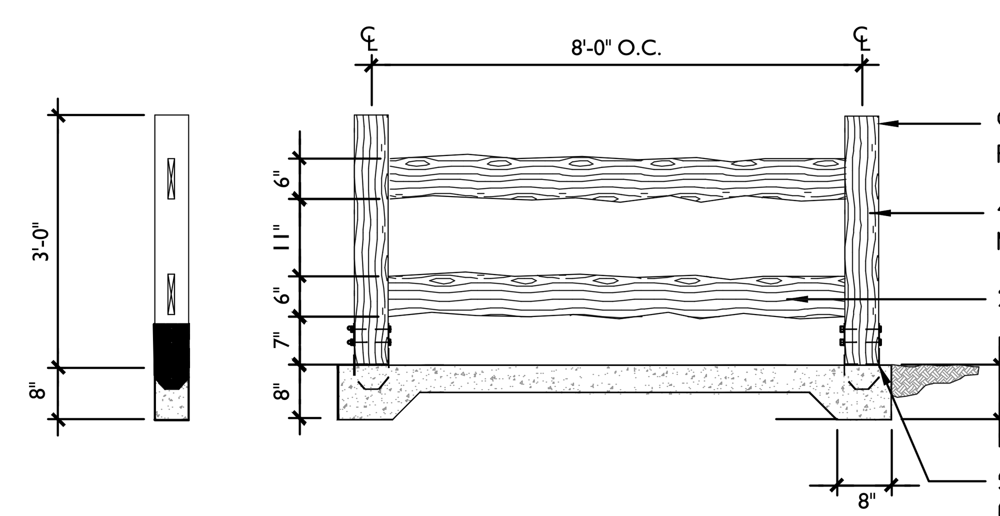
S.C.D. FOR ALL VEHICULAR PAVING SECTIONS

DETAIL PER CITY OF HALF MOON BAY SI-3 SIDEWALK DETAIL

NOTES:
1. ¼" EXPANSION JOINTS WITH ½" X 12" SLIP DOWLES EACH 20' ON STRAIGHT SECTIONS
2. EXPANSION JOINTS TO BE PLACED WITH TOP EDGE ¼" BELOW FINISHED SURFACE. DOWELS TO BE PLACED AT RIGHT ANGLES TO JOINT.
3. FOR CURB RADII GREATER THAN 30FT. EVENLY SPACE EXPANSION JOINTS ALONG FACE OF CURB 20 TO 25 FEET APART.

1 CONCRETE PAVING
SCALE: 1 1/2" = 1'-0"

FENCING AVAILABLE FROM COASTAL LUMBER:
(408) 995-0791



CEDAR SPLIT RAIL FENCING

4"x4" POSTS MORTISE AND TENON

2"x6" RAIL SPLIT CEDAR

SIMPSON STRONG-TIE ZMAX 6.25"H X 3.56"W X GALVANIZED STEEL POST BASE

2X HALF INCH GALVANIZED CARRIAGE BOLTS

3 2 RAIL WOOD FENCE IN CONCRETE
SCALE: 1/2" = 1'-0"

REGISTERED LANDSCAPE ARCHITECT · STATE OF CALIFORNIA · 6/30/2024 · 8/28/2024 · LA

APPROVED BY:
CITY OF HALF MOON BAY

MAZIAR BOZORGINIA DATE
CITY ENGINEER

SMITH FIELD PARKING LOT PROJECT
CONSTRUCTION DETAILS
HALFMOON BAY, CA

City of
Half Moon Bay

501 Main Street
Half Moon Bay
CA 94019

p 650-726-7177
f 650-726-8261
hmbcity.com

REVISIONS	BY

DATE 9-13-2024
SCALE 1"=20'-0"
DRAWN DSS
JOB NO. 276005
DWG
SHEET L3.2
OF # SHEETS

ELECTRICAL LEGEND & NOTES

SMITH FIELD PARKING LOT PROJECT
Half Moon Bay, CA

POWER SYMBOLS

- PANELBOARD, 120/240V, SURFACE MOUNTED SIZE APPROXIMATELY AS SHOWN
- PANELBOARD, 120/240V, FLUSH MOUNTED SIZE APPROXIMATELY AS SHOWN
- F DISCONNECT SWITCH (F=FUSED)
- ELECTRICAL MOTOR CONNECTION
- J JUNCTION BOX, MOUNT ABOVE ACCESSIBLE CEILING UON
- J JUNCTION BOX, WALL MOUNTED, +18" UON
- J JUNCTION BOX, FLOOR MOUNTED
- STANDARD TEL/DATA WALL OUTLET, MOUNT AT SAME HEIGHT AS ADJACENT RECEPTACLE.
- STANDARD DATA WALL OUTLET, MOUNT AT SAME HEIGHT AS ADJACENT RECEPTACLE.
- S SYSTEM SMOKE DETECTOR, SURFACE MOUNTED IN CEILING
- $a SINGLE POLE SWITCH, MOUNT AT +42" UON, LETTER INDICATES THE SWITCH LEG UON
- $K KEY OPERATED SWITCH, MOUNT AT +42" UON
- CONDUIT AND WIRE RUN IN WALL OR CEILING SPACE
- CONDUIT AND WIRE RUN CONCEALED IN SLAB, UNDER SLAB OR UNDERGROUND
- DUPLEX CONVENIENCE RECEPTACLE OUTLET, WITH GROUND MOUNT AT +18" UON, 125V, TAMPER RESISTANT TYPE
- DOUBLE DUPLEX CONVENIENCE RECEPTACLE OUTLET, WITH GROUND MOUNT AT +18" UON, 125V
- G GFCI DUPLEX CONVENIENCE RECEPTACLE OUTLET, MOUNT HORIZONTALLY AT +6" ABOVE COUNTER UON, 125V
- G GFCI DUPLEX CONVENIENCE RECEPTACLE OUTLET, WITH GROUND MOUNT AT +18" UON, 125V
- CONTROLLED DUPLEX CONVENIENCE RECEPTACLE OUTLET, UON, 125V. THE LETTER INDICATES THE SWITCH LEG.
- C DUPLEX GROUND RECEPTACLE OUTPUT FLUSH MOUNTED IN CEILING. 125V
- DUPLEX CONVENIENCE RECEPTACLE OUTLET, MOUNT HORIZONTALLY AT +6" ABOVE COUNTER UON, 125V
- SPECIALTY RECEPTACLE OUTLET, MOUNT AT +18" UON TYPE AS INDICATED
- RECESSED FLUSH DUPLEX RECEPTACLE OUTLET 125V.
- RECESSED FLUSH DOUBLE DUPLEX RECEPTACLE OUTLET, 125V.
- M MOTION SENSOR
- P PHOTOCELL

GENERAL NOTES

1. ARCHITECTURAL DRAWINGS TAKE PRECEDENCE OVER ENGINEERING DOCUMENTS FOR EXACT LOCATION, MOUNTING HEIGHTS AND SUSPENSION LENGTHS OF ALL ELECTRIC EQUIPMENT AND LIGHTING FIXTURES.
2. SEE ELECTRICAL SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
3. PROVIDE AND INSTALL ALL REQUIRED WIRING AND RACEWAYS TO ACHIEVE THE CIRCUITING SHOWN WHETHER THE INTERCONNECTIONS ARE SHOWN OR NOT.
4. CONTRACTOR SHALL MAINTAIN A COMPLETE SET OF AS-BUILT DOCUMENTS THROUGHOUT CONSTRUCTION INDICATING CONDUIT ROUTING, JUNCTION BOX LOCATIONS AND ACTUAL CIRCUIT NUMBER USED AT EACH ELECTRICAL DEVICE. AS-BUILT DOCUMENTS SHALL ACCURATELY REFLECT NEW AND EXISTING CONDITIONS.
5. UPON PROJECT COMPLETION, PROVIDE TWO SETS OF ALL AS-BUILT DOCUMENTS TO OWNER AND ARCHITECT.
6. PROVIDE ACCURATE PANELBOARD DIRECTORIES FOR ALL PANELS. INDICATE NEW AND EXISTING CIRCUITS AS WELL AS SPARE CIRCUITS AND BREAKER SPACES. TURN "OFF" ALL SPARE BREAKERS.

LIGHTING SYMBOLS

SEE LIGHTING SCHEDULE FOR FIXTURE TYPES.

- A1 13a LIGHTING FIXTURE, REFER TO FIXTURE SCHEDULE FOR ADDITIONAL INFORMATION
  A1 = FIXTURE TYPE, 13 = CIRCUIT, a = SWITCH LEG
- ROUND PENDANT LIGHTING FIXTURE, REFER TO FIXTURE SCHEDULE FOR ADDITIONAL INFORMATION
- ROUND RECESSED DOWNLIGHT, REFER TO FIXTURE SCHEDULE FOR ADDITIONAL INFORMATION
- LIGHTING FIXTURE, WALL MOUNTED, REFER TO FIXTURE SCHEDULE FOR ADDITIONAL INFORMATION
- EXIT SIGN WITH INTEGRAL EMERGENCY BACKUP, CEILING OR WALL MOUNTED. DIRECTIONAL ARROW(S) AS INDICATED, ILLUMINATED FACE AS INDICATED BY SHADING.
- EM LIGHTING FIXTURE WITH INTEGRAL EMERGENCY BATTERY BACKUP.
- A1 13 LIGHTING FIXTURE(S). POLE MOUNTED. NUMBER OF ARMS AS SHOWN ON DRAWINGS. REFER TO FIXTURE SCHEDULE FOR ADDITIONAL INFORMATION
  A1 = FIXTURE TYPE, 13 = CIRCUIT

CODE COMPLIANCE

ALL WORK PERFORMED UNDER THIS CONTRACT SHALL CONFORM TO THE FOLLOWING CODES AND REGULATIONS AS APPLICABLE:

- 2022 CALIFORNIA BUILDING STANDARDS ADMINISTRATIVE CODE (PART 1, TITLE 24, CCR)
- 2022 CALIFORNIA BUILDING CODE, VOLUMES 1 AND 2 (PART 2, TITLE 24, CCR)
- 2022 CALIFORNIA ELECTRICAL CODE (PART 3, TITLE 24, CCR)
- 2022 CALIFORNIA ENERGY CODE (PART 6, TITLE 24, CCR)
- 2022 CALIFORNIA FIRE CODE (PART 9, TITLE 24, CCR)
- 2022 CALIFORNIA REFERENCED STADARDS CODE (PART 12, TITLE 24, CCR)

ABBREVIATIONS

AC	ABOVE COUNTER
AFF	ABOVE FINISHED FLOOR
AIC	AMPERES INTERRUPTING CAPACITY
AHU	AIR HANDLING UNIT
ATS	AUTOMATIC TRANSFER SWITCH
A/V	AUDIO VISUAL
B	BOILER
BMS	BUILDING MANAGEMENT SYSTEM
BP	BOOSTER PUMP
C	CONDUIT
C.O.	CONDUIT ONLY
CB	CIRCUIT BREAKER
CO	CARBON MONOXIDE SENSOR
CHWP	CHILLED WATER PUMP
CKT	CIRCUIT
CL	CENTER LINE
CM	COFFEE MAKER
CP	CIRCULATION PUMP
CT	CURRENT TRANSFORMER
CU	CONDENSING UNIT
D	DEDICATED (POWER & SIGNAL) /DIMMING (LIGHTING)
DP	DIMMING PANEL
(E)	EXISTING TO REMAIN
EC	EMPTY CONDUIT
ECC	ENGINEERING CONTROL CENTER
ECH	ELECTRIC CABINET HEATER
EF	EXHAUST FAN
ELEV	ELEVATOR
EM	EMERGENCY
EMT	ELECTRICAL METALLIC TUBING
EPO	EMERGENCY POWER OFF
EWH	ELECTRIC WATER HEATER
EWC	ELECTRIC WATER COOLER
F	FUSED
FAAP	FIRE ALARM ANNUNCIATOR PANEL
FACP	FIRE ALARM CONTROL PANEL
FATC	FIRE ALARM TERMINAL CABINET
FBO	FURNISHED BY OTHERS
FCC	FIRE CONTROL CENTER
FCU	FAN COIL UNIT
FLUOR	FLUORESCENT
FP	FIRE PUMP
FVNR	FULL VOLTAGE NON-REVERSING
GND	GROUND
GD	GARBAGE DISPOSAL
G	GROUND FAULT INTERRUPTER
HID	HIGH INTENSITY DISCHARGE
HP	HEAT PUMP
HX	HEAT EXCHANGER
IC	INTERRUPTING CAPACITY
IG	ISOLATED GROUND
IWH	INSTANT WATER HEATER
IP	IRRIGATION PUMP
JB	JUNCTION BOX
LCP	LIGHTING CONTROL PANEL
MAU	MAKE UP AIR UNIT
MCC	MOTOR CONTROL CENTER
MIC	MINERAL INSULATED CABLE
MD	MOTORIZED DOOR
MS	MOTORIZED SHADES
MW	MICROWAVE
(N)	NEW
N, NEUT	NEUTRAL
NIC	NOT IN CONTRACT
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
NEC	NATIONAL ELECTRICAL CODE
NTS	NOT TO SCALE
OL	OVERLOAD RELAY
OG	OZONE GENERATOR
P	PUMP
PB	PUSHBUTTON SWITCH
PC	PHOTOCELL
PIV	POST INDICATING VALVE
PNL	PANELBOARD
POC	POINT OF CONNECTION
POS	POINT OF SALE
PRT	PRINTER
PVC	POLYVINYL CHLORIDE CONDUIT
(R)	EXISTING TO BE RELOCATED
RAC	RIGID ALUMINUM CONDUIT
RS	RIGID STEEL
RSC	RIGID STEEL CONDUIT
SCC	SECURITY CONTROL CENTER
SDR	STUDIO DIMMER RACK
SEP	SEWAGE EJECTOR PUMP
SP	SUMP PUMP
ST	STANDBY
TB	TELEPHONE BOARD
TBA	TO BE ADVISED
TBC	TO BE CONFIRMED
TEL	TELECOM
TF	TRANSFER FAN
TP	TRANSFER PANEL
TYP	TYPICAL
UG	UNDER GROUND
UON	UNLESS OTHERWISE NOTED
VFD	VARIABLE FREQUENCY DRIVE
VP	VIDEO PROJECTOR
VSD	VARIABLE SPEED DRIVE
WP	WEATHERPROOF
WT	WATER TIGHT
(X)	EXISTING TO BE REMOVED
XFMR	TRANSFORMER
XP	EXPLOSION PROOF

CONVENTIONS

- 1 KEY NOTES: REFER TO NOTES ON SAME SHEET AS REFERENCE
- GN1 GENERAL NOTE. REFER TO NOTES ON THIS SHEET
- EF 1 EQUIPMENT IDENTIFICATION TAG
- P130D CABLE AND/OR RACEWAY TAG
  P = POWER T = TELEPHONE
  SEE WIRING SCHEDULE
- DETAIL REFERENCE:
  A — DETAIL DESIGNATION
  E-3 — SHEET NUMBER REFERENCE

APPROVED BY:
CITY OF HALF MOON BAY

MAZIAR BOZORGINIA DATE
CITY ENGINEER

engineering 350
engineering 350 llc

THE CITY OF HALF MOON BAY CALIFORNIA

City of Half Moon Bay
501 Main Street
Half Moon Bay
CA 94019
p 650-726-7177
f 650-726-8261
hmbcity.com

REVISIONS	BY
35% SUBMITTAL	

DATE 08-26-2024
SCALE AS SHOWN
DRAWN
JOB NO. 276005
DWG
SHEET E0.1

LIGHTING FIXTURE SCHEDULE - MUSCO LIGHTING FIXTURES

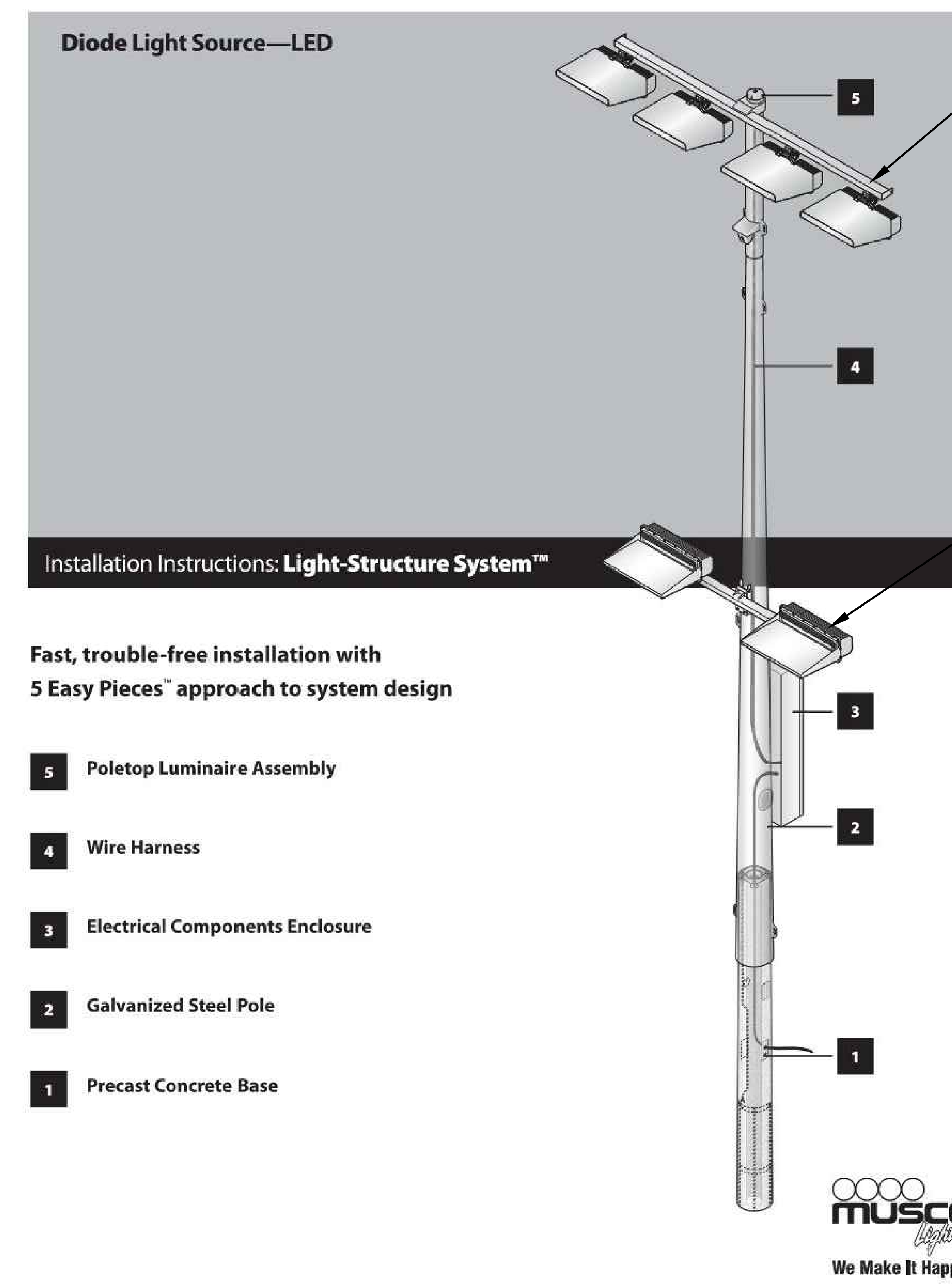
POLE TAG	POLE HEIGHT	LUMINAIRE MODEL	MOUNTING HEIGHT	LUMENS	CCT / CRI	VOLTS	FIXTURE WATTS	FIXTURE QUANTITY PER POLE	TOTAL LOAD KW	FIELD TO ILLUMINATE
A1	70'	TLC-LED-900	70'	104,000	5700K / 75	240	880	3	2.64	BASEBALL
		TLC-BT-575	16'	52,000	5700K / 75	240	575	1	0.57	BALL TRACKER
A2	70'	TLC-LED-900	70'	104,000	5700K / 75	240	880	3	2.64	BASEBALL
		TLC-BT-575	16'	52,000	5700K / 75	240	575	1	0.57	BALL TRACKER
B1	80'	TLC-LED-1200	80'	150,000	5700K / 75	240	1170	5	5.85	BASEBALL
		TLC-BT-575	16'	52,000	5700K / 75	240	575	1	0.57	BALL TRACKER
B2	80'	TLC-LED-1200	80'	150,000	5700K / 75	240	1170	5	5.85	BASEBALL
		TLC-BT-575	16'	52,000	5700K / 75	240	575	1	0.57	BALL TRACKER
S1	80'	TLC-LED-1200	80'	150,000	5700K / 75	240	1170	4	4.68	SOCCER
S2	90'	TLC-LED-1500	80'	181000	5700K / 75	240	1410	2	2.82	SOCCER
		TLC-LED-1200	90'	150,000	5700K / 75	240	1170	5	5.85	SOCCER
		TLC-LED-550	60'	67,000	5700K / 75	240	540	3	1.62	SOCCER
S3	80'	TLC-LED-1200	80'	150,000	5700K / 75	240	1170	5	5.85	SOCCER
S4	70'	TLC-LED-1200	70'	150,000	5700K / 75	240	1170	4	4.68	SOCCER
S5	80'	TLC-LED-1200	80'	150,000	5700K / 75	240	1170	4	4.68	SOCCER

LIGHTING GENERAL NOTES:

1. ALL LIGHTING FIXTURES SHALL BE SUPPLIED WITH THE MOUNTING ACCESSORIES, TRIMS AND/OR SHROUDS NECESSARY TO PROPERLY AND COMPLETELY INSTALL THE FIXTURES. CONTRACTOR SHALL VERIFY WITH ARCHITECT THE COLOR AND FINISH OF FIXTURES TO THE CLOSEST STANDARD COLOR AND FINISH BEFORE ORDERING.
2. COORDINATE LIGHTING CONTROLS AND PROVIDE AS REQUIRED BY MANUFACTURER TO ACHIEVE A COMPLETE WORKING SYSTEM.
3. LIGHTING FOR SPORTS AND ATHLETIC FIELDS ARE EXEMPT FROM PRESCRIPTIVE REQUIREMENTS FOR OUTDOOR LIGHTING PER EXCEPTION 4 TO SECTION 140.7(A) OF 2022 BUILDING ENERGY EFFICIENCY STANDARDS.

1 NEW LIGHTING FIXTURE SCHEDULE

SCALE: NONE



TYP. FOR FIXTURE MODEL TLC-LED-XXX

TYP. FOR FIXTURE MODEL TLC-BT-575

2 LIGHTING FIXTURE CUT SHEET FOR REFERENCE

SCALE: NONE

APPROVED BY:
CITY OF HALF MOON BAY

MAZIAR BOZORGINIA DATE
CITY ENGINEER

ELECTRICAL SCHEDULES

SMITH FIELD PARKING LOT PROJECT
Half Moon Bay, CA

engineering 350 llc

THE CITY OF HALF MOON BAY CALIFORNIA

City of Half Moon Bay

501 Main Street
Half Moon Bay
CA 94019

p 650-726-7177
f 650-726-8261
hmbcity.com

REVISIONS	BY
35% SUBMITTAL	

DATE 08-26-2024

SCALE AS SHOWN

DRAWN

JOB NO. 276005

DWG

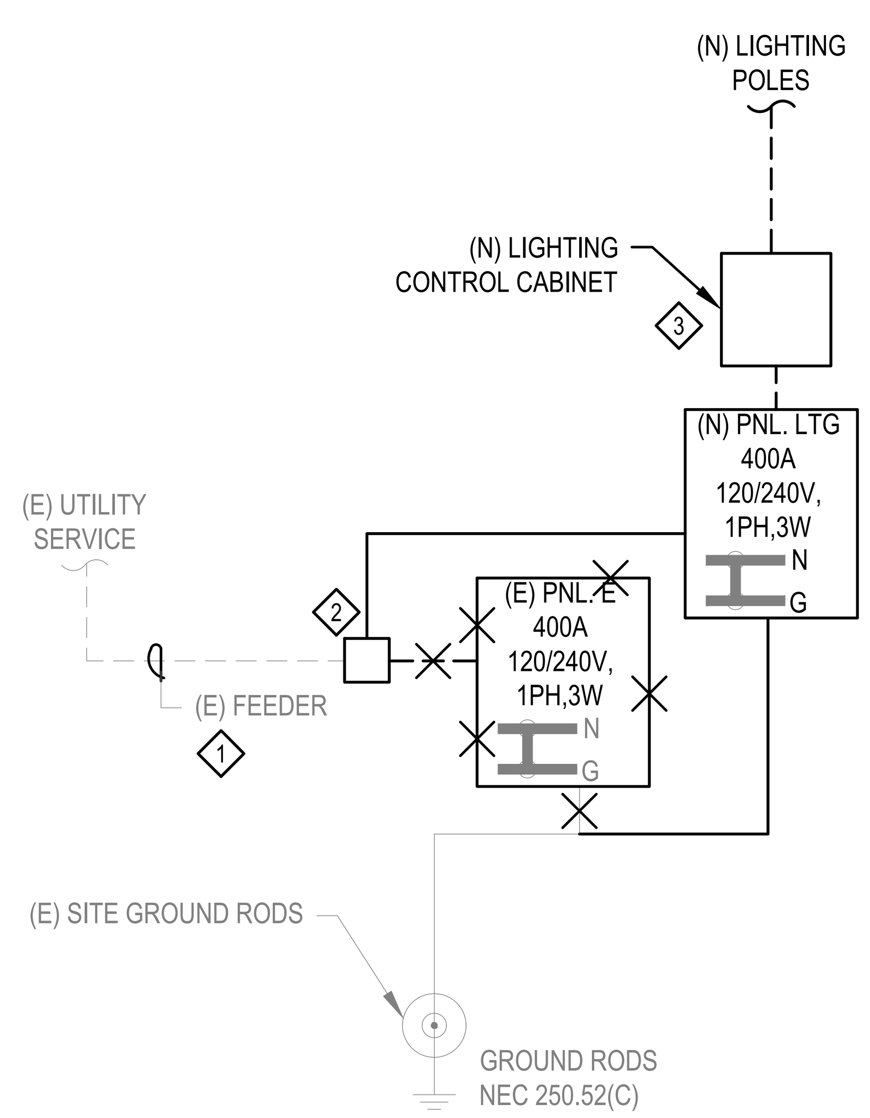
SHEET E0.2

EXISTING LOADS (PER AVAILABLE AS BUILTS FROM 1985)			
POLES		LUMINAIRES	
TAG	MOUNTING HEIGHT	FIXTURE QTY PER POLE	TOTAL KW
A1	61'	2	3.36
B1	70'	9	15.12
C1	80'	7	11.76
A2	61'	2	3.36
B2	61'	8	13.44
C2	70'	6	10.08
		TOTAL EXISTING LOAD TO BE REMOVED	57.12

NEW LOADS			
POLES		LUMINAIRES	
TAG	MOUNTING HEIGHT	FIXTURE QTY PER POLE	TOTAL KW
A1	70'	4	3.21
A2	70'	4	3.21
B1	80'	6	6.42
B2	80'	6	6.42
S1	80'	4	4.68
S2	90'	10	10.29
S3	80'	5	5.85
S4	70'	4	4.68
S5	80'	4	4.68
		TOTAL NEW LOADS	49.44

2 ALTERED LIGHTING SYSTEM SUMMARY

SCALE: NONE



SINGLE LINE DIAGRAM NOTES:

1. SINGLE LINE DIAGRAM IS BASED ON PROVIDED INFORMATION AND LIMITED FIELD SURVEY. FIELD VERIFY INSTALLATION PRIOR TO BEGINNING WORK AND NOTIFY DESIGN TEAM OF ANY DISCREPANCIES IMMEDIATELY.
2. PERFORM A RESISTANCE GROUND TESTING IN FIELD TO VERIFY THAT EXISTING GROUNDING SYSTEM IS ADEQUATE.
3. PROVIDE ARC FLASH HAZARD WARNING LABEL ON PANELBOARDS PER CEC 110.16
4. INSTALL A PERMANENT PLAQUE AT THE SERVICE DISCONNECT LOCATION TO IDENTIFY SERVICE SUPPLYING THE AREA SERVED PER CEC 230.70(B).

KEY NOTES:

1. EXISTING FEEDER RATING SHALL BE VERIFIED PRIOR TO BID. CONTRACTOR SHALL VERIFY EXISTING FEEDER IS RATED FOR 400A SERVICE. REPORT ANY INCONSISTENCIES TO THE TEAM.
2. INTERCEPT EXISTING FEEDER AND EXTEND TO NEW PANELBOARD LOCATION. FIELD VERIFY NEW PANELBOARD LOCATION TO NOT INTERFERE WITH ANY OTHER TRADE.
3. (N) LIGHTING CONTROL CABINET WITH CONTACTORS TO CONTROL LIGHTING POLES. EXACT LOCATION TO BE COORDINATED WITH CIVIL DRAWINGS AND MUSCO LIGHTING REPRESENTATIVE.

1 PARTIAL ELECTRICAL SINGLE LINE DIAGRAM

SCALE: NTS

NAME:		LTG	VOLTAGE:	120/240		BUS SIZE:		400A		MIN. AIC:	EXISTING	
MOUNT:		ELECTRICAL CABINET	PHASE/WIRE:	1PH 3W		MAIN:		400A		SERVED FROM:	EXISTING	
CKT NO.	BKR/ POLE	DESCRIPTION	ΦA	ΦB	R	L/C	M	N	K	DESCRIPTION	BKR/ POLE	CKT NO.
1	30/2	POLE S1 (SOCCER)	2.9			2.9				POLE S2 (SOCCER)	60/2	2
			6.3			6.3						
3				2.9		2.9						4
				6.3		6.3						
5	30/2	POLE S3 (SOCCER)	3.6			3.6				POLE S4 (SOCCER)	30/2	6
			2.9			2.9						
7				3.6		3.6						8
				2.9		2.9						
9	30/2	POLE S5 (SOCCER)	2.9			2.9				POLE A2 (BASEBALL)	30/2	10
			1.6			1.6						
11				2.9		2.9						12
				1.6		1.6						
13	30/2	POLE A1 (BASEBALL)	1.6			1.6				POLE B2 (BASEBALL)	30/2	14
			3.6			3.6						
15				1.6		1.6						16
				3.6		3.6						
17	30/2	POLE B1 (BASEBALL)	3.6			3.6				CONTROL CIRCUIT	20/1	18
			1.0			1.0						
19				3.6		3.6				SPARE	20/1	20
				0.0								
21	30/2	POLES A1,A2,B1,B2 (BALL TRACKERS)	1.4			1.4				SPACE		22
			0.0									
23				1.4		1.4				SPACE		24
				0.0								
CONNECTED LOAD SUBTOTALS			31.4	30.4	0.0	61.9	0.0	0.0	0.0			
CONNECTED LOAD (KVA)			61.9									
CONNECTED LOAD (AMPS):			297.40							65% OF CONNECTED	0.0	KVA
DEMAND LOAD (AMPS):			371.75							100% OF CONNECTED	0.0	KVA
										CONNECTED + 25% LARGEST	0.0	KVA
										125% OF CONNECTED	77.3	KVA
										FIRST 10KVA + 50% REMAINDER	0.0	KVA
										TOTAL CALCULATED DEMAND LOAD PER NEC	77.3	KVA

3 PANELBOARD SCHEDULES

SCALE: NONE

APPROVED BY:
CITY OF HALF MOON BAY

MAZIAR BOZORGINIA DATE
CITY ENGINEER

ELECTRICAL PANELBOARDS AND SINGLE LINE DIAGRAM

SMITH FIELD PARKING LOT PROJECT
Half Moon Bay, CA

engineering 350 llc

City of Half Moon Bay
501 Main Street
Half Moon Bay
CA 94019
p 650-726-7177
f 650-726-8261
hmbcity.com

REVISIONS	BY
35% SUBMITTAL	

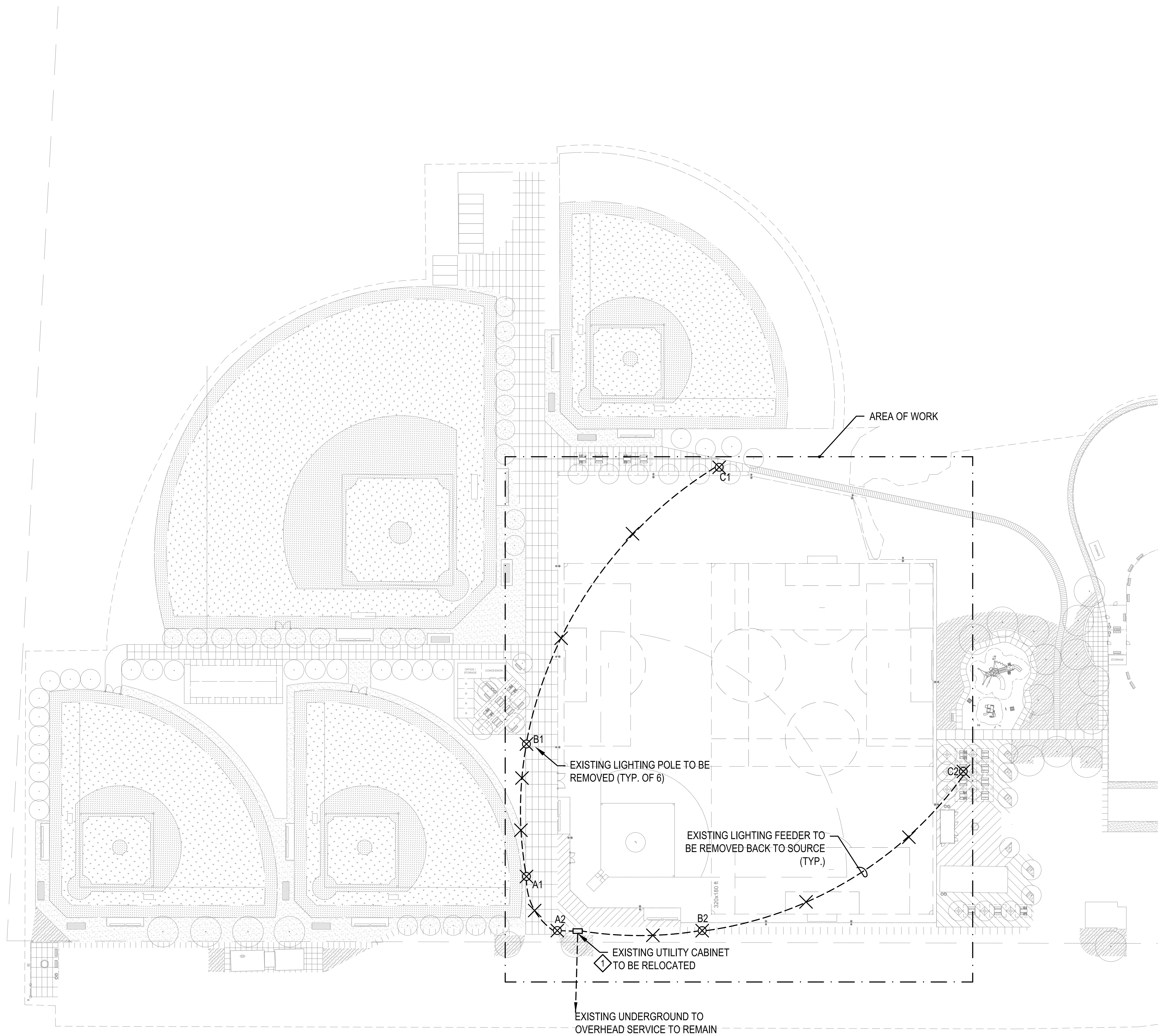
DATE 08-26-2024
SCALE AS SHOWN
DRAWN
JOB NO. 276005
DWG
SHEET E0.3

SHEET NOTES:

1. REFER TO CIVIL DRAWINGS FOR EXACT LOCATION OF ALL DEVICES SHOWN.
2. REMOVE LIGHTING POLES MARKED AND THEIR FEEDERS BACK TO SOURCE. REFER TO E2.1 FOR PROPOSED LIGHTING LAYOUT.
3. EXISTING UTILITY CABINET SHALL BE RELOCATED TO NOT INTERFERE WITH NEW PARKING LOT STALLS. NEW LOCATION SHALL BE COORDINATED WITH CIVIL AND LANDSCAPE DRAWINGS AS THE DESIGN PROGRESSES.
4. LIGHTING POLES SHOWN ON THIS DRAWING ARE FED FROM EXISTING UTILITY CABINET. FIELD VERIFY EXISTING CIRCUITS PRIOR TO BID AND DEMOLITION TO AVOID ACCIDENTAL DEMOLITION OF FEEDERS NOT UNDER AREA OF WORK.
5. LIGHTING OUTSIDE OF AREA OF WORK IS EXISTING TO REMAIN UNLESS OTHERWISE NOTED.
6. CONTRACTOR TO ENSURE OTHER EXISTING LIGHTING POLES AND ELECTRICAL DEVICES SERVED BY THE SAME EQUIPMENT REMAINS FUNCTIONAL AT COMPLETION OF PROJECT.

KEY NOTES:

1. INTERCEPT EXISTING FEEDER AND EXTEND TO NEW PANELBOARD LOCATION. FIELD VERIFY NEW PANELBOARD LOCATION TO NOT INTERFERE WITH ANY OTHER TRADE.



1 LIGHTING SITE PLAN - DEMO

SCALE: 1" = 50'-0"

LIGHTING SITE PLAN – DEMO

SMITH FIELD PARKING LOT PROJECT
Half Moon Bay, CA

engineering 350
engineering 350 llc

THE CITY OF HALF MOON BAY CALIFORNIA

City of Half Moon Bay

501 Main Street
Half Moon Bay
CA 94019

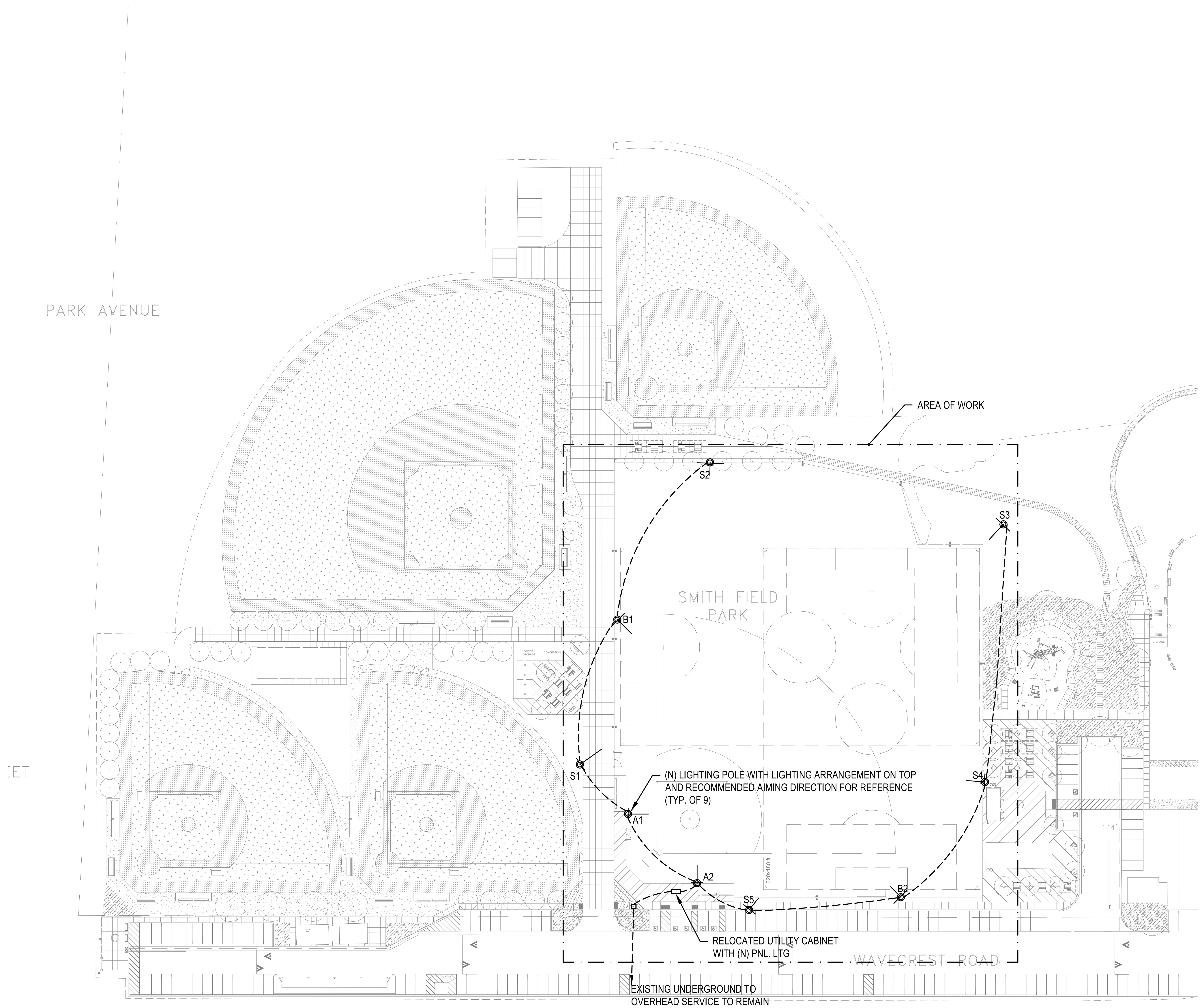
p 650-726-7177
f 650-726-8261
hmbcity.com

REVISIONS	BY
35% SUBMITTAL	

DATE 08-26-2024
SCALE AS SHOWN
DRAWN
JOB NO. 276005
DWG
SHEET E1.1

APPROVED BY:
CITY OF HALF MOON BAY

MAZIAR BOZORGINIA DATE
CITY ENGINEER



1 LIGHTING SITE PLAN - PROPOSED

SCALE: 1" = 50'-0"

SHEET NOTES:

1. REFER TO CIVIL DRAWINGS FOR EXACT LOCATION OF ALL DEVICES SHOWN.
2. NEW LIGHTING POLES ARE CONTROLLED FROM NEW CENTRAL CONTROL CABINET VIA CONTACTORs.
3. CONDUIT ROUTING SHOWN IS DIAGRAMMATIC AND SHALL BE FIELD COORDINATED AND ADJUSTED TO SUIT ACTUAL CONDITIONS. PROVIDE PULL BOXES IN ORDER TO MEET CODE.
4. LIGHTING OUTSIDE OF AREA OF WORK IS EXISTING TO REMAIN UNLESS OTHERWISE NOTED.
5. POLE FOUNDATIONS SHALL BE COORDINATED WITH CIVIL DRAWINGS AND MUSCO LIGHTING REPRESENTATIVE.

LIGHTING SITE PLAN – PROPOSED

SMITH FIELD PARKING LOT PROJECT
Half Moon Bay, CA

City of Half Moon Bay

501 Main Street
Half Moon Bay
CA 94019

p 650-726-7177
f 650-726-8261
hmbcity.com

REVISIONS	BY
35% SUBMITTAL	

DATE 08-26-2024

SCALE AS SHOWN

DRAWN

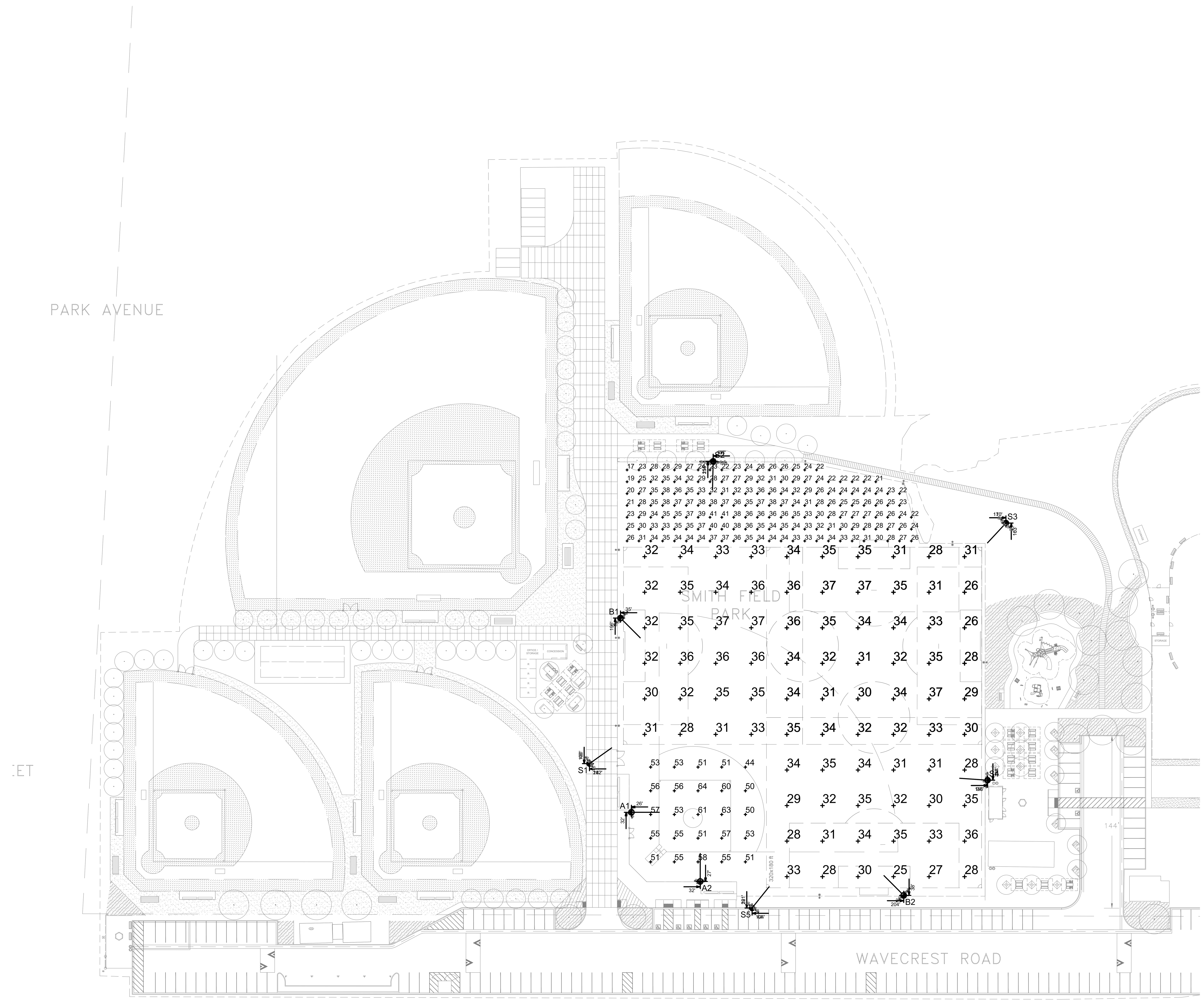
JOB NO. 276005

DWG

SHEET E2.1

APPROVED BY:
CITY OF HALF MOON BAY

MAZIAR BOZORGINIA DATE
CITY ENGINEER



SHEET NOTES:

1. ILLUMINANCE CALCULATIONS PROVIDED BY MUSCO LIGHTING REPRESENTATIVE ARE BASED ON PUBLISHED CALCULATION METHODS AND FOR REFERENCE ONLY.
2. FIELD MEASURED RESULTS MAY DIFFER FROM CALCULATED RESULTS AND ARE DEPENDENT ON A VARIETY OF FACTORS INCLUDING, BUT NOT LIMITED TO, MANUFACTURER'S PHOTOMETRY DATA, LINE VOLTAGE, LUMINARIES PERFORMANCE, TEMPERATURE AND ACTUAL CONDITIONS OF ENVIRONMENT.
3. NOT INCLUDED IN LIGHTING PHOTOMETRICS:
   - 3.1. DAYLIGHT CONTRIBUTION.
   - 3.2. LIGHTING CONTRIBUTION FROM LIGHTING FIXTURES ATTACHED TO NEARBY BUILDINGS.
   - 3.3. EXISTING TREES AND ANY OTHER LANDSCAPE ITEMS THAT COULD INTERFERE WITH LIGHTING LEVELS.

1 **LIGHTING PHOTOMETRICS**

SCALE: 1" = 50'-0"

LIGHTING PHOTOMETRICS

SMITH FIELD PARKING LOT PROJECT
Half Moon Bay, CA

engineering 350 llc

THE CITY OF HALF MOON BAY CALIFORNIA

City of Half Moon Bay

501 Main Street
Half Moon Bay
CA 94019

p 650-726-7177
f 650-726-8261
hmbcity.com

REVISIONS	BY
35% SUBMITTAL	

DATE 08-26-2024

SCALE AS SHOWN

DRAWN

JOB NO. 276005

DWG

SHEET E3.1

APPROVED BY:
CITY OF HALF MOON BAY

MAZIAR BOZORGINIA DATE
CITY ENGINEER

APPENDIX B

Tree Inventory and Level 1 Arborist Assessment Results Memorandum

SWCA®
ENVIRONMENTAL CONSULTANTS
Sound Science. Creative Solutions.®

60 Stone Pine Road, Suite 100
Half Moon Bay, California 94019
Tel 650.440.4160 Fax 650.440.4165
www.swca.com

TECHNICAL MEMORANDUM

To: John Doughty
Public Works Director
City of Half Moon Bay
501 Main Street
Half Moon Bay, California 94019

From: Erich Schickenberg, Arborist

Date: February 14, 2023

Re: **Tree Inventory and Level 1 Arborist Assessment Results Memorandum for the Smith Field Project, Half Moon Bay, San Mateo County, California / SWCA Project No. 76060**

INTRODUCTION

This Tree Inventory and Level 1 Arborist Assessment Results Memorandum has been prepared by SWCA Environmental Consultants (SWCA) at the request of the City of Half Moon Bay (City) in support of the Smith Field Park Facilities Master Plan Project (project). The intent of this memorandum is to provide a summary of the results of the tree inventory and Level 1 arborist assessment for all trees that occur within or adjacent to the proposed project and may be impacted by proposed upgrades to Smith Field Park (survey area).[1]

In January 2019, the City adopted a Parks Master Plan, which provides guidance on future planned improvements to existing parks and construction of new parks within the City's jurisdiction. As part of this plan, upgrades to the existing Smith Field Park were proposed, which may include installation of a new waterline within the right-of-way at Wavecrest Road, upgrades to the park's parking area to include paved access and paved parking spaces (including accessible spaces), youth baseball fields, an all-weather multi-use field (soccer, baseball, softball), establishment of a picnic/BBQ area and interpretive walking trail, expanded dog park (conceptually separated into large and small dog areas), installation of a children's play area, potential additional active sport court uses, potential installation of field lighting, and upgrades to park landscaping.

---

[1] This tree inventory and Level 1 arborist assessment focused only on trees that occur within or adjacent to the portions of the survey area where project-related disturbance is expected to occur. This includes any tree with a drip line, or critical root zone, that extends into the proposed project-related disturbance footprint.

SURVEY AREA DESCRIPTION

The approximately 28.4-acre survey area consists of undeveloped land, sports facilities, and the associated parking lot in Smith Field Park, Half Moon Bay, San Mateo County, California. The survey area supports several stands of trees dominated by Monterey cypress (*Hesperocyparis macrocarpa*) and blue gum eucalyptus (*Eucalyptus globulus*), as well as Monterey pine (*Pinus radiata*), blackwood acacia (*Acacia melanoxylon*), and arroyo willow (*Salix lasiolepis*) at low cover. The majority of trees observed in the survey area were likely planted as windrows or for ornamental purposes.

The survey area is located at the interface of commercial development and an open space area. Land use in the vicinity of the survey area is generally restricted to recreational, commercial, and agricultural uses. Recreational uses include sports fields, a dog park, horseshoe pits, and hiking/biking trails. Commercial uses adjacent to the survey area include a hotel, outdoor storage, a restaurant, and a recreational vehicle park/campground. Agricultural uses in the vicinity of the survey area include hay fields and floriculture. Historically, the survey area and vicinity were farmed and subject to regular disturbance regimes related to agricultural practices associated with row crops. The survey area also shows some signs of historical disturbance related to recreational off-road vehicle use in the form of deep ruts and tire tracks.

REGULATORY BACKGROUND

As per Section 7.40 of the City Municipal Code, a heritage tree is any tree within the city of Half Moon Bay, located on private or public property, and exclusive of blue gum eucalyptus, which has a trunk diameter of 12 inches or more approximately when measured 48 inches above the natural grade (diameter at breast height [DBH]). In addition, the City Council may designate any tree or stand of trees of special historical, environmental, or aesthetic value as a heritage tree.[2] Because of their value to the City, heritage trees may not be removed, destroyed, or damaged beyond repair without a Heritage Tree Permit. Additionally, substantial trimming that threatens the healthy growth of heritage trees shall not be allowed without the approval of a permit. Development projects involving heritage trees that require approval from the Planning Commission must be accompanied by a Tree Protection Plan. To remove a grove of trees in the Coastal Zone, a Coastal Development Permit (CDP) may be required.

SITE VISIT METHODOLOGY

On January 24, 25, and 26, 2023, SWCA arborist Erich Schickenberg (International Society of Arboriculture [ISA] #WE-10211A) traversed the survey area on foot to inventory and conduct a Level 1 arborist assessment for all trees, with a DBH of greater that 1.5 inches, that may be impacted by proposed upgrades to Smith Field Park. Locations of surveyed trees within the study area were recorded using a handheld Global Positioning System (GPS) unit with sub-meter accuracy. When possible, all surveyed trees were given an aluminum tree tag with a unique identification number. Due to insufficient stem size or access constraints, three of the 231 surveyed trees were not given an aluminum tree tag. Information including species and DBH were recorded. Additional information pertinent to the tree removal permitting process was recorded, including approximate height and a preliminary assessment of the condition, health, and structure of the surveyed trees, as listed in Table 1.

---

[2] City of Half Moon Bay. 2012. City of Half Moon Municipal Code. Available at: https://www.codepublishing.com/CA/HalfMoonBay/#%21/halfmoonbay07/HalfMoonBay0740.html#7.40. Accessed January 23, 2023.

Table 1. Rating Narratives for Tree Assessment

Rating	Description
Health	
Good	Tree is free from symptoms of disease and stress.
Fair	Tree shows some symptoms of disease or stress, including twig and small branch dieback, evidence of fungal/parasitic infection, thinning of crown, or poor leaf color.
Poor	Tree shows symptoms of severe decline.
Structure	
Good	Tree is free from major structural defects.
Fair	Tree shows some structural defects in branches, but overall structure is stable.
Poor	Tree shows structural failure of a major branch or co-dominant trunk.
General Condition	
Good	Tree shows condition of foliage, bark, and overall structure characteristic of the species and lacking obvious defect or disease.
Fair	Tree shows condition of foliage, bark, and overall structure characteristic of the species with some evidence of stress, defect, or disease.
Poor	Tree shows condition of foliage, bark, and overall structure uncharacteristic of the species with obvious evidence of stress, defect, or disease.

RESULTS

A total of 231 trees were inventoried in the study area. The species of trees surveyed include Monterey cypress, Monterey pine, blue gum eucalyptus, blackwood acacia, and arroyo willow. Of the 231 surveyed trees, only one, a single arroyo willow, is considered native to this portion of San Mateo County. Within the survey area, 138 trees are considered to be heritage trees under the City Tree Ordinance. Additionally, 14 Monterey cypress trees and one Monterey pine were observed to be dead at the time of the tree inventory. A complete list of trees surveyed is provided in Attachment A.

SUMMARY

A total of 231 trees were surveyed within the survey area, 138 of which are considered to be heritage trees under the City Municipal Code. Appendix A summarizes the findings of the tree inventory and Level 1 arborist assessment. Tree location maps are presented in Attachment B, and representative photographs are included in Attachment C. A tree removal permit from the City may be required for the removal of the aforementioned heritage trees, and a CDP may be required for the removal of a grove of trees in the Coastal Zone. Additionally, a Tree Protection Plan may be required for any development projects in the survey area.

If you have any questions, please contact me at (650) 276-6203 or erich.schickenberg@swca.com.

Sincerely,

Erich Schickenberg
ISA Certified Arborist (ISA # WE-10211A)

ATTACHMENT A

Tree Inventory Results Table

Table A-1. Tree Inventory Results

SWCA Unique ID #	Tree Tag #	Scientific Name	Common Name	MultiStem	DBH 1	DBH 2	DBH 3	DBH 4	DBH 5	Aggregate DBH	Height	Health	Condition	Structure	HeritageTree	Notes
1	001	*Hesperocyparis macrocarpa*	Monterey cypress	No	59.5					59.9	40	Fair	Fair	Fair	Yes	
2	002	*Hesperocyparis macrocarpa*	Monterey cypress	No	42.3					42.3	45	Fair	Fair	Fair	Yes	
3	003	*Hesperocyparis macrocarpa*	Monterey cypress	Yes	13.3	12.4				25.7	32	Good	Fair	Good	Yes	
4	004	*Hesperocyparis macrocarpa*	Monterey cypress	No	21.3					21.3	45	Poor	Poor	Poor	Yes	
5	005	*Hesperocyparis macrocarpa*	Monterey cypress	No	27					27	45	Poor	Poor	Poor	Yes	
6	006	*Hesperocyparis macrocarpa*	Monterey cypress	No	24.3					24.3	45	Fair	Fair	Good	Yes	
7	007	*Pinus radiata*	Monterey pine	No	23.3					23.3	28	Poor	Poor	Fair	Yes	
8	008	*Hesperocyparis macrocarpa*	Monterey cypress	No	88.1	45.7				133.8	45	Fair	Fair	Fair	Yes	
9	009	*Hesperocyparis macrocarpa*	Monterey cypress	Yes	17.1	16.1				33.2	30	Good	Fair	Fair	Yes	
32	010	*Hesperocyparis macrocarpa*	Monterey cypress	No	2.5					2.5	10	Good	Good	Good	No	Recruit
33	011	*Hesperocyparis macrocarpa*	Monterey cypress	No	7.6					7.6	13	Fair	Fair	Poor	No	Pronounced lean
35	012	*Hesperocyparis macrocarpa*	Monterey cypress	Yes	15.2	20.4	17	10	14	76.6	35	Good	Good	Good	Yes	Many stems
36	013	*Hesperocyparis macrocarpa*	Monterey cypress	Yes	14	10	9	9	10	52	30	Good	Good	Good	Yes	Many stems
37	014	*Hesperocyparis macrocarpa*	Monterey cypress	Yes	16.9	8	6.4	5.6		36.9	30	Poor	Poor	Poor	Yes	Decay and lean
38	015	*Hesperocyparis macrocarpa*	Monterey cypress	Yes	22.9					22.9	30	Fair	Fair	Fair	Yes	
39	016	*Hesperocyparis macrocarpa*	Monterey cypress	No	22.4					22.4	35	Fair	Fair	Good	Yes	Suppressed
40	017	*Hesperocyparis macrocarpa*	Monterey cypress	No	14					14	28	Fair	Fair	Fair	Yes	Suppressed
41	018	*Hesperocyparis macrocarpa*	Monterey cypress	No	16.1					16.1	35	Fair	Good	Good	Yes	Suppressed
42	019	*Hesperocyparis macrocarpa*	Monterey cypress	No	16.2					16.2	35	Fair	Fair	Good	Yes	Suppressed
43	020	*Hesperocyparis macrocarpa*	Monterey cypress	No	13					13	26	Fair	Poor	Fair	Yes	Suppressed
44	021	*Hesperocyparis macrocarpa*	Monterey cypress	No	15					15	33	Fair	Fair	Good	Yes	Suppressed
45	022	*Hesperocyparis macrocarpa*	Monterey cypress	No	9.7					9.7	30	Fair	Fair	Good	No	Suppressed
46	023	*Hesperocyparis macrocarpa*	Monterey cypress	No	6.7					6.7	35	Poor	Fair	Good	No	Suppressed
47	024	*Hesperocyparis macrocarpa*	Monterey cypress	No	11.5					11.5	35	Fair	Fair	Good	No	Suppressed
48	025	*Hesperocyparis macrocarpa*	Monterey cypress	No	4.1					4.1	28	Poor	Poor	Good	No	Suppressed
49	026	*Hesperocyparis macrocarpa*	Monterey cypress	No	11.7					11.7	35	Fair	Fair	Good	No	Suppressed
50	027	*Hesperocyparis macrocarpa*	Monterey cypress	No	6.6					6.6	30	Poor	Fair	Good	No	Suppressed
51	028	*Hesperocyparis macrocarpa*	Monterey cypress	No	19					19	32	Fair	Fair	Good	Yes	Suppressed
52	029	*Hesperocyparis macrocarpa*	Monterey cypress	No	18.5					18.5	30	Fair	Fair	Good	Yes	Suppressed
53	030	*Hesperocyparis macrocarpa*	Monterey cypress	No	29.5					29.5	35	Fair	Fair	Good	Yes	
54	031	*Hesperocyparis macrocarpa*	Monterey cypress	No	11.6					11.6	35	Fair	Fair	Fair	No	Suppressed
55	032	*Hesperocyparis macrocarpa*	Monterey cypress	No	14.3					14.3	32	Poor	Fair	Good	Yes	Suppressed
56	033	*Hesperocyparis macrocarpa*	Monterey cypress	No	4					4	25	Dead	Dead	Fair	No	Suppressed
57	034	*Hesperocyparis macrocarpa*	Monterey cypress	No	9.9					9.9	35	Fair	Fair	Good	No	Suppressed
58	035	*Hesperocyparis macrocarpa*	Monterey cypress	No	10.7					10.7	30	Poor	Fair	Good	No	Suppressed
60	036	*Hesperocyparis macrocarpa*	Monterey cypress	No	2.3					2.3	15	Dead	Dead	Fair	No	Suppressed
61	037	*Hesperocyparis macrocarpa*	Monterey cypress	No	19.1					19.1	30	Fair	Fair	Fair	Yes	Suppressed
62	038	*Hesperocyparis macrocarpa*	Monterey cypress	No	15.5	6				21.5	32	Fair	Fair	Fair	Yes	Suppressed
63	039	*Hesperocyparis macrocarpa*	Monterey cypress	No	5					5	28	Poor	Poor	Poor	No	Suppressed

SWCA Unique ID #	Tree Tag #	Scientific Name	Common Name	MultiStem	DBH 1	DBH 2	DBH 3	DBH 4	DBH 5	Aggregate DBH	Height	Health	Condition	Structure	HeritageTree	Notes
64	040	*Hesperocyparis macrocarpa*	Monterey cypress	No	8.9					8.9	32	Poor	Fair	Fair	No	Suppressed
65	041	*Hesperocyparis macrocarpa*	Monterey cypress	No	7					7	25	Dead	Fair	Fair	No	Suppressed
66	042	*Hesperocyparis macrocarpa*	Monterey cypress	Yes	15.4	5.7				21.1	35	Fair	Fair	Fair	Yes	Suppressed
67	043	*Hesperocyparis macrocarpa*	Monterey cypress	No	16.4					16.4	35	Fair	Fair	Good	Yes	Suppressed
68	044	*Hesperocyparis macrocarpa*	Monterey cypress	No	3.7					3.7	25	Dead	Dead	Fair	No	Suppressed
69	045	*Hesperocyparis macrocarpa*	Monterey cypress	No	1.7					1.7	15	Dead	Dead	Poor	No	Suppressed
70	046	*Hesperocyparis macrocarpa*	Monterey cypress	No	12.5					12.5	25	Fair	Fair	Fair	Yes	Suppressed
71	047	*Hesperocyparis macrocarpa*	Monterey cypress	No	5.4					5.4	20	Poor	Fair	Fair	No	Suppressed, possibly dead
72	048	*Hesperocyparis macrocarpa*	Monterey cypress	No	15.5					15.5	35	Fair	Fair	Good	Yes	Suppressed
73	049	*Hesperocyparis macrocarpa*	Monterey cypress	No	4.4					4.4	25	Poor	Poor	Fair	No	Suppressed
74	050	*Hesperocyparis macrocarpa*	Monterey cypress	No	3.7					3.7	25	Dead	Dead	Fair	No	Suppressed
75	051	*Hesperocyparis macrocarpa*	Monterey cypress	No	20.1	7.4	8.8	5.2	2.5	44	30	Fair	Fair	Fair	Yes	Suppressed
76	052	*Hesperocyparis macrocarpa*	Monterey cypress	Yes	13.3	6.7				20	32	Fair	Fair	Fair	Yes	Suppressed
77	053	*Hesperocyparis macrocarpa*	Monterey cypress	No	26.5					26.5	35	Fair	Fair	Fair	Yes	Suppressed
78	054	*Hesperocyparis macrocarpa*	Monterey cypress	No	9.5					9.5	25	Poor	Fair	Fair	No	Suppressed
79	055	*Hesperocyparis macrocarpa*	Monterey cypress	No	26.5					26.5	35	Fair	Fair	Good	Yes	Suppressed
80	056	*Hesperocyparis macrocarpa*	Monterey cypress	No	17.5					17.5	35	Fair	Fair	Fair	Yes	Suppressed
81	057	*Hesperocyparis macrocarpa*	Monterey cypress	Yes	17.2	6.7				23.9	30	Fair	Fair	Fair	Yes	Suppressed
82	058	*Hesperocyparis macrocarpa*	Monterey cypress	No	13.1					13.1	35	Fair	Fair	Fair	Yes	Suppressed
83	059	*Hesperocyparis macrocarpa*	Monterey cypress	Yes	15	12.5				27.5	35	Fair	Fair	Fair	Yes	Suppressed
84	060	*Hesperocyparis macrocarpa*	Monterey cypress	No	12.3					12.3	35	Poor	Fair	Fair	Yes	Suppressed
85	061	*Hesperocyparis macrocarpa*	Monterey cypress	No	18.3					18.3	32	Fair	Fair	Good	Yes	Suppressed
86	062	*Hesperocyparis macrocarpa*	Monterey cypress	No	25					25	30	Fair	Fair	Good	Yes	Suppressed
87	063	*Hesperocyparis macrocarpa*	Monterey cypress	No	21.2					21.2	32	Fair	Fair	Fair	Yes	Suppressed
88	064	*Hesperocyparis macrocarpa*	Monterey cypress	Yes	27.3	11.2	9.9	12	10.5	70.9	29	Good	Good	Good	Yes	Many stems, suppressed
89	065	*Hesperocyparis macrocarpa*	Monterey cypress	Yes	27	14				41	28	Fair	Fair	Fair	Yes	
90	066	*Hesperocyparis macrocarpa*	Monterey cypress	Yes	29.2	12.5	12.7	14.3	11.2	79.9	30	Fair	Fair	Fair	Yes	
91	067	*Hesperocyparis macrocarpa*	Monterey cypress	No	37.2					37.2	30	Fair	Fair	Good	Yes	
92	068	*Hesperocyparis macrocarpa*	Monterey cypress	Yes	12.1	13.2	15.4	16	17.2	73.9	25	Fair	Fair	Fair	Yes	
94	069	*Hesperocyparis macrocarpa*	Monterey cypress	Yes	12.2	16.4	14.6	12.4	13.1	68.7	30	Fair	Fair	Fair	Yes	Many stems
95	070	*Pinus radiata*	Monterey pine	No	27.3					27.3	35	Fair	Fair	Good	Yes	
96	071	*Hesperocyparis macrocarpa*	Monterey cypress	No	19.3					19.3	35	Fair	Fair	Fair	Yes	Suppressed
97	072	*Hesperocyparis macrocarpa*	Monterey cypress	No	15.3					15.3	35	Fair	Fair	Fair	Yes	Suppressed
98	073	*Hesperocyparis macrocarpa*	Monterey cypress	No	8.5					8.5	35	Fair	Fair	Fair	No	Suppressed
99	074	*Hesperocyparis macrocarpa*	Monterey cypress	No	14					14	32	Fair	Fair	Fair	Yes	Suppressed
100	075	*Hesperocyparis macrocarpa*	Monterey cypress	No	12.3					12.3	35	Fair	Fair	Fair	Yes	Suppressed
101	076	*Hesperocyparis macrocarpa*	Monterey cypress	No	16.3					16.3	32	Fair	Fair	Fair	Yes	Suppressed
102	077	*Hesperocyparis macrocarpa*	Monterey cypress	No	14.8					14.8	35	Fair	Fair	Fair	Yes	Suppressed
103	078	*Hesperocyparis macrocarpa*	Monterey cypress	No	5.1					5.1	35	Poor	Poor	Fair	No	Suppressed

SWCA Unique ID #	Tree Tag #	Scientific Name	Common Name	MultiStem	DBH 1	DBH 2	DBH 3	DBH 4	DBH 5	Aggregate DBH	Height	Health	Condition	Structure	HeritageTree	Notes
104	079	*Hesperocyparis macrocarpa*	Monterey cypress	No	14					14	35	Fair	Fair	Good	Yes	Suppressed
105	080	*Hesperocyparis macrocarpa*	Monterey cypress	No	17.4					17.4	32	Fair	Fair	Fair	Yes	Suppressed
106	081	*Hesperocyparis macrocarpa*	Monterey cypress	No	21.2					21.2	32	Fair	Fair	Good	Yes	Suppressed
107	082	*Hesperocyparis macrocarpa*	Monterey cypress	Yes	16.8	17.2	12.6			46.6		Poor	Poor	Poor	Yes	Limb failure, decay, suppressed
108	083	*Hesperocyparis macrocarpa*	Monterey cypress	No	13.3					13.3	30	Fair	Fair	Fair	Yes	Suppressed
109	084	*Hesperocyparis macrocarpa*	Monterey cypress	No	18.5					18.5	35	Fair	Fair	Fair	Yes	Suppressed
110	085	*Hesperocyparis macrocarpa*	Monterey cypress	No	14.7					14.7	35	Fair	Fair	Fair	Yes	Suppressed
111	086	*Hesperocyparis macrocarpa*	Monterey cypress	No	8					8	32	Poor	Fair	Fair	No	Suppressed
112	087	*Hesperocyparis macrocarpa*	Monterey cypress	No	7.2					7.2	35	Poor	Poor	Fair	No	Suppressed
113	088	*Hesperocyparis macrocarpa*	Monterey cypress	No	3.5					3.5	25	Dead	Dead	Fair	No	Suppressed
114	089	*Hesperocyparis macrocarpa*	Monterey cypress	No	3.7					3.7	25	Poor	Dead	Fair	No	Suppressed
115	090	*Hesperocyparis macrocarpa*	Monterey cypress	No	11.5					11.5	35	Fair	Fair	Fair	No	Suppressed
116	091	*Hesperocyparis macrocarpa*	Monterey cypress	No	7.1					7.1	30	Poor	Fair	Fair	No	Suppressed
117	092	*Hesperocyparis macrocarpa*	Monterey cypress	No	10					10	35	Fair	Fair	Fair	No	Suppressed
118	093	*Hesperocyparis macrocarpa*	Monterey cypress	No	14					14	35	Fair	Fair	Fair	Yes	Suppressed
119	094	*Hesperocyparis macrocarpa*	Monterey cypress	No	21.7					21.7	35	Fair	Fair	Fair	Yes	Suppressed
120	095	*Hesperocyparis macrocarpa*	Monterey cypress	No	13.8					13.8	35	Fair	Fair	Fair	Yes	Suppressed
121	096	*Hesperocyparis macrocarpa*	Monterey cypress	Yes	10.3	4.2	6.7			21.2	35	Fair	Fair	Fair	Yes	Suppressed
122	097	*Hesperocyparis macrocarpa*	Monterey cypress	No	19.3					19.3	35	Fair	Fair	Fair	Yes	Suppressed
123	098	*Hesperocyparis macrocarpa*	Monterey cypress	No	10.3					10.3	35	Fair	Fair	Fair	No	Suppressed
124	099	*Hesperocyparis macrocarpa*	Monterey cypress	No	5					5	28	Poor	Poor	Fair	No	Suppressed, likely dead
125	100	*Hesperocyparis macrocarpa*	Monterey cypress	No	11.2					11.2	35	Fair	Fair	Fair	No	Suppressed
126	101	*Hesperocyparis macrocarpa*	Monterey cypress	No	20.1					20.1	32	Fair	Fair	Fair	Yes	Suppressed
127	102	*Hesperocyparis macrocarpa*	Monterey cypress	No	12.5					12.5	35	Fair	Fair	Fair	Yes	Suppressed
128	103	*Hesperocyparis macrocarpa*	Monterey cypress	No	18.3					18.3	35	Fair	Fair	Fair	Yes	Suppressed
129	104	*Hesperocyparis macrocarpa*	Monterey cypress	No	14.6					14.6	32	Fair	Fair	Fair	Yes	Suppressed
130	105	*Hesperocyparis macrocarpa*	Monterey cypress	No	23.7					23.7	35	Fair	Fair	Fair	Yes	Suppressed
131	106	*Hesperocyparis macrocarpa*	Monterey cypress	No	18.3					18.3	35	Fair	Fair	Fair	Yes	Suppressed
132	107	*Hesperocyparis macrocarpa*	Monterey cypress	No	13					13	32	Fair	Fair	Fair	Yes	Suppressed
133	108	*Hesperocyparis macrocarpa*	Monterey cypress	No	24.2					24.2	35	Fair	Fair	Fair	Yes	Suppressed
134	109	*Hesperocyparis macrocarpa*	Monterey cypress	Yes	27	15				42	35	Fair	Good	Fair	Yes	Suppressed
136	110	*Pinus radiata*	Monterey pine	No	1.8					1.8	12	Good	Good	Good	No	Recruit
137	111	*Hesperocyparis macrocarpa*	Monterey cypress	No	12.4					12.4	28	Fair	Fair	Fair	Yes	Suppressed
138	112	*Hesperocyparis macrocarpa*	Monterey cypress	No	11.1					11.1	28	Poor	Poor	Fair	No	Suppressed, decay
139	113	*Hesperocyparis macrocarpa*	Monterey cypress	No	14.3					14.3	32	Fair	Fair	Fair	Yes	Suppressed
140	114	*Hesperocyparis macrocarpa*	Monterey cypress	No	15.4					15.4	35	Fair	Fair	Fair	Yes	Suppressed
141	115	*Hesperocyparis macrocarpa*	Monterey cypress	Yes	20	13	11.3	8.9		53.2	35	Fair	Poor	Fair	Yes	Improper pruning, suppressed
142	116	*Hesperocyparis macrocarpa*	Monterey cypress	No	30.7					30.7	35	Fair	Fair	Fair	Yes	Suppressed
143	117	*Hesperocyparis macrocarpa*	Monterey cypress	Yes	16.4	21	18.6	12.7		68.7	38	Fair	Fair	Fair	Yes	Suppressed

SWCA Unique ID #	Tree Tag #	Scientific Name	Common Name	MultiStem	DBH 1	DBH 2	DBH 3	DBH 4	DBH 5	Aggregate DBH	Height	Health	Condition	Structure	HeritageTree	Notes
144	118	*Hesperocyparis macrocarpa*	Monterey cypress	No	5.9					5.9	25	Poor	Poor	Fair	No	Suppressed
145	119	*Hesperocyparis macrocarpa*	Monterey cypress	No	11.7					11.7	35	Fair	Fair	Fair	No	Suppressed
146	120	*Hesperocyparis macrocarpa*	Monterey cypress	No	16.8					16.8	35	Fair	Fair	Fair	Yes	Suppressed
147	121	*Hesperocyparis macrocarpa*	Monterey cypress	No	7.8					7.8	30	Poor	Fair	Fair	No	Suppressed
148	122	*Hesperocyparis macrocarpa*	Monterey cypress	Yes	12.8	3.1				15.9	38	Fair	Fair	Fair	Yes	Suppressed
149	123	*Hesperocyparis macrocarpa*	Monterey cypress	No	8.6					8.6	35	Fair	Fair	Fair	No	Suppressed
150	124	*Hesperocyparis macrocarpa*	Monterey cypress	No	8.3					8.3	35	Fair	Fair	Fair	No	Suppressed
151	125	*Hesperocyparis macrocarpa*	Monterey cypress	No	7.8					7.8	35	Fair	Fair	Fair	No	Suppressed, mechanical damage
152	126	*Hesperocyparis macrocarpa*	Monterey cypress	No	6.9					6.9	32	Poor	Fair	Fair	No	Suppressed
153	127	*Hesperocyparis macrocarpa*	Monterey cypress	No	9.5					9.5	35	Poor	Fair	Fair	No	Suppressed
154	128	*Hesperocyparis macrocarpa*	Monterey cypress	No	11					11	35	Fair	Fair	Fair	No	Suppressed
155	129	*Hesperocyparis macrocarpa*	Monterey cypress	No	3.5					3.5	5	Dead	Dead	Poor	No	Cut
156	130	*Hesperocyparis macrocarpa*	Monterey cypress	No	5.5					5.5	30	Poor	Fair	Fair	No	Suppressed
157	131	*Hesperocyparis macrocarpa*	Monterey cypress	No	5					5	30	Poor	Poor	Fair	No	Suppressed
159	132	*Hesperocyparis macrocarpa*	Monterey cypress	No	2.8					2.8	5	Dead	Dead	Poor	No	Cut
160	133	*Hesperocyparis macrocarpa*	Monterey cypress	No	3					3	5	Dead	Dead	Dead	No	Dead
161	134	*Hesperocyparis macrocarpa*	Monterey cypress	No	3.7					3.7	5	Dead	Dead	Dead	No	Cut
162	135	*Hesperocyparis macrocarpa*	Monterey cypress	No	6.5					6.5	30	Poor	Fair	Fair	No	Suppressed
163	136	*Hesperocyparis macrocarpa*	Monterey cypress	No	9.4					9.4	35	Fair	Fair	Fair	No	Suppressed
164	137	*Hesperocyparis macrocarpa*	Monterey cypress	No	16.5					16.5	35	Fair	Fair	Fair	Yes	Suppressed
165	138	*Hesperocyparis macrocarpa*	Monterey cypress	Yes	21.2	9.1				30.3	35	Fair	Fair	Fair	Yes	Suppressed
166	139	*Hesperocyparis macrocarpa*	Monterey cypress	No	11					11	35	Fair	Fair	Fair	No	Suppressed
167	140	*Hesperocyparis macrocarpa*	Monterey cypress	No	11.1					11.1	35	Fair	Fair	Fair	No	Suppressed
168	141	*Hesperocyparis macrocarpa*	Monterey cypress	No	6.8					6.8	35	Poor	Fair	Fair	No	Suppressed
169	142	*Hesperocyparis macrocarpa*	Monterey cypress	No	2.9					2.9	25	Dead	Dead	Fair	No	Suppressed
170	143	*Hesperocyparis macrocarpa*	Monterey cypress	No	5.5					5.5	30	Poor	Poor	Fair	No	Suppressed
171	144	*Hesperocyparis macrocarpa*	Monterey cypress	No	4.2					4.2	30	Poor	Poor	Fair	No	Suppressed
172	145	*Hesperocyparis macrocarpa*	Monterey cypress	No	7.9					7.9	35	Fair	Poor	Fair	No	Suppressed
173	146	*Hesperocyparis macrocarpa*	Monterey cypress	No	2.9					2.9	25	Dead	Dead	Fair	No	Suppressed
174	147	*Hesperocyparis macrocarpa*	Monterey cypress	No	25	6.5				31.5	35	Fair	Fair	Fair	Yes	Suppressed
175	148	*Hesperocyparis macrocarpa*	Monterey cypress	No	10.1					10.1	35	Fair	Fair	Fair	No	Suppressed
176	149	*Hesperocyparis macrocarpa*	Monterey cypress	No	13.3					13.3	35	Fair	Fair	Fair	Yes	Suppressed
177	150	*Hesperocyparis macrocarpa*	Monterey cypress	No	7.8					7.8	35	Poor	Fair	Fair	No	Suppressed
178	151	*Hesperocyparis macrocarpa*	Monterey cypress	No	9.7					9.7	35	Fair	Fair	Fair	No	Suppressed
179	152	*Hesperocyparis macrocarpa*	Monterey cypress	No	5.7					5.7	30	Poor	Poor	Fair	No	Suppressed
180	153	*Hesperocyparis macrocarpa*	Monterey cypress	No	6.7					6.7	35	Poor	Fair	Fair	No	Suppressed
181	154	*Hesperocyparis macrocarpa*	Monterey cypress	No	9					9	35	Fair	Fair	Fair	No	Suppressed
182	155	*Hesperocyparis macrocarpa*	Monterey cypress	No	4.7					4.7	30	Poor	Poor	Fair	No	Suppressed, likely dead
183	156	*Hesperocyparis macrocarpa*	Monterey cypress	No	4.9					4.9	35	Poor	Fair	Fair	No	Suppressed

SWCA Unique ID #	Tree Tag #	Scientific Name	Common Name	MultiStem	DBH 1	DBH 2	DBH 3	DBH 4	DBH 5	Aggregate DBH	Height	Health	Condition	Structure	HeritageTree	Notes
184	157	*Hesperocyparis macrocarpa*	Monterey cypress	No	6.8					6.8	35	Poor	Fair	Fair	No	Suppressed
185	158	*Hesperocyparis macrocarpa*	Monterey cypress	No	12					12	35	Fair	Fair	Fair	Yes	Suppressed
186	159	*Hesperocyparis macrocarpa*	Monterey cypress	No	12.4					12.4	35	Fair	Fair	Fair	Yes	Suppressed
187	160	*Hesperocyparis macrocarpa*	Monterey cypress	No	11.8					11.8	35	Fair	Fair	Fair	No	Suppressed
188	161	*Hesperocyparis macrocarpa*	Monterey cypress	No	5					5	30	Dead	Dead	Fair	No	Suppressed
189	162	*Hesperocyparis macrocarpa*	Monterey cypress	No	6.1					6.1	30	Poor	Poor	Fair	No	Suppressed likely dead
190	163	*Hesperocyparis macrocarpa*	Monterey cypress	No	11.9					11.9	35	Fair	Fair	Fair	No	Suppressed
191	164	*Hesperocyparis macrocarpa*	Monterey cypress	No	11.5					11.5	35	Fair	Fair	Fair	No	Suppressed
192	165	*Hesperocyparis macrocarpa*	Monterey cypress	No	21.8					21.8	35	Fair	Fair	Fair	Yes	Suppressed
193	166	*Hesperocyparis macrocarpa*	Monterey cypress	No	32					32	35	Fair	Fair	Fair	Yes	Suppressed
194	167	*Hesperocyparis macrocarpa*	Monterey cypress	No	22.6					22.6	35	Fair	Fair	Fair	Yes	Suppressed
196	168	*Hesperocyparis macrocarpa*	Monterey cypress	Yes	9.1	10.2	11	11.5	8.2	50	20	Poor	Poor	Fair	Yes	Decay
197	169	*Hesperocyparis macrocarpa*	Monterey cypress	Yes	15.3	8.2	6.4	12.1	5.2	47.2	25	Good	Good	Fair	Yes	
198	170	*Hesperocyparis macrocarpa*	Monterey cypress	No	13.9	8.7	5.8			28.4	20	Good	Good	Fair	Yes	
199	171	*Pinus radiata*	Monterey pine	Yes	9.8	8.2				18	20	Dead	Dead	Fair	Yes	Dead
200	172	*Hesperocyparis macrocarpa*	Monterey cypress	No	13.9					13.9	20	Good	Good	Good	Yes	
201	173	*Salix lasiolepis*	arroyo willow	Yes	3.8	4.1	3.1	4.2	4	19.2	12	Poor	Poor	Poor	Yes	
202	174	*Hesperocyparis macrocarpa*	Monterey cypress	No	12.1					12.1	22	Good	Good	Good	Yes	Suppressed
203	175	*Hesperocyparis macrocarpa*	Monterey cypress	No	10.2					10.2	22	Good	Good	Fair	No	Suppressed
204	176	*Hesperocyparis macrocarpa*	Monterey cypress	No	10.1	3.8				13.9	20	Fair	Fair	Fair	Yes	Suppressed
205	177	*Hesperocyparis macrocarpa*	Monterey cypress	Yes	9.4	13.1	11	10.2	8.9	52.6	25	Good	Good	Good	Yes	
206	178	*Hesperocyparis macrocarpa*	Monterey cypress	Yes	16.2	7.1	8			31.3	20	Poor	Poor	Poor	Yes	Uprooted by wind
207	179	*Hesperocyparis macrocarpa*	Monterey cypress	Yes	6.2	5.1	5.9			17.2	22	Fair	Good	Fair	Yes	Suppressed
208	180	*Hesperocyparis macrocarpa*	Monterey cypress	No	13					13	12	Poor	Poor	Poor	Yes	Downed by wind, likely dying
209	181	*Acacia melanoxylon*	blackwood acacia	No	7.1	8	11			26.1	18	Poor	Poor	Fair	Yes	
210	182	*Hesperocyparis macrocarpa*	Monterey cypress	No	5.9	4.8	8.2	6.1	3.2	28.2	22	Fair	Fair	Fair	Yes	Decay
211	183	*Hesperocyparis macrocarpa*	Monterey cypress	No	11.3	9	8.9	11	8.2	48.4	20	Good	Good	Fair	Yes	
212	184	*Hesperocyparis macrocarpa*	Monterey cypress	No	11.5					11.5	22	Good	Good	Good	No	Suppressed
213	185	*Hesperocyparis macrocarpa*	Monterey cypress	Yes	8.2	10	9	8.8	12	48	20	Good	Good	Good	Yes	
215	186	*Hesperocyparis macrocarpa*	Monterey cypress	No	14					14	15	Good	Good	Good	Yes	
216	187	*Hesperocyparis macrocarpa*	Monterey cypress	Yes	23.5	30.1	24	13.2	17.3	108.1	25	Fair	Poor	Poor	Yes	Decay, limb failure, poorly pruned, suppressed
217	188	*Hesperocyparis macrocarpa*	Monterey cypress	No	8.6					8.6	15	Poor	Fair	Fair	No	Suppressed
218	189	*Hesperocyparis macrocarpa*	Monterey cypress	No	17.5					17.5	20	Fair	Fair	Fair	Yes	Suppressed
219	190	*Hesperocyparis macrocarpa*	Monterey cypress	No	15.5					15.5	20	Fair	Fair	Fair	Yes	Suppressed
220	191	*Hesperocyparis macrocarpa*	Monterey cypress	No	23.5					23.5	25	Fair	Fair	Fair	Yes	Suppressed
221	192	*Hesperocyparis macrocarpa*	Monterey cypress	Yes	36.8	7.1	7			50.9	30	Poor	Poor	Fair	Yes	Suppressed, decay, fungal infection
222	193	*Hesperocyparis macrocarpa*	Monterey cypress	No	40					40	20	Fair	Fair	Fair	Yes	Suppressed
223	194	*Hesperocyparis macrocarpa*	Monterey cypress	No	22.3					22.3	30	Fair	Fair	Fair	Yes	Suppressed

SWCA Unique ID #	Tree Tag #	Scientific Name	Common Name	MultiStem	DBH 1	DBH 2	DBH 3	DBH 4	DBH 5	Aggregate DBH	Height	Health	Condition	Structure	HeritageTree	Notes
224	195	*Hesperocyparis macrocarpa*	Monterey cypress	No	21.8					21.8	35	Fair	Good	Good	Yes	Suppressed
225	196	*Hesperocyparis macrocarpa*	Monterey cypress	No	15.2					15.2	15	Fair	Fair	Fair	Yes	Suppressed
226	197	*Hesperocyparis macrocarpa*	Monterey cypress	No	21.5	10	3.1			34.6	30	Fair	Fair	Fair	Yes	Suppressed
227	198	*Hesperocyparis macrocarpa*	Monterey cypress	No	20					20	28	Fair	Good	Good	Yes	Suppressed
228	199	*Hesperocyparis macrocarpa*	Monterey cypress	No	10.5					10.5	20	Fair	Good	Good	No	Suppressed
229	200	*Hesperocyparis macrocarpa*	Monterey cypress	No	18.7	13.1	11.3	7.5		50.6		Fair	Fair	Good	Yes	
230	3968	*Hesperocyparis macrocarpa*	Monterey cypress	No	24					24	30	Fair	Good	Good	Yes	Suppressed
232	3969	*Hesperocyparis macrocarpa*	Monterey cypress	Yes	23.6	10.2				33.8	28	Fair	Fair	Good	Yes	Suppressed
235	3970	*Eucalyptus globulus*	blue gum	No	14					14	35	Fair	Fair	Good	Yes	
236	3971	*Eucalyptus globulus*	blue gum	No	50					50	35	Fair	Fair	Fair	Yes	
237	3972	*Eucalyptus globulus*	blue gum	No	3.3					3.3	20	Fair	Fair	Good	No	
239	3973	*Eucalyptus globulus*	blue gum	No	7.3					7.3	25	Good	Good	Good	No	
240	3974	*Eucalyptus globulus*	blue gum	No	3.4					3.4	15	Poor	Poor	Poor	No	Mechanical damage
241	3975	*Eucalyptus globulus*	blue gum	No	2.3					2.3	18	Fair	Fair	Fair	No	
242	3976	*Eucalyptus globulus*	blue gum	Yes	13.8	4.3				18.1	35	Good	Good	Good	Yes	
243	3977	*Eucalyptus globulus*	blue gum	No	3.7					3.7	25	Good	Good	Good	No	
244	3978	*Eucalyptus globulus*	blue gum	No	3.3					3.3	20	Good	Good	Good	No	
245	3979	*Eucalyptus globulus*	blue gum	No	16.3	18.2				34.5	35	Good	Good	Good	Yes	
246	3980	*Eucalyptus globulus*	blue gum	No	4					4	20	Fair	Fair	Good	No	Suppressed
247	3981	*Eucalyptus globulus*	blue gum	No	8.4					8.4	28	Good	Good	Good	No	
248	3982	*Eucalyptus globulus*	blue gum	No	5.3					5.3	38	Good	Good	Good	No	
249	3983	*Eucalyptus globulus*	blue gum	No	17.7					17.7	30	Good	Good	Good	Yes	
250	3984	*Eucalyptus globulus*	blue gum	No	5.5					5.5	20	Fair	Fair	Fair	No	
252	3985	*Pinus radiata*	Monterey pine	No	1.9					1.9	10	Good	Good	Good	No	
253	3986	*Hesperocyparis macrocarpa*	Monterey cypress	No	26.3	26.8				53.1	30	Fair	Fair	Fair	Yes	
254	3987	*Hesperocyparis macrocarpa*	Monterey cypress	No	14					14	20	Fair	Fair	Fair	Yes	Suppressed
255	3988	*Hesperocyparis macrocarpa*	Monterey cypress	No	23.3					23.3	35	Fair	Fair	Fair	Yes	Suppressed
256	3989	*Hesperocyparis macrocarpa*	Monterey cypress	Yes	30.2	13.1	11.1	14.5	10.9	79.8	35	Fair	Fair	Fair	Yes	Suppressed
257	3990	*Hesperocyparis macrocarpa*	Monterey cypress	No	65	30				95	25	Poor	Poor	Poor	Yes	Uprooted, horizontal to ground
258	3991	*Hesperocyparis macrocarpa*	Monterey cypress	Yes	26.5	13.3				39.8	35	Fair	Fair	Fair	Yes	
259	3992	*Hesperocyparis macrocarpa*	Monterey cypress	No	24					24	65	Fair	Fair	Fair	Yes	Suppressed
260	3993	*Hesperocyparis macrocarpa*	Monterey cypress	Yes	28	13.5				41.5	20	Fair	Fair	Fair	Yes	Suppresed
261	3994	*Hesperocyparis macrocarpa*	Monterey cypress	Yes	40.6	7.5				48.1	30	Fair	Fair	Fair	Yes	Suppressed
262	3995	*Hesperocyparis macrocarpa*	Monterey cypress	Yes	33.3	17.5				50.8	30	Fair	Fair	Fair	Yes	Suppressed
238	No tag	*Eucalyptus globulus*	blue gum	No	1.8					1.8	18	Fair	Fair	Good	No	Recruit
93	No tag	*Hesperocyparis macrocarpa*	Monterey cypress	No	1.9					1.9	10	Fair	Fair	Good	No	Recruit
239	No tag	*Hesperocyparis macrocarpa*	Monterey cypress	No	1.9					1.9	10	Fair	Fair	Good	No	Recruit

ATTACHMENT B

Tree Location Maps

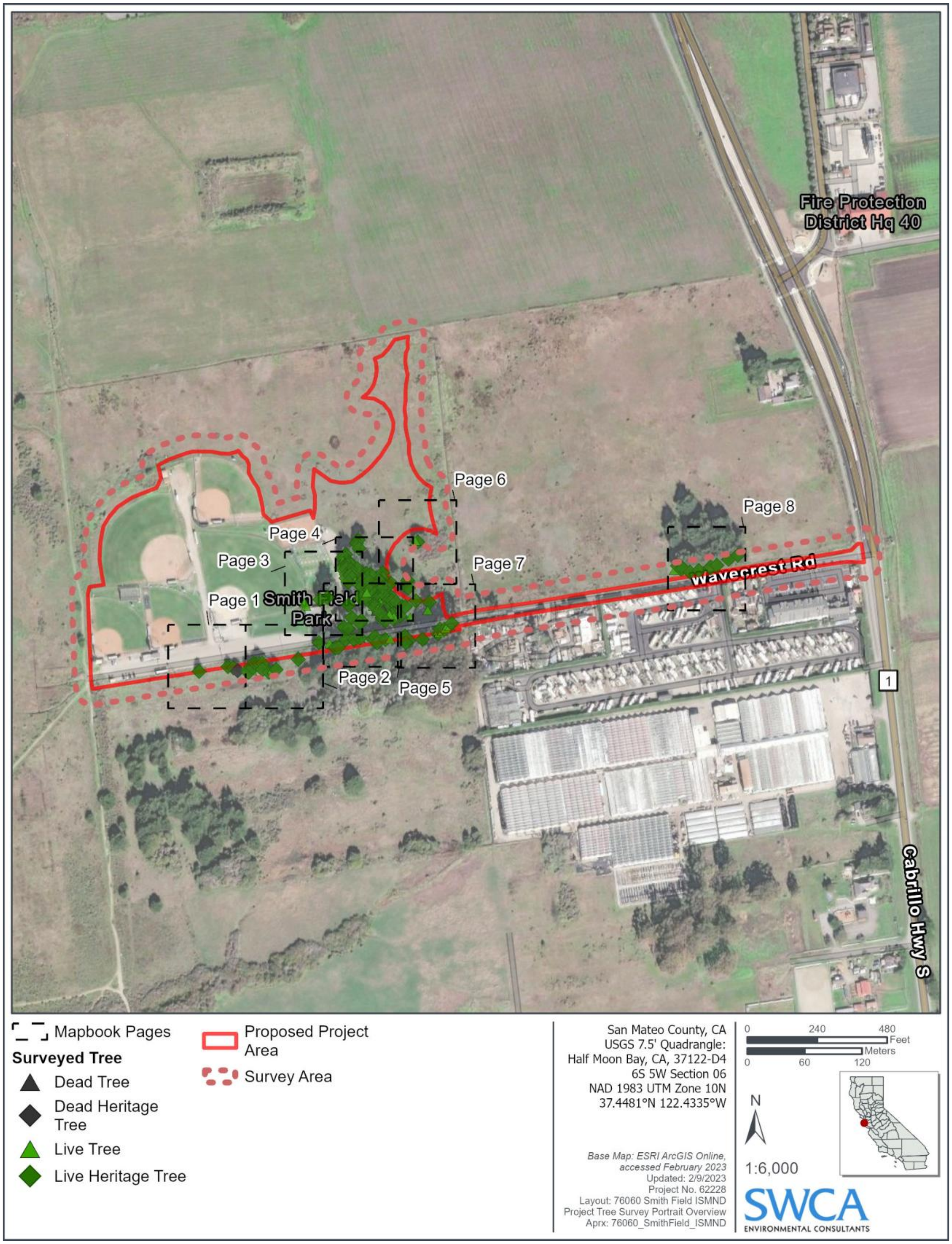


Figure B-1. Tree location overview map.

Figure B-2. Tree location map (page 1 of 8).

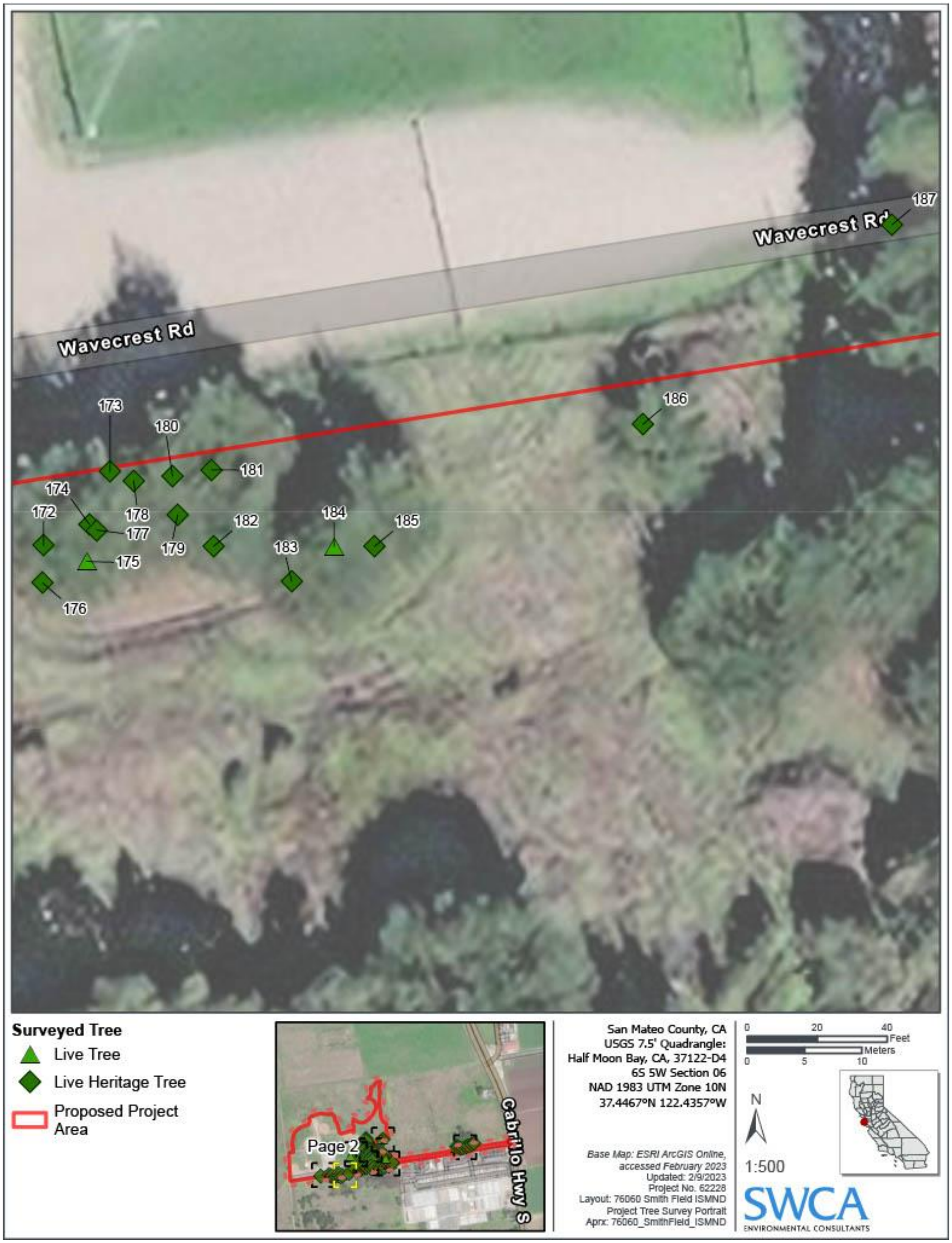


Figure B-3. Tree location map (page 2 of 8).

Figure B-4. Tree location map (page 3 of 8).

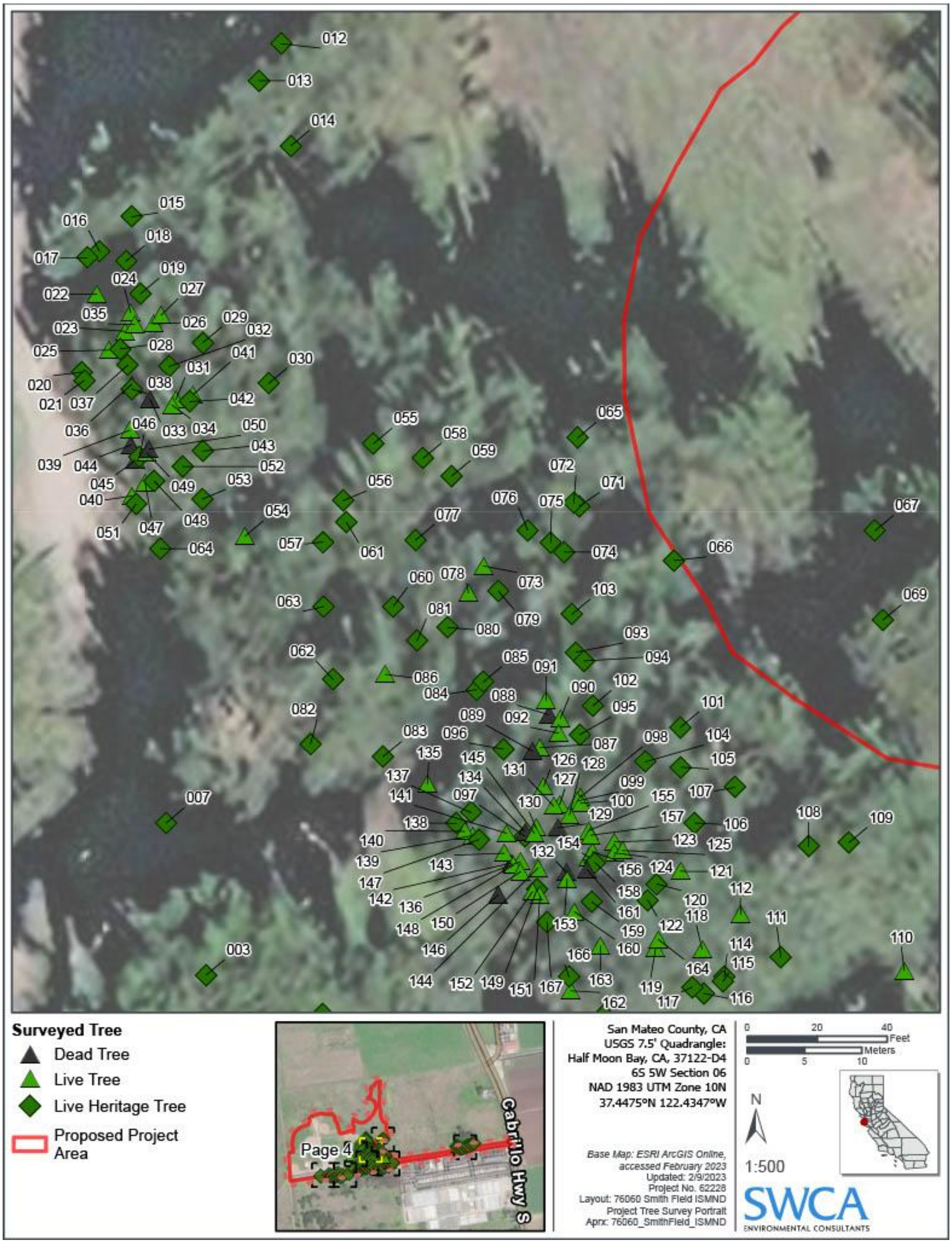


Figure B-5. Tree location map (page 4 of 8).

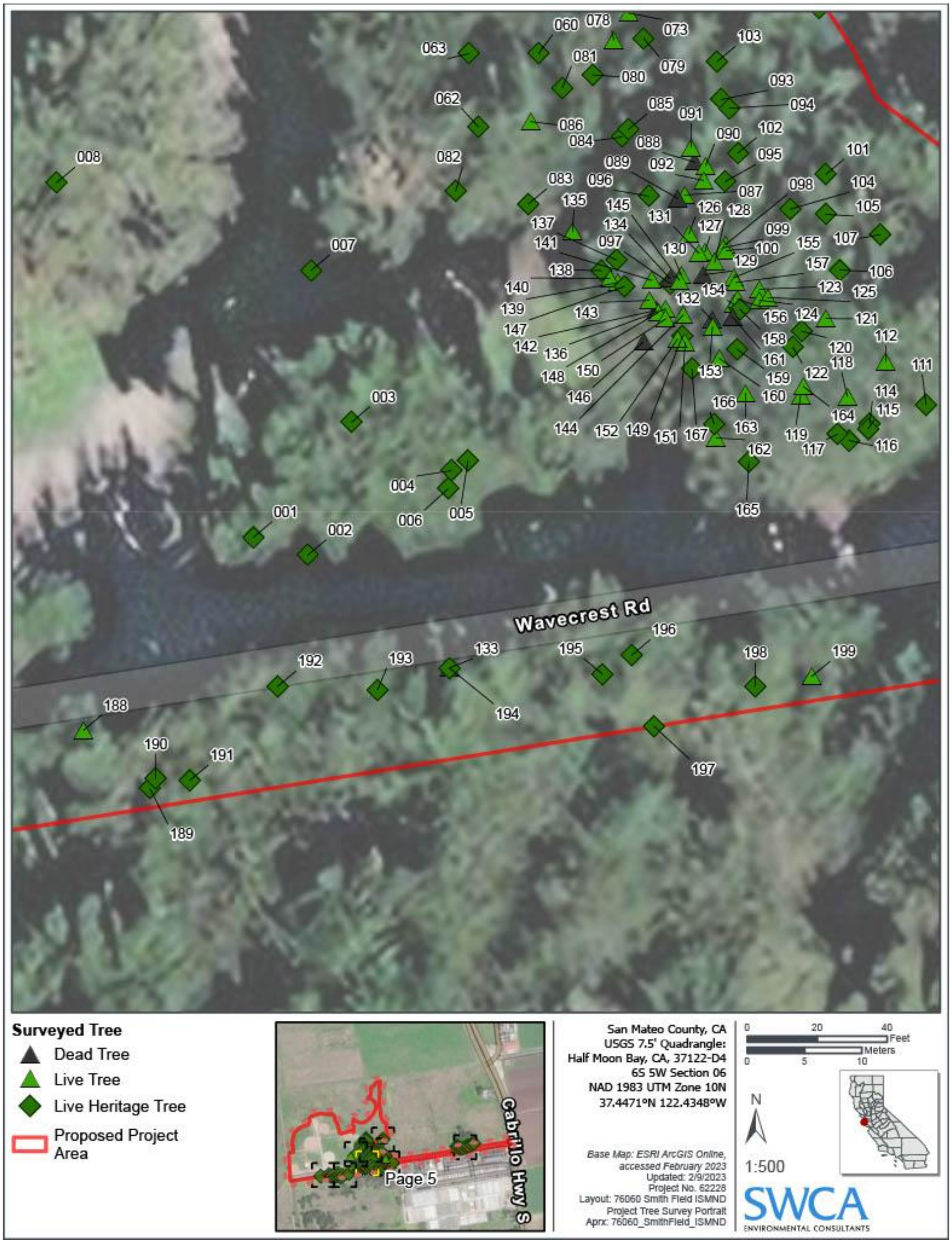


Figure B-6. Tree location map (page 5 of 8).

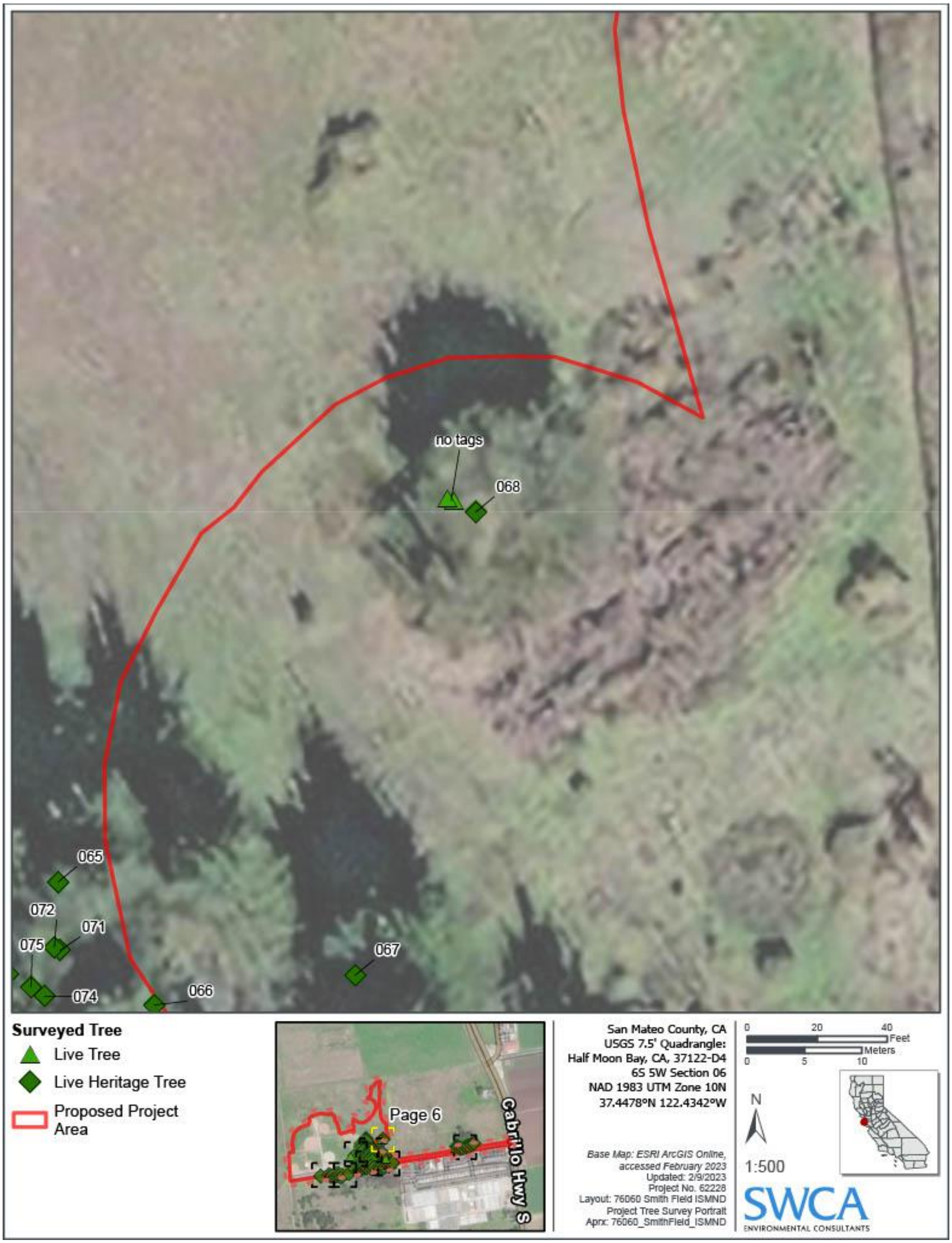


Figure B-7. Tree location map (page 6 of 8).

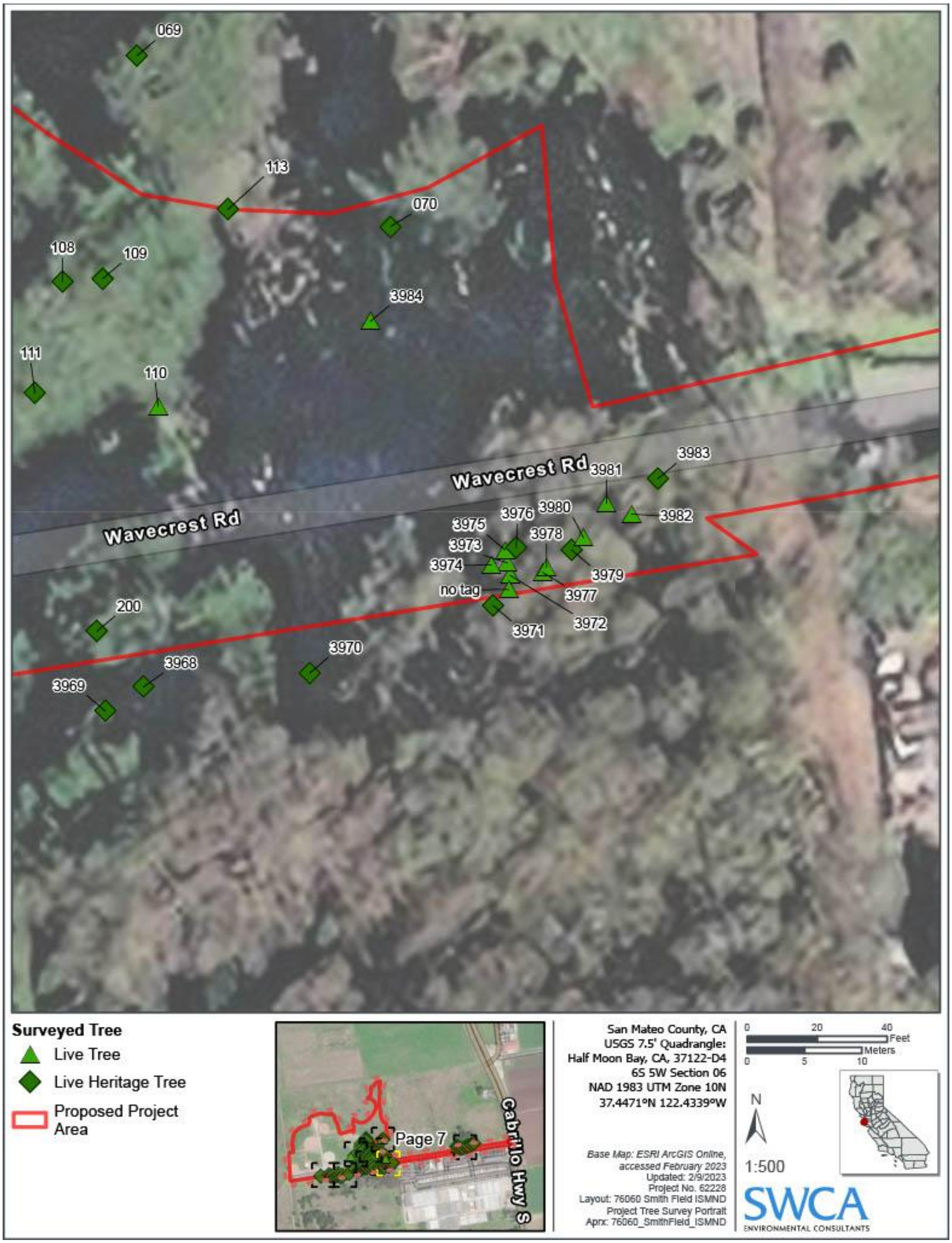


Figure B-8. Tree location map (page 7 of 8).

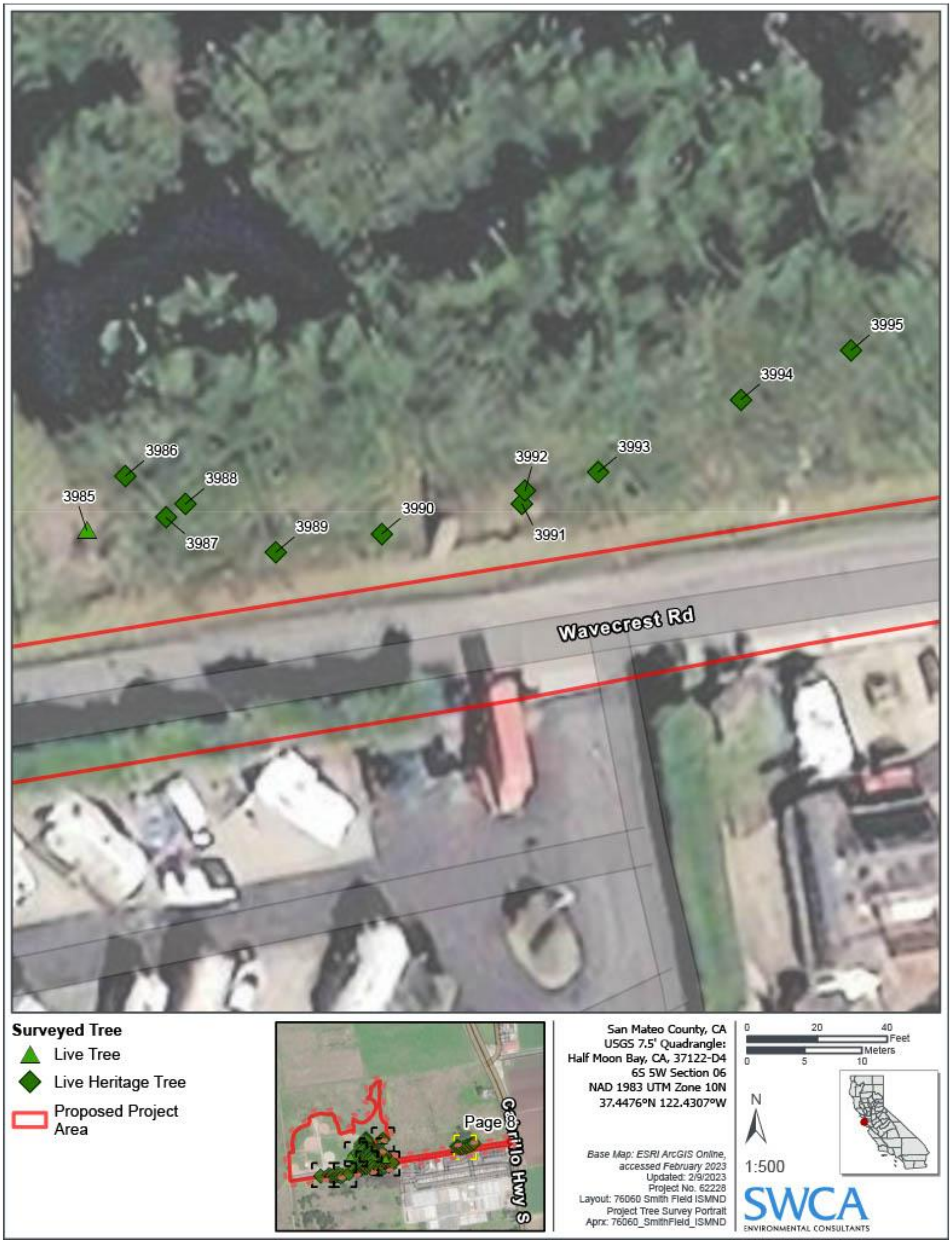


Figure B-9. Tree location map (page 8 of 8).

ATTACHMENT C

Representative Photographs

Photo C-1. Representative photograph showing the portion of the survey area that is dominated by Monterey cypress trees; view facing southwest.

Photo C-2. Representative photograph of understory conditions in the Monterey cypress grove portion of the survey area; view facing south.

Photo C-3. Representative photograph of blue gum eucalyptus trees in the survey area; view facing south.

Photo C-4. Representative photograph of the larger Monterey cypress tree recruits in the survey area; view facing southwest.

Photo C-5. Representative photograph showing the single arroyo willow tree (tree tag #173) within the survey area; view facing northwest.

Photo C-6. Representative photograph of the typical canopy structure of the Monterey cypress trees within the survey area; view facing west.

APPENDIX C

Air Quality and Greenhouse Gas Technical Report

Air Quality and Greenhouse Gas Technical Report for the Smith Field Park Improvement Project, San Mateo County, California

MARCH 2025

PREPARED FOR

City of Half Moon Bay
Public Works Department

PREPARED BY

SWCA Environmental Consultants

AIR QUALITY AND GREENHOUSE GAS TECHNICAL REPORT FOR THE SMITH FIELD PARK IMPROVEMENT PROJECT, SAN MATEO COUNTY, CALIFORNIA

Prepared for

City of Half Moon Bay
Public Works Department
501 Main Street
Half Moon Bay, California 94019
Attn: John Doughty, Public Works Director

Prepared by

Brad Sohm, Principal Air Quality Team Lead
Erin Wielenga, Air Quality Specialist

SWCA Environmental Consultants
60 Stone Pine Road, Suite 100
Half Moon Bay, California 94019
(650)440-4160
www.swca.com

SWCA Project No. 76060

March 2025

CONTENTS

Appendices

Figures

Tables

Acronyms and Abbreviations

$\mu g/m^3$	micrograms per cubic meter
AB	Assembly Bill
BAAQMD	Bay Area Air Quality Management District
BMP	best management practices
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CalEEMod	California Emission Estimator Model
CalEPA	California Environmental Protection Agency
CALGreen Code	California Green Building Standards Code
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CAT	California Action Team
CCAA	California Clean Air Act
CCAP	Community Climate Action Plan
CCR	California Code of Regulations
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CH_4	methane
City	City of Half Moon Bay
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
County	County of San Mateo
DPM	diesel particulate matter
EIR	Environmental Impact Report
EO	Executive Order
EPA	U.S. Environmental Protection Agency
EV	electric vehicle
GHG	greenhouse gas
GWP	global warming potential
H_2S	hydrogen sulfide
HFCs	hydrofluorocarbons
IPCC	Intergovernmental Panel on Climate Change
IQ	intelligence quotient
LCFS	Low Carbon Fuel Standard

MMT	million metric tons
MT	metric ton
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO	nitric oxide
NOA	naturally occurring asbestos
NO_2	nitrogen dioxide
NO_X	oxides of nitrogen
OEHHA	California Office of Environmental Health Hazard Assessment
OPR	Governor's Office of Planning and Research
O_3	ozone
PFCs	perfluorocarbons
PM	particulate matter
$PM_{2.5}$	particulate matter less than 2.5 microns in diameter
PM_{10}	particulate matter less than 10 microns in diameter
ppb	parts per billion
ppm	parts per million
project	Smith Field Park Improvement Project
ROG	reactive organic gases
SAFE	Safer Affordable Fuel-Efficient Vehicles Rule
SB	Senate Bill
SCOTUS	Supreme Court of the United States
SCS	Sustainable Community Strategy
SF_6	sulfur hexafluoride
SFBAAB	San Francisco Bay Area Air Basin
SO_2	sulfur dioxide
SO_x	sulfur oxides
TAC	toxic air contaminant
TSCA	Toxic Substances Control Act
TRU	transport refrigeration units
VMT	vehicle miles traveled
VOC	volatile organic compound
ZEV	zero emission vehicle

1 INTRODUCTION

The City of Half Moon Bay Public Works Department retained SWCA Environmental Consultants (SWCA) to conduct an air quality and greenhouse gas (GHG) emissions technical report in support of the proposed Smith Field Park Improvement Project (project) in San Mateo County, California. The project consists of replacing and upgrading existing park facilities, which currently include five ballfields (one lit for nighttime use), a dog park, a parking lot, and horseshoe pits on Assessor's Parcel Number 065-011-060, totaling approximately 29.25 acres, at 201–203 Wavecrest Road, Half Moon Bay, San Mateo County, California. The purpose of this report is to describe the methodologies used to quantify project air pollutant and GHG emissions and to evaluate the impacts of these emissions on ambient air quality. This air quality technical report also addresses the consistency of the project with current applicable federal, state, and local regulatory policies pertaining to air quality and GHG emissions, and analyzes whether the project would cause an exceedance of an ambient air quality standard or significance threshold.

The evaluation of project impacts was conducted as recommended in the 2023 Bay Area Air Quality Management District (BAAQMD) California Environmental Quality Act (CEQA) Guideline Chapters1 through 8 and Appendices A through F (BAAQMD 2023), which are incorporated into this technical document by reference. BAAQMD CEQA Guidelines Chapter 3 presents the BAAQMD thresholds of significance for use in determining whether a proposed project will have a significant impact on air quality, as well as the project design elements required and local GHG reduction strategies for use in determining whether there will be a significant impact on GHG and climate change (BAAQMD 2023).

2 PROJECT LOCATION AND DESCRIPTION

2.1 Project Location

The proposed project would be on a 29.25-acre parcel at 201–203 Wavecrest Road, Half Moon Bay, San Mateo County, California (Figure 1 and Figure 2). The project site is currently an existing park that includes five ballfields (one lit for nighttime use), a dog park, a parking lot, and horseshoe pits.
The property is owned by the City of Half Moon Bay (City). The proposed improvements to Smith Field Park include installing a new waterline within the right-of-way at Wavecrest Road, upgrading the park's parking area to include paved access and paved parking spaces (including accessible spaces), upgrading the youth baseball fields, constructing a new concession and restroom building, upgrading the existing multi-use field to an all-weather multi-use field (soccer, baseball, softball), establishing a picnic/barbeque area and interpretive walking trail, expanding the dog park (conceptually separated into large and small dog areas), installing a children's play area, and upgrading to park landscaping.

2.1.1 Parking and Access

The existing parking lot would increase slightly in area and would be paved and striped to include 208 regular parking spaces and five Americans with Disabilities Act (ADA)-compliant parking spaces in the main parking lot. In addition, there would be 16 regular parking spaces and two ADA-compliant parking spaces in the small lot adjacent to the picnic area, playground, and dog park. The project would have a total of 224 parking spaces, plus seven ADA-compliant parking spaces.

2.1.2 Ball Fields

As shown in the project site plan (Figure 3), Fields 1, 2, 4, and 5 would remain in approximately the same locations. The fields would have new turf, which would be either natural or synthetic. Each field would have new facilities, including bleachers and dugouts. Existing signage and light poles would be reused to the greatest degree possible. There would be a paved access road with emergency turnaround to provide access to Fields 4 and 5 and storage facilities at the end of the access road. A new plaza with a concession/restroom building and picnic area would be constructed central to the playing fields.

Field 3 would be converted to a multi-purpose playing field that could be used for various sports, including softball, soccer, kick ball, and baseball. It would likely have a synthetic turf field, bleachers, and dugout and continue to include lighting for evening activities. All fields would have new approximately 10-foot-tall fencing with 20-foot-tall tension netting along baselines and between the fields and the parking lot. The top of the tension netting would be 30 feet tall.

2.1.3 Picnic Area

The project would create several picnic areas throughout the park that would provide seating and spaces for pre- and post-game socializing, as well as viewing areas for users of the dog park or play area to enjoy the natural surroundings.

2.1.4 Playground and Plaza

The project would create a new children's playground and plaza where the existing dog park and horseshoe pits are located. The playground surface would be a permeable rubberized play surface, and the playground would contain new play structures suitable for ages 2 through 5 and 6 through 12.

Adjacent to the playground, the project would include a plaza hardscape area with picnic tables, barbeques, and benches and a new permanent restroom building, trash/recycling facilities, and an entry kiosk. A small parking lot would serve the plaza, playground, and dog park. A wooden boardwalk would lead from the small parking area to Fields 4 and 5.

2.1.5 Dog Park

The Half Moon Bay Parks Master Plan recommended expanding opportunities for off-leash dogs, providing a range of activities for dogs, and accommodating a variety of dog sizes and types. The dog park would be relocated east of its current location, expanded to approximately 0.92 acre, and include separate spaces for large and small dogs (0.68 and 0.39 acre, respectively). Each area would be provided with a new water fountain with dog bowl and spigot, storage building, benches, and wire mesh dog fencing. The new dog park would be underlain with a synthetic turf system appropriate for pet areas.

2.1.6 Nature Path

The project would create a 2,440-foot-long low-impact nature trail with benches for seating and interpretive signage. The nature trail would allow access to the natural open space areas to the east of the existing park while protecting surrounding wetlands and other sensitive habitat.

2.1.7 Wavecrest Open Space Access

The project includes new trailhead facilities at the southwestern corner of the park, including signage, a kiosk, trash receptacles, a dog station with dog waste bags and a dog fountain, and a protected place for gathering.

2.1.8 Maintenance/Storage

The Project would include a consolidated storage area at the end of the new maintenance access in the northern portion of the park, which will allow for increased storage space for both the Half Moon Bay Little League and the City Maintenance Division.

2.1.9 Utilities

The improvements to Smith Field Park would require installing new utility services for water, wastewater, stormwater, and electrical service. No natural gas lines would be included in the project. The sanitary sewer lines for the new restroom and snack shack would be tied into existing infrastructure on Wavecrest Road.

The project would remove the existing water system, including the 2-inch-diameter water main, piping, water tank, pump house, meters, valves, and irrigation system. A new 2,150-foot-long, 8-inch-diameter water main would be installed, originating 200 feet west of Highway 1 and tying into the restroom, snack shack, water fountains, irrigation system, and fire water system. Water use would not substantially change compared to existing conditions; existing irrigation facilities would be replaced. Additional restroom and water fountains would be included as part of the project.

Additional lighting would be installed to illuminate Field 3 and the parking lot. Six light standards currently illuminate Field 3. These would be removed and replaced by nine light standards that are better positioned to direct light onto the field. Lighting would consist of low-intensity fixtures that are downward-facing, shielded, and designed to reduce glare and spillover to adjacent neighborhoods and adjacent sensitive habitat.

2.1.10 Stormwater and Drainage

The project would remove the existing stormwater drainage system, including piping and sump pumps. These would be replaced with a system of stormwater drains and bioretention areas and basins adequate to contain a 10-year 2-hour storm. Overflow would drain into the vacant field to the north.

The project would result in a net increase of approximately 83,977 square feet (1.9 acres) of new impervious surface area, which includes the paved drive and parking lot, plazas, picnic areas, paved walkways, and rooftops (Appendix A). The project would be required to comply with the City of Half Moon Bay Green Infrastructure Plan to control runoff. Permanent green infrastructure is anticipated to consist of bioretention basins and planters that would filter contaminants from stormwater runoff before being directed to the open space areas surrounding the park.

Stormwater drainage would be directed to six bioretention catch basins throughout the development to reduce sedimentation and contamination to the adjacent open space, including adjacent wetlands, from surface water runoff. Stormwater outfalls would release to existing open fields surrounding the project site.

2.1.11 Landscaping

New landscaping would include approximately 82 trees as well as shrubs and perennials. Restoration areas would be hydroseeded. Bioretention areas would be planted with facultative wetland plant species.

Of the 231 existing trees on the project site, 33 trees would be removed, consisting of 32 Monterey cypress and one Monterey pine. Twenty-five of the trees to be removed meet the description of heritage trees per the City's Municipal Code (Section 7.40.020). The heritage trees range in size from 12.3 to 133.8 inches diameter at breast height. In accordance with the City's Municipal Code, the heritage trees would be replaced "on a one-for-one basis with a minimum size twenty-four-inch box specimen tree" (Section 7.40.060). The project proposes to plant approximately 82 new trees consisting of 15-gallon through 72-inch box sizes throughout the development, with at least 33 trees being 24-inch box size or larger, which satisfies the removal of heritage trees and includes a replacement ratio either meeting or exceeding the 1:1 required ratio. Additionally, the project would incorporate predominantly native plant landscaping throughout the park.

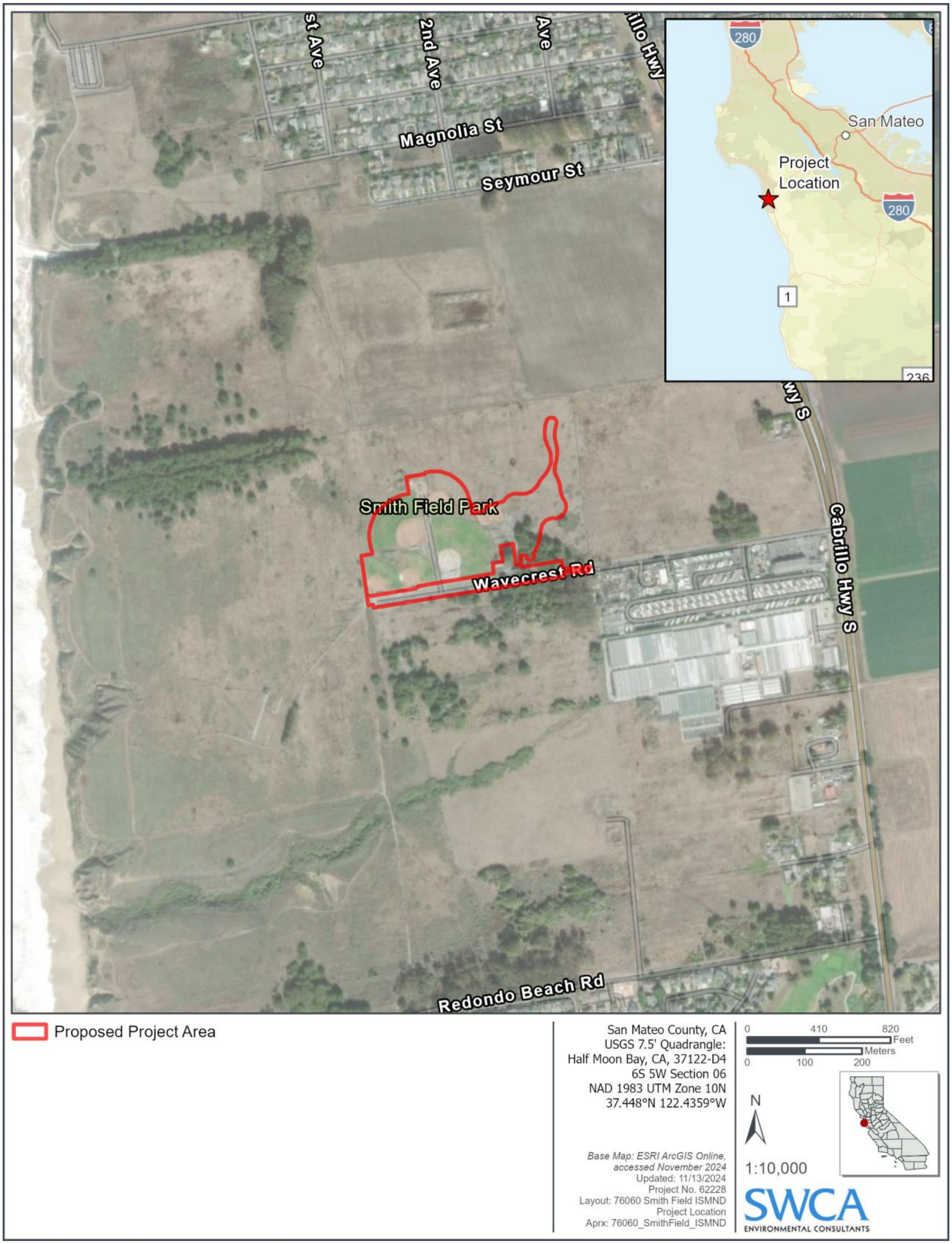


Figure 1. Vicinity map.

Figure 2. Project location map.

SWCA ENVIRONMENTAL CONSULTANTS

Source: Gates +Associates, 2024

Figure 3. Smith Field Park site plan.

2.2 Construction Time Frame and Phasing

The project would be constructed in at least two phases. Phase 1 would include utility installation, parking lot improvements, water main extension/fire hydrant installation, irrigation upgrades, and pavement restoration and rehabilitation on Wavecrest Road. Construction of Phase 1 is expected to occur over an approximately 6-month period, from April 1, 2026, until September 30, 2026. Phase 1 of the project would be constructed in seven stages: 1) demolition (including grubbing and grading of construction areas; removal of 33 trees, including 25 heritage trees; removal of existing water line, water tank, pump house and pump, meters, sump pumps, and irrigation system; removal of existing fencing, bleachers, and some light poles; trenching for new utilities (primarily water); and removal of existing pavement and some buildings); 2) drainage/utilities (including installing stormwater facilities and landscaping); 3) rough grading; 4) fine grading; 5) building construction (including construction of the new concession stand and restroom, landscaping, installing new fencing and lighting and all other construction); 6) paving (112,558 square feet of hardscape for the parking lot; pouring concrete sidewalks, plaza, and picnic areas; pouring rubberized play surface and playground facilities); and 7) architectural coatings (including 1,900 square feet of painting of the new concession stand and restroom building [northeast of Field 2], the existing concession stand [south of Fields 1 and 2], and the restroom [just east of Field 3]). Future phases would include construction of the remaining elements of the project, dependent on acquisition of funding. Phase 2 construction has been modeled conservatively, as specific details are not yet known. Construction of Phase 2 has been assumed to occur over an approximately 12-month period, from January 1, 2027, until December 31, 2027. Emissions generated during Phase 2 have been grouped into four stages in the California Emission Estimator Model (CalEEMod) based on the types of equipment and workload: 1) demolition 2) construction; 3) paving (31,623 square feet of hardscape); and 4) architectural coatings. All construction activities, including construction staging of equipment, would be situated entirely within the project site. Typical construction equipment, potentially including graders, excavators, dozers, and backhoes, would be used during all phases of project construction and would be stored within the staging area. Specific phases and timing of construction have not been determined at this time. Once construction of Phase 1 and Phase 2 are completed, the project would continue to be a park for the community.

3 ENVIRONMENTAL SETTING

The project site is in San Mateo County within the San Francisco Bay Area Air Basin (SFBAAB), which consists of the entirety of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, and Santa Clara Counties; the western portion of Solano County; and the southern portion of Sonoma County. The BAAQMD has jurisdiction within this portion of the SFBAAB. The BAAQMD has full jurisdiction within all San Mateo County. Ambient air quality within SFBAAB is affected by the climate, topography, and the type and amount of pollutants emitted.

3.1 Overview of Air Pollution and Potential Health Effects

3.1.1 Criteria Air Pollutants

Both the federal and state governments have established ambient air quality standards for outdoor concentrations of specific pollutants in order to protect the public health and welfare. These pollutants are referred to as “criteria air pollutants” and the national and state standards have been set at levels considered safe to protect public health, including the health of sensitive populations such as asthmatics, children, and the elderly with a margin of safety; and to protect public welfare, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings.

Certain air pollutants have been recognized to cause notable health problems and consequential damage to the environment, either directly or in reaction with other pollutants, due to their presence in elevated concentrations in the atmosphere. Such pollutants have been identified and regulated as part of the overall endeavor to prevent further deterioration and facilitate improvement in the air quality with the SFBAAB. The criteria air pollutants for which national and state standards have been promulgated and that are most relevant to current air quality planning and regulation in the SFBAAB include carbon monoxide (CO), ozone (O_3), particulate matter (PM), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), lead, sulfates, and hydrogen sulfide (H_2S). These pollutants, as well as volatile organic compounds (VOCs) and toxic air contaminants (TACs), are discussed in the following paragraphs. The national and state criteria pollutants and the applicable ambient air quality standards are listed in Table 1.

3.1.1.1 OZONE

O_3 is a strong-smelling, pale blue, reactive, toxic chemical gas consisting of three oxygen atoms. It is a secondary pollutant formed in the atmosphere by a photochemical process involving the sun's energy and O_3 precursors. These precursors are mainly oxides of nitrogen (NO_X) and VOCs. The maximum effects of precursor emissions on O_3 concentrations usually occur several hours after they are emitted and many miles from the source. Meteorology and terrain play major roles in O_3 formation, and ideal conditions occur during summer and early autumn on days with low wind speeds or stagnant air, warm temperatures, and cloudless skies. O_3 exists in the upper atmosphere O_3 layer (stratospheric ozone) and at the Earth's surface in the troposphere (ozone). The O_3 that the U.S. Environmental Protection Agency (EPA) and the California Air Resources Board (CARB) regulate as a criteria air pollutant is produced close to the ground level, where people live, exercise, and breathe. Ground-level O_3 is a harmful air pollutant that causes numerous adverse health effects and is thus considered "bad" O_3. Stratospheric, or "good" O_3 occurs naturally in the upper atmosphere, where it reduces the amount of ultraviolet light (i.e., solar radiation) entering the Earth's atmosphere. Without the protection of the beneficial stratospheric O_3 layer, plant and animal life would be seriously harmed.

O_3 in the troposphere causes numerous adverse health effects; short-term exposures (lasting for a few hours) can result in breathing pattern changes, reduction of breathing capacity, increased susceptibility to infections, inflammation of the lung tissue, and some immunological changes (EPA 2024a). These health problems are particularly acute in sensitive receptors such as the sick, the elderly, and young children.

3.1.1.2 NITROGEN DIOXIDE

NO_2 is a brownish, highly reactive gas that is present in all urban atmospheres. The major mechanism for the formation of NO_2 in the atmosphere is the oxidation of the primary air pollutant nitric oxide (NO), which is a colorless, odorless gas. NO_X plays a major role, together with VOCs, in the atmospheric reactions that produce O_3. NO_X is formed from fuel combustion under high temperature or pressure. In addition, NO_X is an important precursor to acid rain and may affect both terrestrial and aquatic ecosystems. The two major emissions sources are transportation and stationary fuel combustion sources such as electric utility and industrial boilers.

NO_2 can irritate the lungs, cause bronchitis and pneumonia, and lower resistance to respiratory infections (EPA 2024b).

3.1.1.3 CARBON MONOXIDE

CO is a colorless, odorless gas formed by the incomplete combustion of hydrocarbon, or fossil fuels. CO is emitted almost exclusively from motor vehicles, power plants, refineries, industrial boilers, ships, aircraft, and trains. In urban areas, such as the project location, automobile exhaust accounts for the majority of CO emissions. CO is a nonreactive air pollutant that dissipates relatively quickly; therefore, ambient CO concentrations generally follow the spatial and temporal distributions of vehicular traffic. CO concentrations are influenced by local meteorological conditions—primarily wind speed, topography, and atmospheric stability. CO from motor vehicle exhaust can become locally concentrated when surface-based temperature inversions are combined with calm atmospheric conditions, which is a typical situation at dusk in urban areas from November to February. The highest levels of CO typically occur during the colder months of the year, when inversion conditions are more frequent.

In terms of adverse health effects, CO competes with oxygen, often replacing it in the blood, reducing the blood's ability to transport oxygen to vital organs. The results of excess CO exposure can include dizziness, fatigue, and impairment of central nervous system functions (EPA 2024c).

3.1.1.4 SULFUR DIOXIDE

SO_2 is a colorless, pungent gas formed primarily from incomplete combustion of sulfur-containing fossil fuels. The main sources of SO_2 are coal and oil used in power plants and industries; as such, the highest levels of SO_2 are generally found near large industrial complexes. In recent years, SO_2 concentrations have been reduced by the increasingly stringent controls placed on stationary source emissions of SO_2 and limits on the sulfur content of fuels.

SO_2 is an irritant gas that attacks the throat and lungs and can cause acute respiratory symptoms and diminished ventilator function in children. When combined with particulate matter, SO_2 can injure lung tissue and reduce visibility and the level of sunlight. SO_2 can also yellow plant leaves and erode iron and steel (EPA 2025).

3.1.1.5 PARTICULATE MATTER

Particulate matter pollution consists of very small liquid and solid particles floating in the air and can include smoke, soot, dust, salts, acids, and metals. Particulate matter can form when gases emitted from industries and motor vehicles undergo chemical reactions in the atmosphere. $PM_{2.5}$ and PM_{10} represent fractions of particulate matter. Coarse particulate matter (PM_{10}) is 10 microns or less in diameter and is about 1/7 the thickness of a human hair. Major sources of PM_{10} include crushing or grinding operations; dust stirred up by vehicles traveling on roads; wood-burning stoves and fireplaces; dust from construction, landfills, and agriculture; wildfires and brush/waste burning; industrial sources; windblown dust from open lands; and atmospheric chemical and photochemical reactions. Fine particulate matter ($PM_{2.5}$) is 2.5 microns or less in diameter and is roughly 1/28 the diameter of a human hair. $PM_{2.5}$ results from fuel combustion (e.g., from motor vehicles and power generation and industrial facilities), residential fireplaces, and woodstoves. In addition, $PM_{2.5}$ can be formed in the atmosphere from gases such as sulfur oxides (SOx), NO_X, and VOCs.

$PM_{2.5}$ and PM_{10} pose a greater health risk than larger-size particles. When inhaled, these tiny particles can penetrate the human respiratory system's natural defenses and damage the respiratory tract. $PM_{2.5}$ and PM_{10} can increase the number and severity of asthma attacks, cause or aggravate bronchitis and other lung diseases, and reduce the body's ability to fight infections. Very small particles of substances such as lead, sulfates, and nitrates can cause lung damage directly or be absorbed into the bloodstream, causing damage elsewhere in the body. Additionally, these substances can transport adsorbed gases such as chlorides or ammonium into the lungs, also causing injury. Whereas PM_{10} tends to collect in the upper portion of the respiratory system, $PM_{2.5}$ is so tiny that it can penetrate deeper into the lungs and damage lung tissue. Suspended particulates also damage and discolor surfaces on which they settle and produce haze and reduce regional visibility.

People with influenza, people with chronic respiratory and cardiovascular diseases, and the elderly may suffer worsening illness and premature death as a result of breathing particulate matter. People with bronchitis can expect aggravated symptoms from breathing in particulate matter. Children may experience a decline in lung function due to breathing in $PM_{2.5}$ and PM_{10} (EPA 2024d).

3.1.1.6 LEAD

Lead in the atmosphere occurs as particulate matter. Sources of lead include leaded gasoline; the manufacturing of batteries, paints, ink, ceramics, and ammunition; and secondary lead smelters. Prior to 1978, mobile emissions were the primary source of atmospheric lead. Between 1978 and 1987, the phaseout of leaded gasoline reduced the overall inventory of airborne lead by nearly 95%. With the phaseout of leaded gasoline, secondary lead smelters, battery recycling, and manufacturing facilities are becoming lead-emissions sources of greater concern.

Prolonged exposure to atmospheric lead poses a serious threat to human health. Health effects associated with exposure to lead include gastrointestinal disturbances, anemia, kidney disease, and in severe cases, neuromuscular and neurological dysfunction. Of particular concern are low-level lead exposures during infancy and childhood. Such exposures are associated with decrements in neurobehavioral performance, including intelligence quotient (IQ) performance, psychomotor performance, reaction time, and growth. Children are highly susceptible to the effects of lead (EPA 2024e).

3.1.1.7 OTHERS

Sulfates. Sulfates are the fully oxidized form of sulfur, which typically occur in combination with metals or hydrogen ions. Sulfates are produced from reactions of SO_2 in the atmosphere. Sulfates can result in respiratory impairment, as well as reduced visibility.

Vinyl Chloride. Vinyl chloride is a colorless gas with a mild, sweet odor, which has been detected near landfills, sewage plants, and hazardous waste sites, due to the microbial breakdown of chlorinated solvents. Short-term exposure to high levels of vinyl chloride in air can cause nervous system effects, such as dizziness, drowsiness, and headaches. Long-term exposure through inhalation can cause liver damage, including liver cancer.

Hydrogen Sulfide. H_2S is a colorless and flammable gas that has a characteristic odor of rotten eggs. Sources of H_2S include geothermal power plants, petroleum refineries, sewers, and sewage treatment plants. Exposure to H_2S can result in nuisance odors, as well as headaches and breathing difficulties at higher concentrations.

3.1.2 Volatile Organic Compounds

VOCs are typically formed from combustion of fuels and/or released through evaporation of organic liquids. Some VOCs are also classified by the State of California (State) as TACs. While there are no specific VOC ambient air quality standards, VOC is a prime component (along with NO_X) of the photochemical processes by which such criteria pollutants as O_3, NO_2, and certain fine particles are formed. They are, thus, regulated as “precursors” to the formation of those criteria pollutants.

3.1.3 Toxic Air Contaminants

TACs refer to a diverse group of “non-criteria” air pollutants that can affect human health but have not have ambient air quality standards established for them. This is not because they are fundamentally different from the pollutants discussed above, but because their effects tend to be local rather than regional. TACs are identified by federal and state agencies based on a review of available scientific evidence. In the state of California, TACs are identified through a two-step process that was established in 1983 under the Toxic Air Contaminant Identification and Control Act. This two-step process of risk identification and risk management and reduction was designed to protect residents from the health effects of toxic substances in the air. In addition, the California Air Toxics "Hot Spots" Information and Assessment Act, Assembly Bill (AB) 2588, was enacted by the legislature in 1987 to address public concern over the release of TACs into the atmosphere. The law requires facilities emitting toxic substances to provide local air pollution control districts with information that will allow an assessment of the air toxics problem, identification of air toxics emissions sources, location of resulting hot spots, notification of the public exposed to significant risk, and development of effective strategies to reduce potential risks to the public over 5 years.

The federal TACs are air pollutants that may cause or contribute to an increase in mortality or serious illness, or which may pose a hazard to human health, although there are no ambient standards established for TACs. Many pollutants are identified as TACs because of their potential to increase the risk of developing cancer or other acute (short-term) or chronic (long-term) health problems. For TACs that are known or suspected carcinogens, the CARB has consistently found that there are no levels or thresholds below which exposure is risk free. Individual TACs vary greatly in the risks they present; at a given level of exposure, one TAC may pose a hazard that is many times greater than another. For certain TACs, a unit risk factor can be developed to evaluate cancer risk. For acute and chronic health effects, a similar factor, called a Hazard Index, is used to evaluate risk. TACs are identified and their toxicity is studied by the California Office of Environmental Health Hazard Assessment (OEHHA). Examples of TAC sources include industrial processes, dry cleaners, gasoline stations, paint and solvent operations, and fossil fuel combustion sources. The TAC that is relevant to the implementation of the project include diesel particulate matter (DPM).

DPM was identified as a TAC by the CARB in August 1998 (CARB 1998). DPM is emitted from both mobile and stationary sources. In California, on-road diesel-fueled vehicles contribute approximately 40% of the statewide total, with an additional 57% attributed to other mobile sources such as construction and mining equipment, agricultural equipment, and transport refrigeration units. Stationary sources, contributing about 3% of emissions, include shipyards, warehouses, heavy-equipment repair yards, and oil and gas production operations. Emissions from these sources are from diesel-fueled internal combustion engines. Stationary sources that report DPM emissions also include heavy construction, manufacturers of asphalt paving materials and blocks, and diesel-fueled electrical generation facilities.

Exposure to DPM can have immediate health effects. DPM can have a range of health effects including irritation of eyes, throat, and lungs, causing headaches, lightheadedness, and nausea. Exposure to DPM also causes inflammation in the lungs, which may aggravate chronic respiratory symptoms and increase the frequency or intensity of asthma attacks. Children, the elderly, and people with emphysema, asthma, and chronic heart and lung disease are especially sensitive to fine-particle pollution. In California, DPM has been identified as a carcinogen.

While not a TAC, fine particulate matter ($PM_{2.5}$) has been identified by the BAAQMD as a pollutant with potential non-cancer health effects that should be included when evaluating potential community health impacts under the CEQA. Diesel exhaust is the predominant TAC in air in urban areas and is estimated to contribute more than 85% of a 2006 inventory of Bay Area cancer risk from TACs (BAAQMD 2014). According to CARB, diesel exhaust is a complex mixture of gases, vapors, and fine particles. This complexity makes the evaluation of health effects of diesel exhaust a complex scientific issue. Some of the chemicals in diesel exhaust, such as benzene and formaldehyde, have been previously identified as TACs by the CARB, and are listed as carcinogens either under the State's Proposition 65 or under the Federal Hazardous Air Pollutants programs.

CARB has adopted and implemented a number of regulations to reduce emissions of DPM from stationary and mobile sources. Several of these regulatory programs affect medium- and heavy-duty diesel trucks that represent the bulk of DPM emissions from California highways. These regulations include the solid waste collection vehicle rule, in-use public and utility fleets, and the heavy-duty diesel truck and bus regulations. In 2008, CARB approved a new regulation to reduce emissions of DPM and nitrogen oxides from existing on-road, heavy-duty, diesel fueled vehicles, including those used at construction sites. The regulation requires affected vehicles to meet specific performance requirements between 2014 and 2023, with all affected diesel vehicles required to have 2010 model-year engines or equivalent by 2023. Therefore, as of January 1, 2023, all trucks and buses are 2010 or newer model year engines.

Naturally occurring asbestos areas are identified based on the type of rock found in the area. Asbestos-containing rocks found in California are ultramafic rocks, including serpentine rocks. Asbestos has been designated a TAC by the CARB and is a known carcinogen. When this material is disturbed in connection with construction, grading, quarrying, or surface mining operations, asbestos-containing dust can be generated. Exposure to asbestos can result in adverse health effects such as lung cancer, mesothelioma (cancer of the linings of the lungs and abdomen), and asbestosis (scarring of lung tissues that results in constricted breathing) (Van Gosen and Clinkenbeard 2011).

Naturally occurring asbestos (NOA) is prevalent in at least 44 of California's 58 counties. Asbestos is the name for a group of naturally occurring silicate minerals. Asbestos may be found in serpentine, other ultramafic and volcanic rock. When rock containing NOA is broken or crushed, asbestos may become released and become airborne, causing a potential health hazard. BAAQMD Regulation 11, Rule 2, controls emissions of asbestos to the atmosphere during demolition, renovation, milling and manufacturing and establish appropriate waste disposal procedures. The project is not located in a geologic setting with a potential to host asbestos and, therefore, an asbestos will not be an issue for this project (Department of Conservation 2000).

Table 1. State and Federal Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards	National Standards	
			Primary	Secondary
Ozone (O_3)	1 hour	0.09 ppm (180 µg/m³)	–	Same as primary
	8 hour	0.070 ppm (137 µg/m³)	0.070 ppm (137µg/m³)	
Respirable particulatematter (PM_{10})	24 hour	50 µg/m³	150 µg/m³	Same as primary
	Annual mean	20 µg/m³	–	
Fine particulate matter ($PM_{2.5}$)	24 hour	–	35 µg/m³	Same as primary
	Annual mean	12 µg/m³	9.0 µg/m³	15 µg/m³
Carbon monoxide (CO)	1 hour	20 ppm (23 µg/m³)	35 ppm (40 mg/m³)	–
	8 hour	9.0 ppm (10 mg/m³)	9 ppm (10 mg/m³)	–
Nitrogen dioxide (NO_2)	1 hour	0.18 ppm (339 µg/m³)	100 ppb (188 µg/m³)	–
	Annual mean	0.030 ppm (57 µg/m³)	53 ppm (100 µg/m³)	Same as primary
Sulfur dioxide (SO_2)	1 hour	0.25 ppm (655 µg/m³)	75 ppb (196 µg/m³)	–
	3 hour	–	–	0.5 ppm (1,300 µg/m³)
	24 hour	0.04 ppm (105 µg/m³)	0.14 ppm	–
	Annual mean	--	0.030 ppm	–
Lead	30-day average	1.5 µg/m³	–	–
	Calendarquarter	–	1.5 µg/m³	Same as primary
	Rolling 3-month average	–	0.15 µg/m³	Same as primary

Pollutant	Averaging Time	California Standards	National Standards	
			Primary	Secondary
Visibility reducing particles	8 hour	10-mile visibility standard, extinction of 0.23 per kilometer	No National Standards	
Sulfates	24 hour	25 µg/m³		
Hydrogen sulfide (H_2S)	1 hour	0.03 ppm (42 µg/m³)		
Vinyl chloride	24 hour	0.01 ppm (26 µg/m³)		

Source: CARB (2024a).

Notes: ppm = parts per million; ppb = parts per billion; µg/m³ = micrograms per cubic meter; – = no standard.

3.1.4 Odors

A qualitative assessment should be made as to whether a project has the potential to generate odorous emissions of a type or quantity that could meet the statutory definition for nuisance, i.e., odors “which cause detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which may endanger the comfort, repose, health, or safety of any such person or the public, or which may cause, or have a natural tendency to cause, injury or damage to business or property” (Health and Safety Code 41700). While offensive odors usually do not cause any physical harm, they can be unpleasant enough to lead to considerable distress among the public and generate citizen complaints to local governments and the BAAQMD. The Air District’s Regulation 7, Odorous Substances, places general limitations on odorous substances and specific emission limitations on certain odorous compounds. Odors are also regulated under the Air District Regulation 1, Rule 1-301, Public Nuisance, which states that “no person shall 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 the public; or which endangers the comfort, repose, health or safety of any such persons or the public, or which causes, or has a natural tendency to cause, injury or damage to business or property.” Under the Air District’s Rule 1-301, a facility that receives three or more violation notices within a 30-day period can be declared a public nuisance. The occurrence and severity of odor impacts depend on the nature, frequency, and intensity of the source; wind speed and direction; and the sensitivity of receptors.

3.2 Existing Air Quality Conditions in the Project Area

3.2.1 Regional Air Quality

The SFBAAB is characterized by complex terrain, consisting of coastal mountain ranges, inland valleys, and bays, which distort normal wind flow patterns. The Coast Range splits in the Bay Area, creating a western coast gap, the Golden Gate, and an eastern coast gap, the Carquinez Strait, which allow air to flow in and out of the Bay Area and the Central Valley. The climate is dominated by the strength and location of a semi-permanent, subtropical high-pressure cell. During the summer, the Pacific high-pressure cell is centered over the northeastern Pacific Ocean, resulting in stable meteorological conditions and a steady northwesterly wind flow. The northwesterly wind causes upwelling of cold ocean water from below the surface, producng a band of cold water off the California coast. The cool and moisture-laden air approaching the coast from the Pacific Ocean is further cooled by the cold-water band, resulting in condensation and the presence of fog and stratus clouds along the Northern California coast. In the winter, the Pacific high-pressure cell weakens and shifts southward, resulting in wind flow offshore, the absence of upwelling, and the occurrence of storms. Weak inversions coupled with moderate winds result in a low air pollution potential.

Summertime temperatures in the SFBAAB are determined in large part by the effect of differential heating between land and water surfaces. On summer afternoons, the temperatures at the coast can be 35 degrees Fahrenheit cooler than temperatures 15 to 20 miles inland; at night, this contrast usually decreases to less than 10 degrees Fahrenheit. In the winter, the relationship of minimum and maximum temperatures is reversed. During the daytime the temperature contrast between the coast and inland areas is small, whereas at night the variation in temperature is large.

The SFBAAB is characterized by moderately wet winters and dry summers. Winter rains (November through March) account for about 75% of the average annual rainfall. The amount of annual precipitation can vary greatly from one part of the SFBAAB to another, even within short distances. In general, total annual rainfall can reach 40 inches in the mountains, but it is often less than 16 inches in sheltered valleys. During rainy periods, ventilation (rapid horizontal movement of air and injection of cleaner air) and vertical mixing (an upward and downward movement of air) are usually high, and thus pollution levels tend to be low (i.e., air pollutants are dispersed more readily into the atmosphere rather than accumulating under stagnant conditions). However, during the winter, frequent dry periods do occur, where mixing and ventilation are low and pollutant levels build up.

3.2.2 Regional Attainment Status

Depending on whether the applicable ambient air quality standards are met or exceeded, the air basin is classified on a federal and state level as being in “attainment” or “nonattainment.” The EPA and CARB determine the air quality attainment status of designated areas by comparing ambient air quality measurements from state and local ambient air monitoring stations with the National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS). These designations are determined on a pollutant-by-pollutant basis. Consistent with federal requirements, an unclassifiable/unclassified designation is treated as an attainment designation. The SFBAAB and San Mateo County are currently designated a nonattainment area for California and National O_3 and California and National $PM_{2.5}$. Therefore, is considered an “attainment/unclassified” area for all other pollutants (EPA 2024f).

3.2.3 Local Air Quality

Air pollutants emissions are generated in the local vicinity by stationary and area-wide sources (such as commercial and industrial activity, space and water heating, landscape maintenance, consumer products) and mobile sources primarily consisting of automobile traffic. Area-wide sources are the primary source of pollutants in the local vicinity.

3.2.3.1 EXISTING CRITERIA POLLUTANT LEVELS AT NEARBY MONITORING STATIONS

Existing levels of ambient air quality and historical trends and projections in the vicinity of the project site have been documented and measured by the BAAQMD. BAAQMD has over 30 stations distributed among the nine Bay Area counties. The nearest station is the Redwood City – 897 Barron Avenue Monitoring Station, which monitors O_3, CO, NO_2, and $PM_{2.5}$. Data from this monitoring station are summarized in Table 2. The data show one violation of the federal $PM_{2.5}$ standard. In recent years, California has been plagued by an unprecedented number of wildfires that have produced dense palls of smoke in the Bay Area. The air quality data collected by BAAQMD in Table 2 include exceptional events, including wildfires. The GHG inventory for California for years 2018 through 2022 is presented in Table 3. The national and state criteria pollutants and the applicable ambient air quality standards are listed above in Table 1.

Table 2. Summary of Ambient Air Quality Monitoring

Pollutant	Averaging Period and Standards	Year		
		2021	2022	2023
O_3	Maximum 1-hour concentration (ppm)	0.085	0.079	0.089
	Days exceeding CAAQS (0.09 ppm)	0	0	0
	Maximum 8-hour concentration (ppm)	0.063	0.061	0.061
	Days exceeding NAAQS (0.07 ppm)	0	0	0
	Days exceeding CAAQS (0.07 ppm)	0	0	0
CO	Maximum 1-hour concentration (ppm)	1.6	1.8	1.8
	Days exceeding CAAQS (20 ppm)	0	0	0
	Maximum 3-hour concentration (ppm)	0.9	1.0	1.0
	Days exceeding CAAQS (9 ppm)	0	0	0
NO_2	Maximum 1-hour concentration (ppm)	0.0405	0.0438	0.0552
	Days exceeding CAAQS (0.18 ppm)	0	0	0
$PM_{2.5}$	Maximum 24-hour concentration (μg/m^3)	30.1	27.4	41.0
	Days exceeding NAAQS (35 μg/m^3)	0	0	1

Source: CARB (2024b). Data were obtained from the Redwood City – 897 Barron Avenue Monitoring Station.
Notes: ppm = parts per million; μg/m^3 = micrograms per cubic meter.

BAAQMD also provides data that show areas in the SFBAAB that have elevated pollution levels and are identified as impacted areas. According to BAAQMD's Community Risk Evaluation Program maps, the project site is not within an impacted area.

Table 3. California Greenhouse Gas Inventory

Parameter	Unit*	Year				
		2018	2019	2020	2021	2022
Transportation	$MMTCO_2e$	164.8	161.7	135.2	145.1	139.9
	Percentage	40.2%	40.1%	36.7%	38.2%	37.7%
Electric power	$MMTCO_2e$	65.0	60.2	59.5	62.3	59.8
	Percentage	15.8%	14.9%	16.1%	16.4%	16.1%
Industrial	$MMTCO_2e$	82.3	80.9	73.6	74.2	72.7
	Percentage	20.0%	20.0%	20.0%	19.5%	19.6%
Commercial and residential	$MMTCO_2e$	37.5	40.6	39.0	38.8	39.5
	Percentage	9.1%	10.1%	10.6%	10.2%	10.6%
Agriculture	$MMTCO_2e$	32.0	31.2	31.4	30.4	29.8
	Percentage	7.8%	7.7%	8.5%	8.0%	8.0%
High global warming potential	$MMTCO_2e$	20.6	20.8	21.3	21.3	21.3
	Percentage	5.0%	5.1%	5.8%	5.6%	5.7%
Recycle and waste	$MMTCO_2e$	8.2	8.3	8.5	8.3	8.2
	Percentage	2.0%	2.0%	2.3%	2.2%	2.2%
Total net emissions	**$MMTCO_2e$**	**410.5**	**403.7**	**368.5**	**380.4**	**371.1**

Source: California GHG Inventory for 2000–2022 (CARB 2023).
* $MMTCO_2e$ = million metric tons carbon dioxide equivalent.

3.2.3.2 EXISTING HEALTH RISK IN THE PROJECT VICINITY

OEHHA, on behalf of the California EPA (CalEPA), provides a screening tool called CalEnviroScreen that can be used to help identify California communities disproportionately burdened by multiple sources of pollution. The project site is in Census Tract 6081613700, which has 8,999 people. To determine the existing level of TACs in the area, the CalEnviroScreen indicator that represents modeled air concentration of chemical releases from large facility emissions in and nearby the census tract was identified. This indicator uses the air concentration and toxicity of the chemical to determine the toxic release score. The data are averaged over 2017 through 2019, and the toxic release indicator scores range from 0 to 96,985. The score for this census tract is 113.43 and the toxic release percentile for this census tract is 25, meaning it is higher than 25% of the census tracts in California (OEHHA 2021).

The CalEnviroScreen for diesel particulate matter was also determined, as diesel particulate matter is also a TAC. This indicator represents how much diesel particulate matter is emitted into the air within and near the populated parts of the census tracts. The data from 2016 indicate that sources of diesel PM within and nearby the populated parts of this census tract emit 0.017 tons per year. The diesel PM percentile for this census tract is 6, meaning it is higher than 6% of the census tracts in California. Diesel emissions in California range between 0 and 15 tons per year. These indicators show that health risk in the project vicinity is low. Overall, according to CalEnviroScreen, the project site is in the 19th percentile, which means the project site has a less than average pollution burden in comparison to other communities within California (OEHHA 2021).

3.2.3.3 SENSITIVE USES

Some population groups, including children, the elderly, and acutely and chronically ill persons (especially those with cardiorespiratory diseases), are considered more sensitive to air pollution than others. A sensitive receptor is a person in the population who is particularly susceptible to health effects due to exposure to an air contaminant. The following are land uses where sensitive receptors are typically located:

- Schools, playgrounds, and childcare centers
- Long-term health care facilities
- Rehabilitation centers
- Convalescent centers
- Hospitals
- Retirement homes
- Residences

Sensitive receptors (residences) are located approximately 1,200 feet east of the project site as shown in Figure 2. Short-term (6 months for Phase 1 and 12 months for Phase 2) construction activities could result in temporary increases in pollutant concentrations. The construction-related emissions would be short term and at different locations within the project site. Although Phase 1 and Phase 2 construction would occur over 6 months and 12 months, respectively, construction at any one site would last for a much shorter time. The limited duration and limited quantities of construction emissions ensure that no individual receptor would be exposed to substantial pollutant concentrations. During construction, the BAAQMD standard control measures would minimize construction impacts by reducing dust and exhaust emissions.

3.3 Greenhouse Gas Setting

Global climate change refers to the changes in average climatic conditions on Earth as a whole, including changes in temperature, wind patterns, precipitation, and storms. Global warming, a related concept, is the observed increase in the average temperature of the Earth's atmosphere and oceans in recent decades. There is a general scientific consensus that global climate change is occurring, caused in whole or in part by increased emissions of GHGs that keep the Earth's surface warm by trapping heat in the Earth's atmosphere, in much the same way as glass traps heat in a greenhouse. The Earth's climate is changing because human activities, primarily the combustion of fossil fuels, are altering the chemical composition of the atmosphere through the buildup of GHGs. GHGs are released by the combustion of fossil fuels, land clearing, agriculture, and other activities, and lead to an increase in the greenhouse effect. While climate change has been a concern for several decades, the establishment of the Intergovernmental Panel on Climate Change (IPCC) by the United Nations and World Meteorological Organization in 1988 has led to increased efforts devoted to GHG emissions reduction and climate change research and policy.

Regarding the adverse effects of global warming, as reported by Assembly Bill 2538: "Global warming poses a serious threat to the economic well-being, public health, natural resources and the environment of California." Over the past few decades, energy intensity of the national and state economy has been declining due to the shift to a more service-oriented economy. California ranked fifth lowest among the States in carbon dioxide (CO_2) emissions from fossil fuel consumption per unit of gross state product. However, in terms of total CO_2 emissions, California is second only to Texas in the nation and is the 16th largest source of climate change emissions in the world, exceeding most nations.

3.3.1 Greenhouse Gas Background

GHGs include CO_2, methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). Carbon is the most abundant GHG. Other GHGs are less abundant but have higher global warming potential than does CO_2. Thus, emissions of other GHGs are frequently expressed in the equivalent mass of CO_2, denoted as CO_2e. Forest fires, decomposition, industrial processes, landfills, and consumption of fossil fuels for power generation, transportation, heating, and cooking are the primary sources of GHG emissions. The primary GHGs attributed to global climate change are described below.

3.3.1.1 CARBON DIOXIDE (CO_2)

In the atmosphere, carbon generally exists in its oxidized form, as CO_2. Natural sources of CO_2 include the respiration (breathing) of humans, animals, and plants, volcanic outgassing, decomposition of organic matter, and evaporation from the oceans. Anthropogenic sources of CO_2 include the combustion of fossil fuels and wood, waste incineration, mineral production, and deforestation. Anthropogenic sources of CO_2 amount to over 30 billion tons per year, globally (Friedlingstein et al. 2022). Natural sources release substantially larger amounts of CO_2. Nevertheless, natural removal processes, such as photosynthesis by land and ocean-dwelling plant species, cannot keep pace with this extra input of human-made CO_2, and, consequently, the gas is building up in the atmosphere.

3.3.1.1.1 Methane (CH_4)

CH_4 is produced when organic matter decomposes in environments lacking sufficient oxygen. Natural sources include wetlands, termites, and oceans. Decomposition occurring in landfills accounts for the majority of human-generated CH_4 emissions in California and in the United States as a whole. Agricultural processes such as intestinal fermentation, manure management, and rice cultivation are also significant sources of CH_4 in California.

3.3.1.1.2 Nitrous Oxide (N_2O)

N_2O is produced naturally by a wide variety of biological sources, particularly microbial action in soils and water. Tropical soils and oceans account for much of natural source emissions. N_2O is a product of the reaction that occurs between nitrogen and oxygen during fuel combustion. Both mobile and stationary combustion produce N_2O, and the quantity emitted varies according to the type of fuel, technology, and pollution control device used, as well as maintenance and operating practices. Agricultural soil management and fossil fuel combustion are the primary sources of human-generated N_2O emissions in California.

3.3.1.1.3 Hydrofluorocarbons, Perfluorocarbons, Sulfur Hexafluoride

HFCs are primarily used as substitutes for ozone-depleting substances regulated under the Montreal Protocol (1987), an international treaty that was approved on January 1, 1989, and was designated to protect the ozone layer by phasing out the production of several groups of halogenated hydrocarbons believed to be responsible for ozone depletion. PFCs and SF_6 are emitted from various industrial processes, including aluminum smelting, semiconductor manufacturing, electric power transmission and distribution, and magnesium casting. There is no primary aluminum or magnesium production in California; however, the rapid growth in the semiconductor industry leads to greater use of PFCs.

The magnitude of the impact on global warming differs among the GHGs. The effect each GHG has on climate change is measured as a combination of the volume of its emissions, and its global warming potential (GWP). GWPs are one type of simplified index based on radiative properties and used to estimate the potential future impacts of emissions of different gases upon the climate system, expressed as a function of how much warming would be caused by the same mass of CO_2. Thus, GHG emissions are typically measured in terms of pounds or tons of CO_2 equivalents (CO_2e). GWPs are based on a number of factors, including the radiative efficiency (heat-absorbing ability) of each gas relative to that of CO_2, as well as the decay rate of each gas (the amount removed from the atmosphere over a given number of years) relative to that of CO_2. The larger the GWP, the more that a given gas warms the Earth compared to CO_2 over that time period. HFCs, PFCs, and SF_6 have a greater GWP than does CO_2. In other words, these other GHGs have a greater contribution to global warming than does CO_2 on a per-mass basis. However, CO_2 has the greatest impact on global warming because of the relatively large quantities of CO_2 emitted into the atmosphere.

A summary of the atmospheric lifetime and GWP of selected gases is presented in Table 4. As indicated in this table, GWPs range from 1 to 23,500 based on IPCC Assessment Reports. IPCC has released three assessment reports (AR4, AR5, and AR6) with updated GWPs; however, CARB reports the statewide GHG inventory using the AR4 GWPs, which is consistent with international reporting standards. By applying the GWP ratios, project-related CO_2e emissions can be tabulated in metric tons per year.

Table 4. Global Warming Potentials

Greenhouse Gas	GWP Values for 100-Year Time Horizon		
	AR4*	AR5	AR6
Carbon dioxide (CO_2)	1	1	1
Methane (CH_4)	25	28	Fossil origin – 29.8 Non-fossil origin – 27.2
Nitrous oxide (N_2O)	298	265	273
Select hydrofluorocarbons (HFCs)	124–14,800	4–12,400	–
Sulfur hexafluoride (SF_6)	22,800	23,500	–

Sources: IPCC (2007, 2013, 2021).

* For consistency with the EPA and its Inventory of Greenhouse Gas Reporting, we have represented values from AR4 of the IPCC report in this report.

3.3.2 Greenhouse Gas Emissions Inventories

3.3.2.1 UNITED STATES GHG EMISSIONS

According to the EPA's *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990–2022* (EPA 2024g), total gross U.S. GHG emissions were 6,343.2 million metric tons of CO_2e in 2022. Total gross U.S. emissions decreased by 3.0% from 1990 to 2022, down from a high of 15.2 percent above 1990 levels in 2007. Gross emissions increased from 2021 to 2022 by 0.2% (14.4 million metric tons [MMT] CO_2e). Net emissions (including sinks) were 5,489.0 MMTCO_2e in 2022. Overall, net emissions increased by 1.3% from 2021 to 2022 and decreased by 16.7% from 2005 levels. Between 2021 and 2022, the increase in total GHG emissions was driven largely by an increase in CO_2 emissions from fossil fuel combustion across most end-use sectors due in part to increased energy use from the continued rebound of economic activity after the height of the COVID-19 pandemic. In 2022, CO_2 emissions from fossil fuel combustion increased by 1.0% relative to the previous year and were 1.1% below emissions in 1990. Carbon dioxide emissions from natural gas use increased by 5.2% (84.8 MMTCO_2e.) from 2021, while CO_2 emissions from coal consumption decreased by 6.1% (58.6 MMTCO_2e.) from 2021 to 2022. The increase in natural gas consumption and associated emissions in 2022 is observed across all sectors except U.S. Territories, while the coal decrease is due to reduced use in the electric power sector. Emissions from petroleum use also increased by 0.9% (19.0 MMTCO_2e.) from 2021 to 2022.

3.3.2.2 STATEWIDE GHG EMISSIONS

According to California's 2000–2022 GHG emissions inventory, California emitted 371.1 MMTCO_2e in 2022 (CARB 2023). The sources of GHG emissions in California include transportation, industrial uses, electric power production from both in-state and out-of-state sources, commercial and residential uses, agriculture, high global-warming potential substances, and recycling and waste. The California GHG emission source categories (as defined in CARB's 2008 Scoping Plan) and their relative contributions in 2022 are presented in Table 3. Total GHG emissions in 2022 were approximately 42.9 MMTCO_2e less than were 2016 emissions. The 2016 statewide GHG inventory fell below 1990 levels, consistent with AB 32. The declining trend in GHG emissions, coupled with programs that will continue to provide additional GHG reductions going forward, demonstrates that California will continue to reduce emissions below the 2020 target of 431 MMTCO_2e (CARB 2023).

4 REGULATORY SETTING

Federal, state, and local agencies have set ambient air quality standards for certain air pollutants through statutory requirements and have established regulations and various plans and policies to maintain and improve air quality, as described below.

4.1 Federal

4.1.1 Federal Clean Air Act

4.1.1.1 AIR QUALITY

The federal Clean Air Act (CAA), which was passed in 1970 and last amended in 1990, forms the basis for the national air pollution control effort. The CAA delegates primary responsibility for clean air to the EPA. The EPA develops rules and regulations to preserve and improve air quality and delegates specific responsibilities to state and local agencies. Under the act, the EPA has established the NAAQS for six criteria air pollutants that are pervasive in urban environments and for which state and national health-based ambient air quality standards have been established. O_3, CO, NO_2, SO_2, lead, and particulate matter (PM_{10} and $PM_{2.5}$) are the six criteria air pollutants. O_3 is a secondary pollutant; NO_X and VOCs are of particular interest as they are precursors to O_3 formation. The NAAQS are divided into primary and secondary standards; the primary standards are set to protect human health within an adequate margin of safety, and the secondary standards are set to protect environmental values, such as plant and animal life. The standards for all criteria pollutants are presented in Table 1.

The CAA requires the EPA to designate areas as attainment, nonattainment, or maintenance (previously nonattainment and currently attainment) for each criteria pollutant based on whether the NAAQS have been achieved. The act also mandates that the State submit and implement a State Implementation Plan for areas not meeting the NAAQS. These plans must include pollution control measures that demonstrate how the standards will be met.

4.1.1.2 GREENHOUSE GAS EMISSIONS

The Supreme Court of the United States (SCOTUS) ruled in Massachusetts v. Environmental Protection Agency, 127 S.Ct. 1438 (2007), that CO_2 and other GHGs are pollutants under the federal CAA, which the EPA must regulate if it determines they pose an endangerment to public health or welfare. SCOTUS did not mandate that the EPA enact regulations to reduce GHG emissions. Instead, SCOTUS found that the EPA could avoid taking action if it found that GHGs do not contribute to climate change or if it offered a “reasonable explanation” for not determining that GHGs contribute to climate change.

On April 17, 2009, the EPA issued a proposed finding that GHGs contribute to air pollution that may endanger public health or welfare. On April 24, 2009, the proposed rule was published in the Federal Register under Docket ID No. EPA-HQ-OAR-2009~0171. The EPA stated that high atmospheric levels of GHGs “are the unambiguous result of human emissions and are very likely the cause of the observed increase in average temperatures and other climatic changes.” The EPA further found that “atmospheric concentrations of greenhouse gases endanger public health and welfare within the meaning of Section 202 of the Clean Air Act.” The findings were signed by the EPA Administrator on December 7, 2009. The final findings were published in the Federal Register on December 15, 2009. The final rule was effective on January 14, 2010. While these findings alone do not impose any requirements on industry or other entities, this action is a prerequisite to regulatory actions by the EPA, including, but not limited to, GHG emissions standards for light-duty vehicles.

On July 20, 2011, the EPA published its final rule deferring GHG permitting requirements for CO_2 emissions from biomass-fired and other biogenic sources until July 21, 2014. Environmental groups challenged the deferral. In September 2011, EPA released an “Accounting Framework for Biogenic CO_2 Emissions from Stationary Sources,” which analyses accounting methodologies and suggests implementation for biogenic CO_2 emitted from stationary sources.

On April 4, 2012, the EPA published a proposed rule to establish, for the first time, a new source performance standard for GHG emissions. Under the proposed rule, new fossil fuel–fired generating units larger than 25 megawatts are required to limit emissions to 1,000 pounds of CO_2 per megawatt-hour on an average annual basis, subject to certain exceptions.

4.1.2 Toxic Substance Control Act

The Toxic Substances Control Act (TSCA) of 1976 provides the EPA with authority to require reporting, record-keeping and testing requirements, and restrictions relating to chemical substances and/or mixtures. TSCA became law on October 11, 1976, and became effective on January 1, 1977. The TSCA authorized the EPA to secure information on all new and existing chemical substances, as well as to control any of the substances that were determined to cause unreasonable risk to public health or the environment.

Congress later added additional titles to the TSCA, with this original part designated at Title I – Control of Hazardous Substances. TSCA regulatory authority and program implementation rests predominantly with the federal government (i.e., the EPA). However, the EPA can authorize States to operate their own, EPA-authorized programs for some portions of the statute. TSCA Title IV allows States the flexibility to develop accreditation and certification programs and work practice standards for lead-related inspection, risk assessment, renovation, and abatement that are at least as protective as existing federal standards.

4.1.3 National Emission Standards for Hazardous Air Pollutants (Asbestos)

The EPA's air toxics regulation for asbestos is intended to minimize the release of asbestos fibers during activities involving the handling of asbestos. Asbestos was one of the first hazardous air pollutants regulated under the air toxics program as there are major health effects associated with asbestos exposure (lung cancer, mesothelioma, and asbestosis). On March 31, 1971, the EPA identified asbestos as a hazardous pollutant, and on April 6, 1973, EPA promulgated the Asbestos National Emission Standards for Hazardous Air Pollutants (NESHAP), currently found in 40 Code of Federal Regulations 61(M). The Asbestos NESHAP has been amended several times, most comprehensively in November 1990. In 1995, the rule was amended to correct cross-reference citations to Occupational Safety and Health Administration, Department of Transportation, and other EPA rules governing asbestos. Air toxics regulations under the CAA have guidance on reducing asbestos in renovation and demolition of buildings; institutional, commercial, and industrial building; large-scale residential demolition; exceptions to the asbestos removal requirements; asbestos control methods; waste disposal and transportation; and milling, manufacturing, and fabrication.

4.2 State

4.2.1 California Clean Air Act

The California Clean Air Act (CCAA) was adopted by the CARB in 1988. The CCAA requires that all air districts in the state endeavor to achieve and maintain CAAQS for O_3, CO, SO_2, and NO_2 by the earliest practical date. The CCAA specifies that districts focus particular attention on reducing the emissions from transportation and area-wide emission sources, and the act provides districts with authority to regulate indirect sources. The CARB and local air districts are responsible for achieving CAAQS, which are to be achieved through district-level Air Quality Management Plans that would be incorporated into the State Implementation Plan. In California, the EPA has delegated authority to prepare State Implementation Plans to CARB, which in turn, has delegated that authority to individual air districts. Each district plan is required to either 1) achieve a 5% annual reduction, averaged over consecutive 3-year periods, in district-wide emissions of each nonattainment pollutant or its precursors, or 2) to provide for implementation of all feasible measures to reduce emissions. Any planning effort for air quality attainment would thus need to consider both state and federal planning requirements.

The State began to set its ambient air quality standards (i.e., CAAQS) in 1969, under the mandate of the Mulford-Carrell Act. The CCAA requires all air districts of the state to achieve and maintain the CAAQS by the earliest practical date. Table 1 shows the CAAQS currently in effect for each of the criteria pollutants, as well as the other pollutants recognized by the State. As shown in Table 1, the CAAQS are generally more stringent than the corresponding federal standards and incorporate additional standards for sulfates, H_2S, vinyl chloride, and visibility-reducing particles.

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

- Title 20 California Code of Regulations (CCR): Appliance Energy Efficiency Standards. Title 20 of the CCR encompasses the Appliance Energy Efficiency Standards, which are designed to reduce energy consumption and promote energy efficiency across a wide range of appliances and equipment used in residential and commercial settings. These standards set minimum efficiency requirements for various appliances, including refrigerators, air conditioners, water heaters, and lighting products. The regulations aim to lower energy demand, reduce GHG emissions, and provide cost savings to consumers through decreased energy bills. Compliance with these standards is mandatory for manufacturers and retailers, ensuring that all products sold in California meet the specified energy efficiency criteria. The overarching goal is to support California's broader environmental and energy conservation objectives.
- Title 24, Part 6, CCR: Building Energy Efficiency Standards - California Energy Code. Energy consumption by new buildings in California is regulated by the Building Energy Efficiency Standards, in Part 6 of Title 24 of the CCR, known as the Energy Code. The California Energy Commission (CEC) first adopted the Building Energy Efficiency Standards for Residential and Non-residential Buildings in 1978 in response to a legislative mandate to reduce energy consumption in the State. The Energy Code is updated every 3 years, with the most recent update consisting of the 2022 Energy Code that became effective January 1, 2023. Mid-cycle supplements to the 2022 Code will become effective on July 1, 2024. The efficiency standards apply to both new construction and rehabilitation of both residential and nonresidential buildings and regulate energy consumed for heating, cooling, ventilation, water heating, and lighting. The building efficiency standards are enforced through the local building permit process. Local government agencies may adopt and enforce energy standards for new buildings, provided these standards meet or exceed those provided in the Energy Code and the California Green Building Standards Code.
- Title 24, Part 11, CCR: Green Building Standards Code. In 2010, the California Building Standards Commission adopted Part 11 of the Title 24 Building Energy Efficiency Standards, referred to as the California Green Building Standards Code (CALGreen). CALGreen took effect on January 1, 2011. CALGreen is updated regularly, with the most recent update consisting of the 2022 CALGreen Code standards that became effective January 1, 2023. CALGreen established mandatory measures for residential and nonresidential building construction and encouraged sustainable construction practices in the following five categories: 1) planning and design, 2) energy efficiency, 3) water efficiency and conservation, 4) material conservation and resource efficiency, and 5) indoor environmental quality. Although CALGreen was adopted as part of the State's efforts to reduce GHG emissions, CALGreen standards have co-benefits of reducing energy consumption from residential and nonresidential buildings subject to the standard.

4.2.2 California Code of Regulations

The CCR is the official compilation and publication of regulations adopted, amended, or repealed by the state agencies pursuant to the Administrative Procedure Act. The CCR includes regulations that pertain to air quality emissions. Specifically, Section 2485 in Title 13 of the CCR states that the idling of all diesel-fueled commercial vehicles (weighing over 10,000 pounds) during construction shall be limited to 5 minutes at any location. In addition, Section 93115 in Title 17 of the CCR states that operation of any stationary, diesel-fueled, compression-ignition engine shall meet specified fuel and fuel additive requirements and emission standards.

4.2.3 Toxic Air Contaminants Regulations

California regulates TACs primarily through the Toxic Air Contaminant Identification and Control Act of 1983 (AB 1807, also known as the Tanner Air Toxics Act) and the Air Toxics Hot Spots Information and Assessment Act of 1987 (AB 2588 – Connelly). In the early 1980s, the CARB established a statewide comprehensive air toxics program to reduce exposure to air toxics. The Tanner Air Toxics Act (AB 1807) created California's program to reduce exposure to air toxics. The Air Toxics "Hot Spots" Information and Assessment Act (AB 2588) supplements the AB 1807 program by requiring a statewide air toxics inventory, notification of people exposed to a significant health risk, and facility plans to reduce these risks (CARB 2011).

In August 1998, CARB identified DPM emissions from diesel-fueled engines as a TAC. In September 2000, CARB approved a comprehensive diesel risk reduction plan to reduce emissions from both new and existing diesel-fueled engines and vehicles (CARB 2000). The goal of the plan is to reduce diesel PM_{10} (inhalable particulate matter) emissions and the associated health risk by 75% in 2010 and by 85% by 2020. The plan identified 14 measures that target new and existing on-road vehicles (e.g., heavy-duty trucks and buses, etc.), off-road equipment (e.g., graders, tractors, forklifts, sweepers, and boats), portable equipment (e.g., pumps, etc.), and stationary engines (e.g., stand-by power generators, etc.). During the control measure phase, specific statewide regulations designed to further reduce DPM emissions from diesel-fueled engines and vehicles were evaluated and developed. The goal of each regulation is to make diesel engines as clean as possible by establishing state-of-the-art technology requirements or emission standards to reduce DPM emissions. The project would be required to comply with applicable diesel control measures.

Under AB 2588, TAC 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 through notices and public meetings.

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

4.2.4 Executive Order S-3-05, Executive Order B-30-15, and Executive Order B-55-18

In 2005, the governor issued Executive Order (EO) S-3-05, establishing statewide GHG emissions reduction targets, as well as a process to ensure the targets are met. The order directed the Secretary of the CalEPA to report every 2 years on the State's progress toward meeting the governor's GHG emission reduction targets. The statewide GHG targets established by Executive Order S-3-05 are as follows:

- By 2010, reduce to 2000 emission levels.
- By 2020, reduce to 1990 emission levels.
- By 2050, reduce to 80% below 1990 levels.

EO B-30-15, issued by Governor Brown in April 2015, established an additional statewide policy goal to reduce GHG emissions 40% below their 1990 levels by 2030. Reducing GHG emissions by 40% below 1990 levels in 2030 and by 80% below 1990 levels by 2050 (consistent with EO S-3-05) aligns with scientifically established levels needed in the United States to limit global warming below 2 degrees Celsius.

The State Legislature adopted equivalent 2020 and 2030 statewide targets in the California Global Warming Solutions Act of 2006 (also known as AB 32) and Senate Bill (SB) 32, respectively, both of which are discussed below. However, the legislature has not yet adopted a target for the 2050 horizon year. As a result of EO S-3-05, the California Action Team (CAT), led by the Secretary of CalEPA, was formed. The CAT is made of representatives from a number of state agencies and was formed to implement global warming emission reduction programs and to report on the progress made toward meeting statewide targets established under the EO. The CAT reported several recommendations and strategies for reducing GHG emissions and reaching the targets established in the EO.

The CAT stated that "smart" land use is an umbrella term for strategies that integrate transportation and land use decisions. Such strategies generally encourage jobs/housing proximity, promote transit-oriented development, and encourage high-density residential/commercial development along transit corridors. These strategies develop more efficient land use patterns within each jurisdiction or region to match population increases, workforce, and socioeconomic needs for the full spectrum of the population. "Intelligent transportation systems" is the application of advanced technology systems and management strategies to improve operational efficiency of transportation systems and the movement of people, goods, and services.

EO B-55-18, issued by Governor Brown in September 2018, establishes a new statewide goal to achieve carbon neutrality as soon as possible, but no later than 2045, and achieve and maintain net negative emissions thereafter. Based on this executive order, CARB would work with relevant state agencies to develop a framework for implementation and accounting that tracks progress toward this goal. The executive order also ensures that future scoping plans will identify and recommend measures to achieve the carbon neutrality goal.

4.2.5 Assembly Bill 32 – California Global Warming Solution Act

The California Global Warming Solutions Act of 2006 (also known as AB 32) commits the State to achieving the following:

- By 2010, reduce to 2000 GHG emission levels.
- By 2020, reduce to 1990 levels.

To achieve these goals, which are consistent with the California CAT GHG targets for 2010 and 2020, AB 32 mandates that the CARB establish a quantified emissions cap, institute a schedule to meet the cap, implement regulations to reduce statewide GHG emissions from stationary sources consistent with the CAT strategies, and develop tracking, reporting, and enforcement mechanisms to ensure that reductions are achieved. In order to achieve the reductions, AB 32 requires CARB to adopt rules and regulations in an open, public process that achieves the maximum technologically feasible and cost-effective GHG reductions.

SB 32, signed September 8, 2016, updates AB 32 to include an emissions reduction goal for the year 2030. Specifically, SB 32 requires CARB to ensure that statewide GHG emissions are reduced to 40% below the 1990 level by 2030. The new plan, outlined in SB 32, involves increasing renewable energy use, imposing tighter limits on the carbon content of gasoline and diesel fuel, putting more electric cars on the road, improving energy efficiency, and curbing emissions from key industries.

4.2.6 Climate Change Scoping Plan

In 2008, CARB approved a Climate Change Scoping Plan, as required by AB 32. Subsequently, CARB approved updates of the Climate Change Scoping Plan in 2014 (First Update) and 2017 (2017 Update), with the 2017 Update considering SB 32 (adopted in 2016) in addition to AB 32 (CARB 2014, 2017a). The First Update highlights California's progress toward meeting the "near-term" 2020 GHG emission reduction goals (to the level of 427 $MMTCO_2e$) defined in the original Scoping Plan. It also evaluates how to align the State's longer-term GHG reduction strategies with other State policy priorities, such as for water, waste, natural resources, clean energy and transportation, and land use. In November 2022, the final 2022 Scoping Plan Update and Appendices were released. This 2022 Scoping Plan Update assesses progress toward the statutory 2030 target, while laying out a path to achieving carbon neutrality no later than 2045 (CARB 2022). The 2022 Scoping Plan Update focuses on outcomes needed to achieve carbon neutrality by assessing paths for clean technology, energy deployment, natural and working lands, and others, and is designed to meet the State's long-term climate objectives and support a range of economic, environmental, energy security, environmental justice, and public health priorities.

4.2.7 Assembly Bill 197

AB 197, signed September 8, 2016, is a bill linked to SB 32 that prioritizes efforts to reduce GHG emissions in low-income and minority communities. AB 197 requires the CARB to make available, and update at least annually on its website, the emissions of GHGs, criteria pollutants, and TACs for each facility that reports to CARB and air districts. In addition, AB 197 adds two members of the legislature to the CARB board as ex officio, non-voting members, and also creates the Joint Legislative Committee on Climate Change Policies to ascertain facts and make recommendations to the legislature concerning the State's programs, policies, and investments related to climate change.

4.2.8 Cap-and-Trade Program

The 2008 Climate Change Scoping Plan identified a cap-and-trade program as one of the strategies for California to reduce GHG emissions. The cap-and-trade program is a key element in California's climate plan. It sets a statewide limit on sources responsible for 85% of California's GHG emissions and establishes a price signal needed to drive long-term investment in cleaner fuels and more efficient use of energy. The cap-and-trade rules came into effect on January 1, 2013, and apply to large electric power plants and large industrial plants. In 2015, fuel distributors, including distributors of heating and transportation fuels, also became subject to the cap-and-trade rules. At that stage, the program encompassed around 360 businesses throughout California and nearly 85% of the state's total GHG emissions. Covered entities subject to the cap-and-trade program are sources that emit more than 25,000 metric tons CO_2e ($MTCO_2e$) per year. Triggering of the 25,000 $MTCO_2e$ per year "inclusion threshold" is measured against a subset of emissions reported and verified under the California Regulation for the Mandatory Reporting of Greenhouse Gas Emissions.

Under the cap-and-trade regulation, companies must hold enough emission allowances to cover their emissions and are free to buy and sell allowances on the open market. California held its first auction of GHG allowances on November 14, 2012. California's GHG cap-and-trade system was projected to reduce GHG emissions to 1990 levels by the year 2020 and would achieve an approximate 80% reduction from 1990 levels by 2050.

4.2.9 Assembly Bill 1493 (Pavley I)

AB 1493, passed in 2002, requires the development and adoption of regulations to achieve the maximum feasible reduction in GHG emitted by noncommercial passenger vehicles, light-duty trucks, and other vehicles used primarily for personal transportation in the state. CARB originally approved regulations to reduce GHG from passenger vehicles in September 2004; these took effect in 2009. On September 24, 2009, CARB adopted amendments to these regulations that reduce GHG emissions from new passenger vehicles from 2009 through 2016. Although setting emission standards on automobiles is solely the responsibility of the EPA, the federal CAA allows California to set state-specific emission standards on automobiles, and the State first obtains a waiver from the EPA. The comparison between the AB 1493 standards and the federal Corporate Average Fuel Economy standards was completed by CARB, and the analysis determined the California emission standards were 16% more stringent through the 2016 model year and 18% more stringent for the 2020 model year. CARB is also committed to further strengthening these standards beginning with 2020 model year vehicles, to obtain a 45% GHG reduction in comparison to 2009 model years.

In March 2020, the EPA issued the Safer Affordable Fuel-Efficient Vehicles Rule (SAFE) which would roll back fuel economy standards and revoke California's waiver. Under this rule, EPA would amend certain average fuel economy and GHG standards for passenger cars covering model years 2021 through 2026. In September 2019, the EPA withdrew the waiver that had previously been provided in California for the State's GHG and Zero Emission Vehicle (ZEV) programs under Section 209 of the Clean Air Act. The withdrawal of the waiver became effective on November 26th, 2019. In response, several states including California have a lawsuit challenging the withdrawal of the EPA waiver. These actions continue to be challenged in court. On January 20, 2021, President Biden issued an executive order directing all executive departments and agencies to take action, as appropriate, to address federal regulations and other actions taken during the previous 4 years that conflict with the administration's climate and environmental justice goals, which include SAFE.

4.2.10 Executive Order S-01-07 (California Low Carbon Fuel Standard)

EO S-01-07, the Low Carbon Fuel Standard (LCFS) (issued January 18, 2007), requires a reduction of at least 10% in the carbon intensity of California transportation fuels by 2020. Regulatory proceedings and implementation of the LCFS were directed to CARB. CARB released a draft version of the LCFS in October 2008. The final regulation was approved by the Office of Administrative Law and filed with the Secretary of State on January 12, 2010; the LCFS became effective on the same day.

The 2017 update has identified LCFS as a regulatory measure to reduce GHG emissions to meet the 2030 emissions target. In calculating statewide emissions and targets, the 2017 update has assumed the LCFS be extended to an 18% reduction in carbon intensity beyond 2020. On September 27, 2018, CARB approved a rulemaking package that amended the LCFS to relax the 2020 carbon intensity reduction from 10% to 7.5%, and to require a carbon intensity reduction of 20% by 2030.

4.2.11 Advanced Clean Car Regulations

In 2012, CARB approved the Advanced Clean Cars program, a new emissions control program for model years 2015 through 2025. The components of the advance clean car standards include the Low-Emission Vehicle regulations that reduce criteria pollutants and GHG emissions from light- and medium-duty vehicles, and the Zero Emission Vehicle regulation, which requires manufacturers to produce an increasing number of pure ZEVs, with provisions to also produce plug-in hybrid electric vehicles in the 2018 through 2025 model years period. In March 2017, CARB voted unanimously to continue with the vehicle GHG emission standards and the ZEV programs for cars and light trucks sold in California through 2025.

4.2.12 Senate Bill 375

SB 375 requires CARB to set regional emissions reduction targets for passenger vehicles. The Metropolitan Planning Organization for each region must then develop a Sustainable Communities Strategy (SCS) that integrates transportation, land use, and housing policies to plan how it will achieve the emissions target for its region. If the SCS is unable to achieve the regional GHG emissions reductions targets, then the Metropolitan Planning Organization is required to prepare an alternative planning strategy that shows how the GHG emissions reduction target can be achieved through alternative development patterns, infrastructure, and/or transportation measures.

As required under SB 375, CARB is required to update regional GHG emission targets every 8 years, with the most recent update formally adopted in March 2018. As part of the 2018 update, CARB has adopted a passenger vehicle–related GHG reduction target of 19% by 2035 for the Southern California Association of Governments region, which is more stringent than the previous reduction target of 13% for 2035.

4.2.13 Senate Bill 97

SB 97 was enacted in 2007. SB 97 required the Governor's Office of Planning and Research (OPR) to develop, and the Natural Resources Agency to adopt, amendments to the CEQA Guidelines addressing the analysis and mitigation of GHG emissions (OPR 2008, 2018). Those CEQA Guidelines amendments clarified several points, including the following:

- Lead agencies must analyze the GHG emissions of proposed projects and must reach a conclusion regarding the significance of those emissions.
- When a project's GHG emissions may be significant, lead agencies must consider a range of potential mitigation measures to reduce those emissions.
- Lead agencies must analyze potentially significant impacts associated with placing projects in hazardous locations, including locations potentially affected by climate change.
- Lead agencies may significantly streamline the analysis of GHGs on a project level by using a programmatic GHG emissions reduction plan meeting certain criteria.
- CEQA mandates analysis of a proposed project's potential energy use (including transportation-related energy), sources of energy supply, and ways to reduce energy demand, including through the use of efficient transportation alternatives.

As part of the administrative rulemaking process, the California Natural Resources Agency developed a Final Statement of Reasons explaining the legal and factual bases, intent, and purpose of the CEQA Guidelines amendments. The amendments to the CEQA Guidelines implementing SB 97 became effective on March 18, 2010. SB 97 applies to any environmental impact report (EIR), negative declaration, mitigated negative declaration, or other document required by CEQA, which has not been finalized.

4.3 Regional

4.3.1 Bay Area Air Quality Management District

The BAAQMD is the agency responsible for ensuring that the National and California AAQS are attained and maintained in the SFBAAB. Air quality conditions in the SFBAAB have improved significantly since the BAAQMD was created in 1955. The BAAQMD prepares air quality management plans to attain ambient air quality standards in the SFBAAB. The BAAQMD prepares ozone attainment plans for the National O_3 standard and clean air plans for the California O_3 standard. The BAAQMD prepares these air quality management plans in coordination with Association of Bay Area Governments and the Metropolitan Transportation Commission to ensure consistent assumptions about regional growth.

4.3.1.1 BAY AREA AIR QUALITY MANAGEMENT DISTRICT 2017 CLEAN AIR PLAN

BAAQMD adopted the *2017 Clean Air Plan: Spare the Air, Cool the Climate* (2017 Clean Air Plan) (BAAQMD 2017) on April 19, 2017, making it the most recently adopted comprehensive plan. The 2017 Clean Air Plan incorporates significant new scientific data, primarily in the form of updated emissions inventories, ambient measurements, new meteorological episodes, and new air quality modeling tools (CARB 2017b). The 2017 Clean Air Plan serves as an update to the adopted Bay Area 2010 Clean Air Plan and continues to provide the framework for SFBAAB to achieve attainment of the California and National AAQS. The 2017 Clean Air Plan updates the Bay Area's ozone plan, which is based on the "all feasible measures" approach to meet the requirements of the CCAA. It sets a goal of reducing health risk impacts to local communities by 20% between 2015 and 2020 and lays the groundwork for reducing GHG emissions in the Bay Area to meet the State's 2030 GHG reduction target and 2050 GHG reduction goal. It also includes a vision for the Bay Area in a post-carbon year 2050 that encompasses the following:

- Construct buildings that are energy efficient and powered by renewable energy.
- Walk, bicycle, and use public transit for the majority of trips and use electric-powered autonomous public transit fleets.
- Incubate and produce clean energy technologies.
- Live a low-carbon lifestyle by purchasing low-carbon foods and goods in addition to recycling and putting organic waste to productive use.

A multipollutant control strategy was developed to be implemented in the next 3 to 5 years to address public health and climate change and to set a pathway to achieve the 2050 vision. The control strategy includes 85 control measures to reduce emissions of ozone, particulate matter, TACs, and GHG from a full range of emission sources. These control measures cover the following sectors: 1) stationary (industrial) sources; 2) transportation; 3) energy; 4) agriculture; 5) natural and working lands; 6) waste management; 7) water; 8) super-GHG pollutants and 9) buildings. The proposed control strategy is based on the following key priorities:

- Reduce emissions of criteria air pollutants and toxic air contaminants from all key sources.
- Reduce emissions of "super-GHGs" such as methane, black carbon, and fluorinated gases.
- Decrease demand for fossil fuels (gasoline, diesel, and natural gas).
- Increase efficiency of the energy and transportation systems.
- Reduce demand for vehicle travel and high-carbon goods and services.
- Decarbonize the energy system.
- Make the electricity supply carbon-free.
- Electrify the transportation and building sectors.

4.3.1.2 COMMUNITY AIR RISK EVALUATION PROGRAM

The BAAQMD Community Air Risk Evaluation program was initiated in 2004 to evaluate and reduce health risks associated with exposure to outdoor TACs in the Bay Area, primarily DPM. The last update to this program was in 2014. Based on findings of the latest report, DPM was found to account for approximately 85% of the cancer risk from airborne toxics. Carcinogenic compounds from gasoline-powered cars and light duty trucks were also identified as significant contributors: 1,3-butadiene contributed 4% of the cancer risk-weighted emissions, and benzene contributed 3%. Collectively, five compounds—DPM, 1,3-butadiene, benzene, formaldehyde, and acetaldehyde—were found to be responsible for more than 90% of the cancer risk attributed to emissions. All these compounds are associated with emissions from internal combustion engines. The most important sources of cancer risk-weighted emissions were combustion-related sources of DPM, including on-road mobile sources (31%), construction equipment (29%), and ships and harbor craft (13%). Overall, cancer risk from TAC dropped by more than 50% between 2005 and 2015, when emissions inputs accounted for State diesel regulations and other reductions.

The major contributor to acute and chronic non-cancer health effects in the SFBAAB is acrolein (C_3H_4O). Major sources of acrolein are on-road mobile sources and aircraft near freeways and commercial and military airports (BAAQMD 2006). Currently CARB does not have certified emission factors or an analytical test method for acrolein. Since the appropriate tools needed to implement and enforce acrolein emission limits are not available, the Air District does not conduct health risk screening analysis for acrolein emissions (BAAQMD 2016).

4.3.1.3 ASSEMBLY BILL 617 COMMUNITY ACTION PLANS

AB 617 was signed into law in July 2017 to develop a new community-focused program to reduce exposure more effectively to air pollution and preserve public health in environmental justice communities. AB 617 directs CARB and all local air districts to take measures to protect communities disproportionally impacted by air pollution through monitoring and implementing air pollution control strategies.

On September 27, 2018, CARB approved BAAQMD’s recommended communities for monitoring and emission reduction planning. The State approved communities for year 1 of the program as well as communities that would move forward over the following 5 years. BAAQMD recommendations included all the Community Air Risk Evaluation areas, areas with large sources of air pollution (refineries, seaports, airports, etc.), areas identified via statewide screening tools as having pollution and/or health burden vulnerability, and areas with low life expectancy (BAAQMD 2019).

4.3.2 County of San Mateo 2020 Climate Action Plan

The San Mateo County 2022 Community Climate Action Plan (CCAP) (County of San Mateo 2022) outlines priority actions to achieve a 45% reduction of GHG emissions over 1990 levels by 2030 and carbon neutrality by 2040. The CCAP streamlines the development process by meeting the BAAQMD’s requirements for a Qualified GHG Reduction Strategy. The CCAP also supports the goals and policies of AB 32 –The California Global Warming Solutions Act of 2006. San Mateo County’s (the County’s) strategies and actions are structured around four focus areas: building energy, transportation, waste and working lands.

Buildings are the second largest contributor to GHG emissions in unincorporated areas of the County, accounting for 32% of all emissions. These emissions stem primarily from the use of natural gas in residential and commercial buildings.

Emissions in the transportation sector come from people driving vehicles (vehicle miles traveled or VMT) on roads within the county. In 2017, this represented 40% of the County's emissions inventory and remains the largest contributor when compared to the other sectors. Reducing this emissions source will require reducing VMT as well as increasing the community adoption of electric vehicles (EVs). While making this change will require multijurisdictional action beyond the County's jurisdiction, and will rely upon individual behavior change, the County can still play a critical role. San Mateo County can facilitate EV adoption, build the necessary charging infrastructure to enable widespread EV use, increase access to jobs, goods, and services in neighborhoods, help its communities shift to active transportation (human-powered forms of transportation including walking, rolling, and biking), and work in partnership to enhance and improve public transit access and ridership.

Waste produced in unincorporated communities is sent to Ox Mountain Landfill where the organic materials decompose and produce methane, which is a GHG. Waste represents a smaller share of overall county emissions at 26%. There are measures designed to prevent materials from entering the landfill through source reduction and waste diversion actions such as reducing waste generated, reusing materials, composting organics, and recycling.

Rangeland and cropland, including publicly and privately managed lands, comprise a large portion of the land base in California and in San Mateo County. These working lands have significant potential for sequestering carbon from the atmosphere, thus serving as a climate mitigation strategy. Active management of working lands can enhance the rate of carbon sequestration in soils and vegetation; therefore, carbon farming (i.e., the suite of practices that brings about more sequestration) has a critical role to play in helping San Mateo County develop resilience to climate change while simultaneously reducing atmospheric GHGs driving climate change.

4.3.3 County of San Mateo General Plan

The County of San Mateo General Plan (County of San Mateo 2013) is the County's vision for future development. It identifies goals, policies, and objectives to govern the physical development of the County. State law requires each city and county to adopt a General Plan with a minimum of seven elements: Land Use, Circulation, Housing, Conservation, Open-Space, Noise, and Safety. The San Mateo General Plan contains 17 chapters addressing each of the required elements and additional elements like transportation and climate. Many of the general plan policies affect air quality and GHG emissions for the County. For example, the General Plan Climate Change Element demonstrates San Mateo County's commitment to achieving energy efficiency and mitigating its impact on climate change by reducing GHG emissions consistent with state legislation.

4.3.4 California Coastal Act

California Coastal Act Section 30253(c) requires that new development in the Coastal Zone shall "be consistent with requirements imposed by an air pollution control district or the State Air Resources Board as to each particular development." In this case, the air pollution control district is BAAQMD.

5 THRESHOLDS OF SIGNIFICANCE

5.1 Air Quality

According to the environmental checklist presented in Appendix G of the State CEQA Guidelines, the project would have a significant impact on air quality if it would:

- conflict with or obstruct implementation of the applicable air quality plan;
- result in cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under applicable federal or state ambient air quality standards;
- expose sensitive receptors to substantial pollutant concentrations; or
- result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

A discussion of applicable thresholds of significance and significance determination follows.

The BAAQMD CEQA Air Quality Guidelines were prepared to assist in the evaluation of air quality impacts of projects and plans proposed within the Bay Area. The guidelines provide recommended procedures for evaluating potential air impacts during the environmental review process, consistent with CEQA requirements, and include recommended thresholds of significance, mitigation measures, and background air quality information. They also include recommended assessment methodologies for air toxics, odors, and GHG emissions. These thresholds are designed to establish the level at which air pollution emissions would cause significant environmental impacts under CEQA (Table 5).

Table 5. BAAQMD Regional (Mass Emission) Criteria Air Pollutant Significance Thresholds

Pollutant	Construction Phase	Operational Phase	
	Average Daily Emissions (pounds/day)	Average Daily Emissions (pounds/day)	Maximum Annual Emissions (tons/year)
ROG	54	54	10
NO_X	54	54	10
PM_{10}	82 (exhaust)	82	15
$PM_{2.5}$	82 (exhaust)	54	10
PM_{10} and $PM_{2.5}$ fugitive dust	Best Management Practices	None	None

Source: BAAQMD 2023.

Note: ROG = reactive organic gases.

Projects that do not exceed the emissions in Table 5 would not cumulatively contribute to health effects in the SFBAAB. If projects exceed the emissions in Table 5, emissions would cumulatively contribute to the nonattainment status and would contribute to elevating health effects associated with these criteria air pollutants. Known health effects related to ozone include worsening of bronchitis, asthma, and emphysema and a decrease in lung function. Health effects associated with particulate matter include premature death of people with heart or lung disease, nonfatal heart attacks, irregular heartbeat, decreased lung function, and increased respiratory symptoms. Reducing emissions would further contribute to reducing possible health effects related to criteria air pollutants.

However, for projects that exceed the emissions in Table 5, it is speculative to determine how exceeding the regional thresholds would affect the number of days the region is in nonattainment since mass emissions are not correlated with concentrations of emissions or with the number of additional individuals in the air basin who would be affected by the health effects cited above. The BAAQMD is the primary agency responsible for ensuring the health and welfare of individuals sensitive to elevated concentrations of air pollutants in the SFBAAB and, at the present time, it has not provided methodology to assess the specific correlation between mass emissions generated and the effect on health in order to address the issue raised in *Sierra Club v. County of Fresno (Friant Ranch, L.P.) (2018) 6 Cal.5th 502, Case No. S21978* (Friant Ranch).

Ozone concentrations depend on a variety of complex factors, including the presence of sunlight and precursor pollutants, natural topography, nearby structures that cause building downwash, atmospheric stability, and wind patterns. Because of the complexities of predicting ground-level ozone concentrations in relation to the NAAQS and CAAQS, it is speculative to link health risks to the magnitude of emissions exceeding the significance thresholds. To achieve the health-based standards established by the EPA, the air districts prepare air quality management plans that detail regional programs to attain the AAQS. However, if a project within the SFBAAB exceeds the regional significance thresholds, the project could contribute to an increase in health effects in the basin until such time as the attainment standards are met in the SFBAAB.

Congested intersections have the potential to create elevated concentrations of CO, referred to as CO hotspots. The significance criteria for CO hotspots are based on the California AAQS for CO, which are 9.0 parts per million (ppm) (8-hour average) and 20.0 ppm (1-hour average). With the turnover of older vehicles, introduction of cleaner fuels, and implementation of control technology, the SFBAAB is in attainment of the California and National AAQS, and CO concentrations in the SFBAAB have steadily declined. Because CO concentrations have improved, the BAAQMD does not require a CO hotspot analysis if the following criteria are met (CARB 2014):

- The project is consistent with an applicable congestion management program established by the County Congestion Management Agency for designated roads or highways, the regional transportation plan, and local congestion management agency plans.
- The project would not increase traffic volumes at affected intersections to more than 44,000 vehicles per hour.
- The project traffic would not increase traffic volumes at affected intersection to more than 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited (e.g., tunnel, parking garage, bridge underpass, natural or urban street canyon, below-grade roadway).

5.1.1 Toxic Air Contaminants

The BAAQMD's significance thresholds for local community risk and hazard impacts apply to both the siting of a new source and to the siting of a new receptor. Local community risk and hazard impacts are associated with TACs and $PM_{2.5}$ because emissions of these pollutants can have significant health impacts at the local level. The proposed project would generate TACs and $PM_{2.5}$ during construction activities that could elevate concentrations of air pollutants at the nearby residential, day care, and school-based sensitive receptors. The thresholds for construction-related local community risk and hazard impacts are the same as for project operations. BAAQMD has adopted screening tables for air toxics evaluation during construction (CARB 2017b). Construction-related TAC and $PM_{2.5}$ impacts should be addressed on a case-by-case basis, taking into consideration the specific construction-related characteristics of each project and proximity to off-site and on-site receptors, as applicable (CARB 2018).

Project-level emissions of TACs or $PM_{2.5}$ from individual sources that exceed any of the thresholds listed below are considered a potentially significant community health risk:

- An excess cancer risk level of more than 10 in one million, or a noncancer (i.e., chronic or acute) hazard index greater than 1.0 would be a significant project contribution.
- An incremental increase of greater than 0.3 microgram per cubic meter ($\mu g/m^3$) annual average $PM_{2.5}$ from a single source would be a significant project contribution.

Cumulative sources represent the combined total risk values of each of the individual sources within the 1,000-foot evaluation zone. A project would have a cumulative considerable impact if the aggregate total of all past, present, and foreseeable future sources within a 1,000-foot radius from the fence line of a source or location of a receptor, plus the contribution from the project, exceeds any of the following:

- An excess cancer risk level of more than 100 in one million or a chronic noncancer hazard index (from all local sources) greater than 10.0.
- 0.8 $\mu g/m^3$ annual average $PM_{2.5}$.

In February 2015, OEHHA adopted new health risk assessment guidance that includes several efforts to be more protective of children's health. These updated procedures include the use of age sensitivity factors to account for the higher sensitivity of infants and young children to cancer-causing chemicals and age-specific breathing rate (OEHHA 2015). The sensitive receptors closest to the project are more than 1,000 feet from the project construction.

5.2 Greenhouse Gases

Consistent with Appendix G of the State CEQA Guidelines, a project would have a significant GHG impact if it would

- generate GHG emissions, either directly or indirectly, that may have an adverse effect on the environment; or
- conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs.

State CEQA Guidelines Section 15064.4 recommends that lead agencies quantify GHG emissions projects and consider several other factors that may be used in the determination of significance of project-related GHG emissions, including 1) the extent to which the project may increase or reduce GHG emissions; 2) whether the project exceeds an applicable significant threshold; and 3) the extent to which the project complies with the regulations or requirements adopted to implement a reduction or mitigation of GHG.

Section 15064.4 does not establish a threshold of significance. Lead agencies have the discretion to establish significance thresholds for their respective jurisdictions, and in establishing those thresholds, a lead agency may appropriately look at thresholds developed by other public agencies, or suggested by other experts, such as the California Air Pollution Control Officers Association (CAPCOA), as long as any threshold chosen is supported by substantial evidence (see State CEQA Guidelines Section 15064.7(c)). The State CEQA Guidelines also clarify that the events of GHG emissions are cumulative and should be analyzed in the context of CEQA's requirements for cumulative impact analysis (see State CEQA Guidelines Section 15130(f)). It is noted that the State CEQA Guidelines were amended in response to SB 97. In particular, the State CEQA Guidelines were amended to specify that compliance with the GHG emissions reduction plan renders a cumulative impact less than significant.

According to State CEQA Guidelines Section 15064(h)(3), a project's incremental contribution to a cumulative impact can be found not cumulatively considerable if the project would comply with an approved plan or mitigation program that provides specific requirements that would avoid or substantially lessen the cumulative problem within the geographic area of the project. To qualify, such plans or programs must be specified in law or adopted by the public agency with jurisdiction over the affected resources through a public review process to implement, interpret, or make specific the law enforced or administered by the public agency. Examples of such programs include "water quality control plan, air quality attainment or maintenance plan, integrated waste management plan, habitat conservation plan, natural community conservation plans [and] plans or regulations for the reduction of greenhouse gas emissions" (14 CCR Section 15064(h)(3)). Put another way, State CEQA Guidelines Section 15064(h)(3) allows a lead agency to make a finding of less than significant for GHG emissions if a project complies with adopted programs, plans, policies, and/or other regulatory strategies to reduce GHG emissions.

Although GHG emissions can be quantified, CARB, BAAQMD, and the County have not adopted quantitative project-level significance thresholds for GHG emissions that would be applicable to the project. According to State CEQA Guidelines Section 15064.4(b), "in determining the significance of a project's greenhouse gas emissions, the lead agency should focus its analysis on the reasonably foreseeable incremental contribution of the project's emissions to the effects of climate change. A project's incremental contribution may be cumulatively considerable even if it appears relatively small compared to statewide, national or global emissions." When determining the significance of GHG impacts, lead agencies should consider the project's impact as compared to the existing environmental setting, whether the project exceeds a threshold of significance, and compliance with relevant GHG-related plans (see, for example, State CEQA Guidelines Section 15064.4(b)). Regarding the latter criterion, lead agencies should consider "the extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of greenhouse gas emissions" (see, for example, State CEQA Guidelines Section 15183.5(b)). According to State CEQA Guidelines Section 15064.4(b)(3), such requirements must be adopted by the relevant public agency through a public review process and must reduce or mitigate the project's incremental contribution of GHG emissions.

For the project, no quantitative threshold has been adopted to evaluate significance for GHG emissions to address the State's more recent GHG-reduction target of achieving carbon neutrality by 2045, in accordance with Executive Order B-55-18 (2018). To achieve carbon neutrality by 2045, it is recommended that future development include measures to support building decarbonization, including the replacement of natural gas service with other alternatives, such as use of electrically powered equipment (CARB 2022, CEC 2021). Based on recent GHG threshold updates and supportive documentation prepared by the BAAQMD, it is recommended that future development prohibit the installation of natural gas infrastructure/use of natural gas–fired appliances, to the maximum extent possible, and incorporate EV charging stations beyond what is required by current building standards in order to contribute its "fair share" of what would be required for the State to achieve its carbon neutrality goal (BAAQMD 2023). As a result, project-generated GHG emissions would also be considered to have a potentially significant impact if the project would not prohibit the installation of natural gas–fired appliances/equipment, to the maximum extent possible, or encourage the installation of EV charging stations beyond what is required by current building standards. As an additional significance criterion, consistency with the applicable plans and policies to reduce GHG emissions, including the emissions reduction policies, strategies, and measures discussed within CARB's Climate Change Scoping Plan, was additionally evaluated.

6 METHODOLOGY

This analysis focuses on the potential change in the air quality environment due to implementation of the project. Air pollution emissions would result from both construction and operation of the project. Specific methodologies used to evaluate these emissions are discussed below.

The analysis is based on project specifics and default values in the latest versions of CalEEMod. Accordingly, this analysis has been conducted with the most recent available tools prepared and accepted by the regulatory agencies.

6.1 Construction Emissions

The project's emissions will be evaluated based on significance thresholds established by BAAQMD, as discussed above. Daily emissions during construction are estimated by assuming a conservative construction schedule and applying the multiple source and fugitive dust emission factors derived from the BAAQMD-recommended CalEEMod latest version. Details of the modeling assumptions and emission factors are provided in Appendix A. The calculations of the emissions generated during project construction activities reflect the types and quantities of construction equipment that would be used to complete the project.

6.1.1 Construction Assumptions

Construction emissions associated with the project, including emissions associated with the operation of off-road equipment, haul-truck trips, on-road worker vehicle trips, vehicle travel on paved and unpaved surfaces, and fugitive dust from material handling activities, were calculated using CalEEMod version 2022.1 (CAPCOA 2022). CalEEMod is a statewide land use emissions computer model designed to provide a uniform platform for government agencies, land use planners, and environmental professionals to quantify potential criteria pollutant and GHG emissions associated with both construction and operation of a variety of land use projects. The model uses widely accepted federal and state models for emission estimates and default data from sources such as EPA AP-42 emission factors, CARB vehicle emission models, and studies from California agencies such as the CEC. The model quantifies direct emissions from construction and operations, as well as indirect emissions, such as GHG emissions from energy use, solid waste disposal, vegetation planting and/or removal, and water use. The model was developed in collaboration with the air districts in California. Default data (e.g., emission factors, trip lengths, meteorology, source inventory, etc.) have been provided by the various California air districts to account for local requirements and conditions.

Emissions generated during the project Phase 1 have been grouped into seven stages in CalEEMod based on the types of equipment and workload: 1) demolition (including grubbing and grading of construction areas; removal of 33 trees, including 25 heritage trees; removal of existing water line, water tank, pump house and pump, meters, sump pumps, and irrigation system; removal of existing fencing, bleachers, and some light poles; trenching for new utilities (primarily water); and removal of existing pavement and some buildings); 2) drainage/utilities (including installing stormwater facilities and landscaping); 3) rough grading; 4) fine grading; 5) building construction (including construction of the new concession stand and restroom, landscaping, installing new fencing and lighting and all other construction); 6) paving (112,558 square feet of hardscape for the parking lot; pouring concrete sidewalks, plaza, and picnic areas; pouring rubberized play surface and playground facilities); and 7) architectural coatings (including 1,900 square feet of painting of the new concession stand and restroom building [northeast of Field 2], the existing concession stand [south of Fields 1 and 2], and the restroom [just east of Field 3]). The project is within a 29.25-acre parcel, and project activities would take place from April 1, 2026, until September 30, 2026. Two CalEEMod land uses were used: 1) Recreational – City Park and 2) Parking Lot. During construction, approximately 1,403 cubic yards of material would be imported. This analysis includes quantification of construction and operation of off-road equipment, fugitive dust, and on-road mobile sources, as well as the operational emissions for the park.

Modeling input data were based on this anticipated construction schedule and phasing. Construction equipment and usage required for each phase were obtained using CalEEMod defaults for the land use types that make up the project site, information provided by City of Half Moon Bay Public Works Department, and default parameters contained in the model for the project site (San Mateo County) and land uses. The Phase 1 construction duration is assumed to be approximately 6 months, from April 1 to September 30, 2026.

Phase 2 construction has been modeled conservatively, as specific details are not yet known. Emissions generated during the project Phase 2 have been grouped into four stages in CalEEMod based on the types of equipment and workload: 1) demolition 2) construction; 3) paving (31,623 square feet of hardscape); and 4) architectural coatings. The project is within a 29.25-acre parcel, and project activities would place from January 1 to December 31, 2027. Two CalEEMod land uses were used: 1) Recreational – City Park and 2) Parking Lot. During construction approximately 28,539 cubic yards of material would be imported equating to 1,784 round trips. This analysis includes quantification of construction and operation off-road equipment, fugitive dust, and on-road mobile sources, as well as the operational emissions for the park.

Modeling input data were based on this anticipated construction schedule and phasing. Construction equipment and usage required for each phase were obtained using CalEEMod defaults for the land use types that make up the project site, information provided by City of Half Moon Bay Public Works Department, and default parameters contained in the model for the project site (San Mateo County) and land uses. The Phase 2 construction duration is assumed to be approximately 12 months, from January 1 to December 31, 2027.

Project construction would consist of different activities undertaken in stages, through to the completion/operation of the project. Typical construction equipment, potentially including dozers, backhoes, graders, and excavators, would be used during all phases of project construction and would be stored within the staging area. The project would cover a temporary disturbance area of 206,000 square feet in Phase 1 and 656,000 square feet in future phases. Table 6 shows the Phase 1 project's anticipated construction schedule, presents an estimate of the maximum number of pieces of equipment for each construction phase, and assumes equipment would be operating 6 days per week for the construction phase duration. Table 7 shows the Phase 2 project's anticipated construction schedule, presents an estimate of the maximum number of pieces of equipment for each construction phase, and assumes equipment would be operating 6 days per week for the construction phase duration. These are very conservative, as details necessary to refine equipment and schedule are not yet available. The construction emissions were mitigated in the CalEEMod model to comply with any BAAQMD standard control measures identified in Section 7.2.

Table 6. Phase 1 Construction Anticipated Schedule, Trips, and Equipment

Phase (duration)	Equipment Used			Daily Vehicle Trips
	Type	Number	Hours/Day	
1. Demolition 4/1/2026–4/30/2026 (26 working days)	Rubber tired dozers	2	8	25 one-way worker trips 4 one-way vendor trips 20 one-way haul truck trips 5 trucks driving 1 mile of on-site truck travel
	Excavators	3	6	
	Concrete/Industrial saws	2	8	
	Dumpers/Tenders	2	2	
	Off-highway trucks	1	5	
2. Drainage/Utilities 5/1/2026–6/30/2026 (52 working days)	Rubber tired dozers	3	8	20 one-way worker trips 4 one-way vendor trips 12 one-way haul truck trips 5 trucks driving 1 mile of on-site truck travel
	Tractors/Loaders/Backhoes	2	8	
	Forklifts	2	6	
	Crawler tractors	2	8	
	Surfacing equipment	2	8	
	Trenchers	2	6	
	Pumps	2	8	
	Generator sets	1	8	
	Off-highway trucks	1	5	

Phase (duration)	Equipment Used			Daily Vehicle Trips
	Type	Number	Hours/Day	
3. Rough grading 7/1/2026–7/31/2026 (27 working days)	Graders	2	8	20 one-way worker trips 4 one-way vendor trips 8 one-way haul truck trips 5 trucks driving 1 mile of on-site truck travel
	Excavators	2	8	
	Tractors/Loaders/Backhoes	2	8	
	Scrapers	2	8	
	Rubber tired dozers	2	8	
	Skid steer loaders	2	8	
	Off-Highway trucks	1	5	
4. Fine grading 8/1/2026–8/31/2026 (21 working days)	Graders	2	8	20 one-way worker trips 4 one-way vendor trips 4 one-way haul truck trips 0 miles of onsite truck travel
	Excavators	2	8	
	Tractors/Loaders/Backhoes	2	8	
	Scrapers	2	8	
	Rubber tired dozers	1	8	
	Skid steer loaders	2	8	
	Plate compactors	2	4	
	Off-highway trucks	1	5	
5. Building construction 8/1/2026–9/18/2026 (42 working days)	Forklifts	2	6	0 one-way worker trips 0 one-way vendor trips 2 one-way haul truck trips 5 trucks driving 1 mile of on-site truck travel
	Generator sets	1	8	
	Cranes	1	7	
	Tractors/Loaders/Backhoes	3	7	
	Cement and mortar mixers	1	4	
	Sweepers/Scrubbers	2	3	
	Rubber tired loaders	2	8	
	Signal boards	1	8	
	Pressure washers	2	2	
	Crawler tractors	2	8	
	Dumpers/Tenders	2	2	
	Pumps	2	8	
6. Paving 9/1/2026–9/30/2026 (26 working days)	Pavers	2	8	22 one-way worker trips 4 one-way vendor trips 0 one-way haul truck trips 5 trucks driving 1 mile of on-site truck travel
	Paving equipment	2	8	
	Rollers	2	8	
	Sweepers/Scrubbers	2	3	
	Off-highway trucks	1	5	
7. Architectural coating 9/20/2026–9/30/2026 (9 working days)	Air compressors	2	3	0 one-way worker trips 0 one-way vendor trips 0 one-way haul truck trips 0 miles of onsite truck travel

Notes: For the parameters that are not provided in the table (e.g., equipment horsepower and load factor, on-road trip lengths), CalEEMod defaults were used.

Table 7. Phase 2 Construction Anticipated Schedule, Trips, and Equipment

Phase (duration)	Equipment Used			Daily Vehicle Trips
	Type	Number	Hours/Day	
1. Demolition 1/1/2027–6/30/2027 (155 working days)	Excavators	2	6	0 one-way worker trips 0 one-way vendor trips 0 one-way haul truck trips 0 mile of on-site truck travel
	Concrete/Industrial saws	2	8	
	Scrapers	2	8	
	Graders	2	8	
	Dumpers/Tenders	2	2	
	Surfacing equipment	2	8	
2. Construction 1/1/2027–12/31/2027 (313 working days)	Forklifts	2	6	50 one-way worker trips 4 one-way vendor trips 25 one-way haul truck trips 5 trucks driving 1 mile of on-site truck travel
	Generator sets	1	8	
	Cranes	1	2	
	Tractors/Loaders/Backhoes	2	8	
	Skid steer loader	2	8	
	Cement and mortar mixers	1	4	
	Bore/Drill rigs	1	3	
	Aerial lifts	2	2	
	Off-highway truck	1	5	
	Sweepers/Scrubbers	2	3	
	Rubber tired dozer	2	6	
	Trenchers	2	6	
	Rubber tired loaders	2	8	
	Plate compactor	2	4	
	Signal boards	1	8	
	Pressure washers	2	2	
	Crawler tractors	2	8	
	Dumpers/Tenders	2	2	
	Pumps	2	8	
3. Paving 1/1/2027–12/31/2027 (313 working days)	Pavers	2	4	0 one-way worker trips 0 one-way vendor trips 0 one-way haul truck trips 0 miles of on-site truck travel
	Paving equipment	2	4	
	Rollers	2	8	
	Sweepers/Scrubbers	2	3	
4. Architectural Coating 7/1/2027–12/31/2027 (158 working days)	Air compressors	2	3	0 one-way worker trips 0 one-way vendor trips 0 one-way haul truck trips 0 miles of on-site truck travel

Notes: For the parameters that are not provided in the table (e.g., equipment horsepower and load factor, on-road trip lengths), CalEEMod defaults were used.

6.2 Operational Emissions

Once construction is completed, the project would be an operational community park. Criteria pollutant and GHG emissions from the operations of the park were estimated using CalEEMod Version 2022.1. Year 2027 was assumed as the first full year of operations after completion of construction. The operational emissions were calculated based on CalEEMod defaults associated with the project's land use types, removing any natural gas processes. The CalEEMod Recreational – City Park and Parking Lot land uses were used for a 29.25-acre project area, conservatively assuming 16 acres of disturbance and 10 acres of landscaping. Analysis of the project's likely impact on regional air quality during project operation takes into consideration seven types of sources: 1) area, 2) energy, 3) mobile, 4) water and wastewater consumption, 5) waste consumption, 6) refrigeration and 7) off-road. Details of the modeling assumptions and emission factors are provided in Appendix A.

CalEEMod was used to estimate operational emissions from area sources, including emissions from consumer product use, architectural coatings, and landscape maintenance equipment. Emissions associated with natural gas usage in space heating, water heating, and stoves are not calculated as part of building energy use in CalEEMod since the project will not include any natural gas.

Consumer products are chemically formulated products used by household and institutional consumers, including detergents; cleaning compounds; polishes; floor finishes; cosmetics; personal care products; home, lawn, and garden products; disinfectants; sanitizers; aerosol paints; and automotive specialty products. Other paint products, furniture coatings, or architectural coatings are not considered consumer products (CAPCOA 2022). Consumer product VOC emissions are estimated in CalEEMod based on the floor area of residential and nonresidential buildings and on the default factor of pounds of VOC per building square foot per day.

VOC off-gassing emissions result from evaporation of solvents contained in surface coatings, such as in paints and primers using during building maintenance. CalEEMod calculates the VOC evaporative emissions from application of residential and nonresidential surface coatings based on the VOC emission factor, the building square footage, the assumed fraction of surface area, and the reapplication rate. It was assumed that all buildings, new and existing, would be painted. The VOC emission factor is based on the VOC content of the surface coatings. The model default reapplication rate of 10% of area per year is assumed.

Landscape maintenance includes fuel combustion emissions from equipment such as lawn mowers, rototillers, shredders/grinders, blowers, trimmers, chainsaws, and hedge trimmers. The emissions associated with landscape equipment use are estimated based on CalEEMod default values for emission factors (grams per square foot of nonresidential building space per day) and number of summer days (when landscape maintenance would generally be performed) and winter days. For San Mateo County, the average annual "summer" days are estimated to 180 days; and it is assumed that landscaping equipment would operate 180 days per year in CalEEMod. Emissions associated with potential landscape maintenance equipment were included and no emission reduction features related to electric landscape equipment were assumed, to conservatively capture potential project operational emission sources.

As represented in CalEEMod, energy sources include emissions associated with buildings. Electricity use would contribute indirectly to criteria air pollutant emissions; however, the emissions from electricity use are only quantified for GHGs in CalEEMod, since criteria pollutant emissions occur at the site of the power plant, which is typically off-site.

The project would generate criteria pollutant emissions from mobile sources (vehicular traffic) as a result of project operations. Emissions from mobile sources during operation of the project were estimated using anticipated trip rates (2,000 trips on Saturdays and 150 trips per day all other days) and CalEEMod trip lengths, fleet mix, and emissions factors for each vehicle type.

The water and wastewater consumptions determine the GHG emissions associated with supplying and treating water and wastewater used and generated by the project land use. The solid waste determines the GHG emissions at landfills associated with disposal of solid waste generated for each project land use subtype. Emissions from water and wastewater consumption as well as waste consumption during operation of the project were estimated using CalEEMod defaults for the project land use and size.

The fugitive GHG emissions associated with building air conditioning and refrigeration equipment have been estimated using defaults for the project land use and size. The off-road equipment emissions during operations have also been estimated. It is anticipated that an ATV (approximately 1 day per week for 8 hours per day), a backhoe (1 day per month for 8 hours per day), and a mower (1 day per week for 8 hours per day) would be utilized during operations. In addition, the stationary equipment emissions during operations has also been estimated for the pump house for irrigation.

6.3 Greenhouse Gas

This analysis quantifies the project’s total annual GHG emissions from construction, taking into account any GHG emission reduction measures that would be incorporated into the project’s design. However, given the lack of a formally adopted numerical significance threshold or a formally adopted local plan for reducing GHG emission applicable to this project, this analysis evaluates the significance of the project’s GHG emission by assessing the project’s consistency with regulatory schemes and policies.

6.4 Toxic Air Contaminants Impacts (Construction and Operations)

Potential TAC impacts are evaluated by conducting a qualitative analysis consistent with the CARB Handbook (2005) followed by a more detailed analysis (i.e., dispersion modeling), if necessary. The qualitative analysis consists of reviewing the project to identify any new or modified TAC emission sources. The project, being a short-term construction park improvement project with no substantial differences to operational emissions and no identified TACs other than short-term and intermittent DPM will not result in significant emissions of TACs. The project will implement the control measures discussed in Section 7.2, *Standard Control Measures,* which would reduce TAC emissions during construction. The project’s construction emissions from particulate exhaust matter, which is utilized to represent diesel PM, is less than three pounds per day and 0.13 ton per year as shown in Appendix A. The project’s operations emissions from particulate exhaust matter would be less than 0.66 pound per day and less than 0.09 ton per year as shown in Appendix A. No residential uses are located within 1,000 feet of the project. Due to the project location and consistency with TAC-related rules and regulations, a health risk assessment was not conducted for construction or operations.

7 IMPACT ANALYSIS

Impact AQ-1 Would the project conflict with or obstruct implementation of the applicable air quality plan?

Less Than Significant Impact. The 2017 Clean Air Plan is the current applicable regional Air Quality Plan (AQP) for the SFBAAB (BAAQMD 2017). The primary goals of the 2017 Clean Air Plan are to protect public health and protect the climate, and the plan acknowledges that the BAAQMD’s two stated goals of protection are closely related. As such, the 2017 Clean Air Plan identifies a wide range of control measures intended to decrease both criteria pollutants and GHG emissions. The development of the project would improve a community park. The proposed project does not involve substantial employment growth (none anticipated). Determining consistency with the 2017 Clean Air Plan involves assessing whether applicable control measures contained in the 2017 Clean Air Plan are implemented and whether implementation of the proposed project would disrupt or hinder implementation of AQP control measures. The control measures are organized into five categories: 1) stationary and area source control measures; 2) mobile source measures; 3) transportation control measures; 4) land use and local impact measures; and 5) energy and climate measures. The control measures are geared toward traditional land uses (e.g., residential, commercial, industrial uses) and buildings. All control measures contained in the 2017 Clean Air Plan applicable to the project will be implemented. In addition, all projects within BAAQMD's jurisdiction are required to implement the BAAQMD standard control measures or best management practices (BMPs) during construction activities. As discussed in below, the proposed project would implement all BMPs for construction activities and would be consistent with the assumptions in the AQP. Furthermore, the proposed project would not include any special features that would disrupt or hinder implementation of the AQP control measures. Therefore, the proposed project would not obstruct implementation of the 2017 Clean Air Plan.

Furthermore, the thresholds of significance, adopted by BAAQMD, determine compliance with the goals of attainment plans in the region. As such, emissions below the BAAQMD significance thresholds would not conflict with or obstruct implementation of the applicable air quality plans. As Table 8, Table 9, and Table 10 show, the emissions from project construction and operations are below the thresholds of significance; therefore, the project does not conflict with implementation of the BAAQMD applicable air quality plans.

Impact AQ-2 Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in nonattainment under an applicable federal or state ambient air quality standard?

Less Than Significant Impact. The BAAQMD's thresholds of significance represent the allowable emissions a project can generate without generating a cumulatively considerable contribution to regional air quality impacts. Therefore, a project that would not exceed the BAAQMD thresholds of significance on a project level also would not be considered to result in a cumulatively considerable contribution to these regional air quality impacts. The region is in nonattainment for federal and state ozone standards and federal and state $PM_{2.5}$ standards. Impacts related to construction and operation of the proposed project are addressed separately below.

Construction

The project implementation would generate emissions of criteria air pollutants during construction. The estimated unmitigated emissions from Phase 1 construction of the project are summarized in Table 8. The detailed assumptions and calculations, as well as CalEEMod outputs, are provided in Appendix A of this report.

Table 8. Unmitigated Phase 1 Construction Emissions Summary

Construction Year	Unmitigated Construction Emissions Summary					
	ROG	NO_X	CO	PM_{10}	$PM_{2.5}$	SO_2
Pollutant Emission (pounds per day)						
2026 average daily emission	1.99	16.44	17.31	3.86	1.78	0.04
BAAQMD significance thresholds	54	54	N/A	82	54	N/A
Threshold exceeded?	*No*	*No*	*N/A*	*No*	*No*	*N/A*
Pollutant Emission (tons per year)						
2026 max annual	0.36	3.00	3.16	0.70	0.32	0.007
BAAQMD significance thresholds	10	10	N/A	15	10	N/A
Threshold exceeded?	*No*	*No*	*N/A*	*No*	*No*	*N/A*

Source: Emissions were quantified using CalEEMod version 2022.1 (CAPCOA 2022).

Notes: ROG = reactive organic gases. N/A = Not applicable, no threshold. Model results (summer, winter, and annual) and assumptions are provided in Appendix A.

As Table 8 shows, estimated unmitigated construction emissions for all pollutants are below BAAQMD significance thresholds. The combined construction emissions from all components of the proposed project are below the recommended BAAQMD thresholds of significance. Therefore, project construction would have a less-than-significant impact. However, BAAQMD standard control measures have been included to further reduce localized impacts (Section 7.2).

The estimated unmitigated emissions from the conservatively modeled Phase 2 construction of the project are summarized in Table 9. The detailed assumptions and calculations, as well as CalEEMod outputs, are provided in Appendix B of this report.

Table 9. Unmitigated Phase 2 Construction Emissions Summary

Construction Year	Unmitigated Construction Emissions Summary					
	ROG	NO_X	CO	PM_{10}	$PM_{2.5}$	SO_2
Pollutant Emission (pounds per day)						
2027 average daily emission	5.42	46.12	55.18	17.72	6.95	0.11
BAAQMD significance thresholds	54	54	N/A	82	54	N/A
Threshold exceeded?	No	No	N/A	No	No	N/A
Pollutant Emission (tons per year)						
2027 max annual	0.99	8.42	10.07	3.23	1.27	0.020
BAAQMD significance thresholds	10	10	N/A	15	10	N/A
Threshold exceeded?	No	No	N/A	No	No	N/A

Source: Emissions were quantified using CalEEMod version 2022.1 (CAPCOA 2022).

Notes: N/A = Not applicable, no threshold. ROG = reactive organic gases. Model results (summer, winter, and annual) and assumptions are provided in Appendix B.

As Table 9 shows, estimated unmitigated construction emissions for all pollutants, although conservative, are below BAAQMD significance thresholds. The combined construction emissions from all components of the proposed project are below the recommended BAAQMD thresholds of significance. Therefore, project construction would have a less-than-significant impact. However, BAAQMD standard control measures have been included to further reduce localized impacts (Section 7.2).

Operations

Project operations would generate VOC, NO_X, CO, SO_x, PM_{10}, and $PM_{2.5}$ emissions from mobile sources, including vehicle trips; area sources, including the use of consumer products, architectural coatings for repainting, and landscape maintenance equipment; water, waste, off-road, stationary, and energy sources. The estimated emissions from operation of the project are summarized in Table 10. Complete details of the emissions calculations are provided in Appendix A.

Table 10. Unmitigated Operational Emissions Summary

Operation Year 2028	Unmitigated Operational Emissions Summary					
	ROG	NO_X	CO	PM_{10}	$PM_{2.5}$	SO_2
Pollutant Emission (pounds per day)						
Mobile	1.21	1.16	12.27	3.75	0.97	0.038
Area	0.29	0.00	0.00	0.00	0.00	0.000
Energy	0.00	0.00	0.00	0.00	0.00	0.000
Off-road	0.65	5.73	6.10	0.39	0.36	0.008
Stationary	0.54	1.51	1.96	0.08	0.08	0.003
Total	**2.68**	**8.40**	**20.33**	**4.22**	**1.40**	**0.05**
BAAQMD significance thresholds	54	54	N/A	82	54	N/A
Threshold exceeded?	No	No	N/A	No	No	N/A
Pollutant Emission (tons per year)						
Mobile	0.2202	0.2115	2.2391	0.6852	0.1762	0.0070
Area	0.0526	0.0000	0.0000	0.0000	0.0000	0.0000
Energy	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-road	0.1184	1.0462	1.1139	0.0705	0.0648	0.0015
Stationary	0.0985	0.2752	0.3573	0.0145	0.0145	0.0005
Total	**0.49**	**1.53**	**3.71**	**0.77**	**0.26**	**0.01**
BAAQMD significance thresholds	10	10	N/A	15	10	N/A
Threshold exceeded?	No	No	N/A	No	No	N/A

Source: Emissions were quantified using CalEEMod version 2022.1 (CAPCOA 2022).

Notes: N/A = Not applicable, no threshold. ROG = reactive organic gases. Model results (summer, winter, and annual) and assumptions are provided in Appendix A. Totals do not always equal the sum of individual numbers because of rounding.

As Table 10 shows, estimated unmitigated operational emissions for all pollutants are below BAAQMD significance thresholds. Also, project operations would meet the BAAQMD CO hotspot analysis screening criteria regarding traffic volumes at any affected intersection. Therefore, the proposed project would not need a CO hotspot analysis. Therefore, based on the above criteria, the proposed project would have a less-than-significant impact related to CO hotspots.

The combined construction emissions and combined operational emissions from all components of the proposed project are below the recommended BAAQMD thresholds of significance. Therefore, the project would not be anticipated to exceed any significance threshold and would have a less than significant contribution to cumulative impacts with mitigation.

Impact AQ-3 Would the project expose sensitive receptors to substantial pollutant concentrations?

Less Than Significant Impact with Mitigation. While criteria pollutants (such as particulate matter [PM_{10} and $PM_{2.5}$]) are a concern at the regional level, community risk impacts from TACs and annual $PM_{2.5}$ exposure to nearby sensitive receptors are also a localized concern. While the discussion under Impact AQ-3 above addressed PM at the regional level, this impact addresses PM at the localized level. Impacts related to increased community risk can occur either by introducing new sensitive receptors, such as residences, in proximity to existing sources of TACs or by introducing a new source of TACs with the potential to adversely affect existing sensitive receptors in the project vicinity.

There are no sensitive receptors within 1,000 feet of the project construction. Also, implementation of the proposed project would not result in the long-term operation of any emission sources that would adversely affect nearby sensitive receptors. Short-term (6 months for Phase 1 and 12 months for Phase 2) construction activities could result in temporary increases in pollutant concentrations. The construction-related emissions would be short term and at different locations within the project site. Although Phase 1 and Phase 2 construction would occur over 6 months and 12 months, respectively, construction at any one site would last for a much shorter time. The limited duration and limited quantities of construction emissions ensure that no individual receptor would be exposed to substantial pollutant concentrations. During construction, the BAAQMD BMPs would minimize construction impacts by reducing dust and exhaust emissions. Operations of the park as a result of the project would not change substantially. Therefore, construction and operation of the project would not expose sensitive receptors to substantial pollutant concentrations, and impacts would be less than significant.

Impact AQ-4 Would the project 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 be a source of any odors during operations. During construction, a limited number of diesel engines would be operated on the project site for limited durations. Diesel exhaust and VOCs from these diesel engines would be emitted during construction of the proposed project, which are objectionable to some; however, the duration of Phase 1 and Phase 2 construction activities is expected to last approximately 6 months and 12 months, respectively; emissions would disperse rapidly from the project site; and diesel exhaust odors would be consistent with existing vehicle odors in the area. Considering this information, construction and operation of the proposed project would not create other emissions or odors adversely affecting a substantial number of people, and impacts would be less than significant.

Impact GHG-1 Would the project generate GHG emissions, either directly or indirectly, that may have an adverse effect on the environment?

Less Than Significant Impact. The proposed project is in the SFBAAB, which is regulated by the BAAQMD. Projects generate GHG emissions during construction and operation (e.g., mobile emissions, emissions from generation of electricity for operations), and projects must be consistent with a local GHG reduction strategy that meets the criteria under State CEQA Guidelines Section 15183.5(b). On April 20, 2022, the BAAQMD adopted changes to its thresholds for evaluating the significance of climate impacts from land use projects and plans under CEQA. In place of numerical thresholds, the focus will be on the design of a project as well as building operations and transportation. At a minimum, building projects cannot include natural gas appliances or natural gas plumbing and cannot result in any wasteful, inefficient, or unnecessary energy usage as determined by the analysis required under CEQA Section 21100(b)(3) and State CEQA Guidelines Section 15126.2(b). The project will not utilize natural gas and will not result in any wasteful, inefficient, or unnecessary energy usage. The project operations must also achieve a reduction in project-generated VMT below the regional average consistent with the current version of the California Climate Change Scoping Plan or meet a locally adopted VMT target, and VMT thresholds for San Mateo County are determined on a case-by-case basis. The project parking would not significantly increase, and operations would remain unchanged. The project will be consistent with local GHG reduction strategies meeting the criteria under State CEQA Guidelines Section 15183.5(b). Therefore, construction- and operation-related GHG emissions would be less than significant.

Construction of the project would result in GHG emissions, which are primarily associated with use of off-road construction equipment, on-road vendor trucks, and worker vehicles. The BAAQMD does not have current GHG significance thresholds; however, construction emissions were calculated and amortized over a 30-year project lifetime. CalEEMod was used to calculate the annual GHG emissions based on the construction scenario described. Construction of Phase 1 of the project is anticipated to last a total of approximately 6 months. Construction of Phase 2 of the project is anticipated to last a total of approximately 12 months. On-site sources of GHG emissions include off-road equipment, and off-site sources include vendor trucks and worker vehicles. Table 11 presents Phase 1 construction emissions for the project from on-site and off-site emission sources.

Table 11. Estimated Phase 1 Annual Construction Greenhouse Gas Emissions

Construction Year	Metric Tons per Year			
	CO_2	**CH_4**	**N_2O**	**CO_2e**
2026	661.66	0.03	0.02	667.07
			Total	**667.07**
			Amortized construction emissions	*22.2*

Source: Appendix A.

As shown in Table 11, the estimated total GHG emissions during Phase 1 construction would be approximately 667 $MTCO_2e$ over the construction period. Estimated project-generated construction emissions amortized over 30 years would be approximately 22 $MTCO_2e$ per year. As with project-generated construction criteria air pollutant emissions, GHG emissions generated during construction of the project would only occur when construction is active, lasting only for the duration of the construction period, and would not represent a long-term source of GHG emissions.

Table 12 presents Phase 2 construction emissions for the project from conservative assumptions for on-site and off-site emission sources.

Table 12. Estimated Phase 2 Annual Construction Greenhouse Gas Emissions

Construction Year	Metric Tons per Year			
	CO_2	**CH_4**	**N_2O**	**CO_2e**
2027	2,082.00	0.11	0.06	2,103.14
			Total	**2,103.14**
			Amortized construction emissions	*70.1*

Source: Appendix B.

As shown in Table 12, the estimated total GHG emissions during Phase 2 construction would be approximately 2,103 $MTCO_2e$ over the construction period. Estimated project-generated construction emissions amortized over 30 years would be approximately 70 $MTCO_2e$ per year. As with project-generated construction criteria air pollutant emissions, GHG emissions generated during construction of the project would only occur when construction is active, lasting only for the duration of the construction period, and would not represent a long-term source of GHG emissions.

Operation of the project would generate GHG emissions through motor vehicle trips to and from the project site, landscape maintenance equipment operation, energy use, solid waste disposal, off-road equipment, stationary equipment, refrigeration, and generation of electricity associated with water supply, treatment, and distribution and wastewater treatment. CalEEMod was used to calculate the annual GHG emissions based on the operational assumptions described in Section 0.

The estimated operational project-generated GHG emissions from area sources, energy usage, motor vehicles, off-road sources, stationary equipment, refrigeration, solid waste generation, water usage, and wastewater generation are shown in Table 13.

Table 13. Estimated Annual Operational Greenhouse Gas Emissions

Emission Source	Metric Tons per Year			
	CO_2	CH_4	N_2O	CO_2e
Mobile	644.96	0.02	0.02	652.88
Area	0.00	0.00	0.00	0.00
Energy	7.12	0.00	0.00	7.19
Water	1.65	0.00	0.00	1.66
Waste	0.12	0.01	0.00	0.43
Refrigeration	N/A	N/A	N/A	0.00
Off-road	144.27	0.01	0.00	144.77
Stationary	45.70	0.00	0.00	45.85
Total	**843.82**	**0.04**	**0.02**	**852.77**
			Amortized construction emissions	*22.24*
			Total operational + amortized construction GHGs	**875.01**

Source: Appendix A.

Note: N/A = not applicable. These emissions reflect operational year 2028. Totals do not always equal the sum of the individual numbers because of rounding.

As shown in Table 13, estimated annual project-generated GHG emissions would be approximately 853 $MTCO_2e$ per year as a result of project operations only. After summing the amortized project construction emissions, total GHGs generated by the project would be approximately 875 $MTCO_2e$ per year. In summary, Impact GHG-1 would be less than significant.

Impact GHG-2 Would the project conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs?

Less Than Significant Impact. The San Mateo County CCAP was approved and adopted as an element of the San Mateo County General Plan in 2022. The CCAP outlines actionable items that, if successfully implemented, would achieve a 45% reduction of GHG emissions over 1990 levels by 2030 and carbon neutrality by 2040.

The project is a park improvement and will include features that align with all applicable plans, policies, and regulation. For example, new light fixtures will be dark-sky compliant and will be more energy efficient. Therefore, the project would not conflict with the policies, regulations, or guidelines in the General Plan, CCAP, Bay Area Clean Air Plan, or any other applicable plans and/or regulations adopted for the purposes of reducing GHG emissions. Furthermore, GHG emissions from the project, as shown in Appendix A, would not generate substantial GHG emissions during construction or operation. Therefore, impacts would be less than significant.

7.1 Cumulative Impacts

7.1.1 Air Quality

The cumulative setting for air quality includes the SFBAAB. The SFBAAB is designated as a nonattainment area for state standards of ozone and $PM_{2.5}$ and federal standards of ozone and $PM_{2.5}$ and is unclassified or attainment for all other pollutants. Cumulative growth in population and vehicle use could inhibit efforts to improve regional air quality and attain the ambient air quality standards. The BAAQMD CEQA Air Quality Guidelines do not include separate significance thresholds for cumulative construction and operational emissions. As described in threshold discussion above, the project would also be consistent with the appropriate 2017 Clean Air Plan control measures, which are provided to reduce air quality emissions for the entire Bay Area region. Additionally, the previous threshold discussion, above, addresses cumulative impacts and demonstrates that the project would not exceed the applicable BAAQMD thresholds for construction or operations. The BAAQMD CEQA Air Quality Guidelines note that the nature of air emissions is largely a cumulative impact. As a result, no single project is sufficient in size by itself to result in nonattainment of ambient air quality standards. Instead, a project's individual emissions contribute to existing cumulatively significant adverse air quality impacts. Consistency with the 2017 Clean Air Plan control measures would ensure that the project would not cumulatively contribute to air quality impacts in the Basin; therefore, impacts would be less than significant.

7.1.2 Greenhouse Gas Emissions

The analysis of a project's GHG emissions is inherently a cumulative impacts analysis because climate change is a global problem and the emissions from any single project alone would be negligible. Accordingly, the analysis above considers the potential for the project to contribute to the cumulative impact of a global climate change. Table 11, Table 12, and Table 13 show the estimated annual project-generated GHG emissions as a result of project construction and operations. Given that the project would not conflict with applicable reduction plans and policies and given that GHG emission impacts are cumulative in nature, the project's incremental contribution to cumulatively significant GHG emissions would be less than significant.

7.2 Standard Control Measures

As discussed, all construction projects within BAAQMD jurisdiction must comply with the BMPs regarding fugitive dust and equipment exhaust emissions. The BMPs to be included in the project consistent with regional rules and regulations are as follows:

- Exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, unpaved access roads) shall be watered with non-potable water two times per day.
- All haul trucks transporting soil, sand, or other loose material off-site shall be covered.

- All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
- All roadways, driveways, and sidewalks shall be paved as soon as possible.
- Idling times shall be minimized either by shutting equipment off when not in use or by reducing the maximum idling time to 5 minutes (as required by the California Airborne Toxics Control Measure in 13 CCR Section 2485). Clear signage shall be provided for construction workers at all access points.
- All construction equipment shall be maintained and properly tuned in accordance with the manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation. All equipment shall be checked by a certified visible emissions evaluator.
- A publicly visible sign shall be posted with the telephone number and person to contact at the City regarding dust complaints. This person shall respond and take corrective action within 48 hours of a complaint or issue notification. The BAAQMD's phone number shall also be visible to ensure compliance with applicable regulations.
- All vehicle speeds on unpaved roads shall be limited to 15 miles per hour.
- Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.

Implementation of these would ensure that the recommended BAAQMD BMPs are implemented to reduce impacts. The BAAQMD's standard control measures should be stipulated in contract requirements and detailed on all construction plans.

8 LITERATURE CITED

Bay Area Air Quality Management District (BAAQMD). 2006. *Community Air Risk Evaluation Program, Phase I Findings and Policy Recommendations Related to Toxic Air Contaminants in the San Francisco Bay Area.* Available at: https://www.baaqmd.gov/Divisions/Planning-and-Research/Planning-Programs-and-Initiatives/~/media/54D434A0EB8348B78A71C4DE32831544.ashx. Accessed February 2025.

———. 2014. *Ultrafine Particulate Matter in the San Francisco Bay Area*. Available at: https://www.baaqmd.gov/~/media/files/planning-and-research/research-and-modeling/estimating-public-health-and-monetary-impacts-of-ufpm-in-the-bay-area-final_12182014.pdf?la=en&rev=6e866d25899d4487850a6bd0b2caecf9. Accessed February 2025.

———. 2016. *Air Toxics NSR Program, Health Risk Assessment Guidelines*. Available at: https://sj-admin.s3-us-west-2.amazonaws.com/2016_1200_BAAQMD_NSRProgram.pdf#:~:text=This%20document%20describes%20the%20Bay%20Area%20Air%20Quality,Management%20District%27s%20guidelines%20for%20conducting%20health%20risk%20assessments. Accessed February 2025.

———. 2017. *2017 Clean Air Plan: Spare the Air, Cool the Climate*. Available at: https://www.baaqmd.gov/~/media/files/planning-and-research/plans/2017-clean-air-plan/attachment-a_-proposed-final-cap-vol-1-pdf.pdf?la=en. Accessed February 2025.

———. 2019. *San Francisco Bay Area Community Health Protection Program*. April 16. Available at: https://www.baaqmd.gov/~/media/files/ab617-community-health/2019_0325_ab617onepager-pdf.pdf?la=en. Accessed February 2025.

———. 2023. 2022 CEQA Guidelines Chapters. Available at: https://www.baaqmd.gov/plans-and-climate/california-environmental-quality-act-ceqa/updated-ceqa-guidelines. Accessed February 15, 2025.

California Air Pollution Control Officers Association (CAPCOA). 2022. California Emission Estimator Model (CalEEMod) and user guide. Version 2022.1. Available at: http://www.caleemod.com/. Accessed February 2025.

California Air Resources Board (CARB). 1998. *Report to the Air Resources Board on the Proposed Identification of Diesel Exhaust as a Toxic Air Contaminant, Part A, Exposure Assessment* (as approved by the Scientific Review Panel).

———. 2000. *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles*. Available at: https://ww2.arb.ca.gov/sites/default/files/classic/diesel/documents/rrpfinal.pdf. Accessed February 15, 2025.

———. 2005. Air Quality and Land Use Handbook: A Community Health Perspective. Available at: https://sfmohcd.org/sites/default/files/20%20-%20CARB%2C%20Air%20Quality%20and%20Land%20Use%20Handbook%202005.pdf. Accessed February 2025.

———. 2011. CARB toxic air contaminant identification list. Available at: https://ww2.arb.ca.gov/resources/documents/carb-identified-toxic-air-contaminants. Accessed February 2025.

———. 2014. *First Update to the Climate Change Scoping Plan*. Available at: https://ww2.arb.ca.gov/sites/default/files/classic/cc/scopingplan/2013_update/first_update_climate_change_scoping_plan.pdf. Accessed February 2025.

———. 2017a. *California's 2017 Climate Change Scoping Plan*. Available at: https://ww2.arb.ca.gov/sites/default/files/classic/cc/scopingplan/scoping_plan_2017.pdf. Accessed February 2025.

———. 2017b. *The 2017 Climate Change Scoping Plan Update: The Proposed Strategy for Achieving California's 2030 Greenhouse Gas Target*. Available at: https://www.arb.ca.gov/cc/scopingplan/2030sp_pp_final.pdf. Accessed February 2025.

———. 2018. *Updated Final Staff Report: Proposed Update to the SB 375 Greenhouse Gas Emissions Reduction Targets*. Available at: https://ww2.arb.ca.gov/sites/default/files/2020-06/SB375_Updated_Final_Target_Staff_Report_2018.pdf. Accessed February 2025.

———. 2022. 2022 Scoping Plan Update. Available at: https://ww2.arb.ca.gov/our-work/programs/ab-32-climate-change-scoping-plan/2022-scoping-plan-documents#:~:text=The%202022%20Scoping%20Plan%20Update%20focuses%20on%20outcomes,energy%20security%2C%20environmental%20justice%2C%20and%20public%20health%20priorities. Accessed February 2025.

———. 2023. 2000–2022 GHG emissions trends report data. Available at: https://ww2.arb.ca.gov/ghg-inventory-data. Accessed February 2025.

———. 2024a. *Table of Ambient Air Quality Standards*. Available at: https://ww2.arb.ca.gov/sites/default/files/2024-08/AAQS%20Table_ADA_FINAL_07222024.pdf. Accessed February 2025.

———. 2024b. Air quality data statistics; top four summary for monitored data. Available online: https://www.arb.ca.gov/adam/. Accessed February 2025.

California Energy Commission (CEC). 2021. California Building Decarbonization Assessment. Available at: https://www.energy.ca.gov/publications/2021/california-building-decarbonization-assessment. Accessed February 2025.

California Office of Environmental Health Hazard Assessment (OEHHA). 2015. Air Toxics Hot Spots Program Risk Assessment Guidelines Guidance Manual for Preparation of Health Risk Assessments. Available at: https://oehha.ca.gov/media/downloads/crnr/2015guidancemanual.pdf. Accessed February 2025.

———. 2021. CalEnviroScreen 4.0. Available at: https://oehha.ca.gov/calenviroscreen/report/calenviroscreen-40. Accessed February 2025.

Department of Conservation. 2000. *A General Location Guide for Ultramafic Rocks in California – Areas More Likely to Contain Naturally Occurring Asbestos*. Available at: https://www.placer.ca.gov/DocumentCenter/View/1433/General-Location-Guide-PDF. Accessed February 2025.

Pierre Friedlingstein, Matthew W. Jones, Michael O'Sullivan, Robbie M. Andrew, Dorothee C. E. Bakker, Judith Hauck, Corinne Le Quéré, Glen P. Peters, Wouter Peters, Julia Pongratz, Stephen Sitch, Josep G. Canadell, Philippe Ciais, Rob B. Jackson, Simone R. Alin, Peter Anthoni, Nicholas R. Bates, Meike Becker, Nicolas Bellouin, Laurent Bopp, Thi Tuyet Trang Chau, Frédéric Chevallier, Louise P. Chini, Margot Cronin, Kim I. Currie, Bertrand Decharme, Laique M. Djeutchouang, Xinyu Dou, Wiley Evans, Richard A. Feely, Liang Feng, Thomas Gasser, Dennis Gilfillan, Thanos Gkritzalis, Giacomo Grassi, Luke Gregor, Nicolas Gruber, Özgür Gürses, Ian Harris, Richard A. Houghton, George C. Hurtt, Yosuke Iida, Tatiana Ilyina, Ingrid T. Luijkx, Atul Jain, Steve D. Jones, Etsushi Kato, Daniel Kennedy, Kees Klein Goldewijk, Jürgen Knauer, Jan Ivar Korsbakken, Arne Körtzinger, Peter Landschützer, Siv K. Lauvset, Nathalie Lefèvre, Sebastian Lienert, Junjie Liu, Gregg Marland, Patrick C. McGuire, Joe R. Melton, David R. Munro, Julia E. M. S. Nabel, Shin-Ichiro Nakaoka, Yosuke Niwa, Tsuneo Ono, Denis Pierrot, Benjamin Poulter, Gregor Rehder, Laure Resplandy, Eddy Robertson, Christian Rödenbeck, Thais M. Rosan, Jörg Schwinger, Clemens Schwingshackl, Roland Séférian, Adrienne J. Sutton, Colm Sweeney, Toste Tanhua, Pieter P. Tans, Hanqin Tian, Bronte Tilbrook, Francesco Tubiello, Guido R. van der Werf, Nicolas Vuichard, Chisato Wada, Rik Wanninkhof, Andrew J. Watson, David Willis, Andrew J. Wiltshire, Wenping Yuan, Chao Yue, Xu Yue, Sönke Zaehle, and Jiye Zeng. 2022. Global carbon budget 2021. *Earth System Science Data* 14:1917–2022. Available at: https://essd.copernicus.org/articles/14/1917/2022/essd-14-1917-2022.html. Accessed February 2025.

Governor's Office of Planning and Research (OPR). 2008. *Technical Advisory. CEQA and Climate Change: Addressing Climate Change through California Environmental Quality Act (CEQA) Review*. Available at: https://opr.ca.gov/docs/june08-ceqa.pdf. Accessed February 2025.

———. 2018. *Discussion Draft: CEQA and Climate Change Advisory*. Available at: https://www.opr.ca.gov/docs/20181228-Discussion_Draft_Climate_Change_Adivsory.pdf. Accessed February 2025.

Intergovernmental Panel on Climate Change (IPCC). 2007. *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*, Table 2.14. Available at: https://www.ipcc.ch/site/assets/uploads/2018/02/ar4-wg1-chapter2-1.pdf. Accessed February 15, 2025.

———. 2013. *Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*. Available at: https://www.ipcc.ch/site/assets/uploads/2018/02/WG1AR5_all_final.pdf. Accessed February 15, 2025.

———. 2021. IPCC Sixth Assessment Report Global Warming Potentials. Available at: https://www.ercevolution.energy/ipcc-sixth-assessment-report/. Accessed February 2025.

County of San Mateo. 2013. County of San Mateo General Plan. Available at: https://www.smcgov.org/planning/general-plan-policies. Accessed February 2025.

County of San Mateo. 2022. *County of San Mateo Community Climate Action Plan*. Available at: https://www.smcgov.org/media/73456/download?inline=. Accessed February 2025.

U.S. Environmental Protection Agency (EPA). 2024a. Health effects of ozone pollution. Available at: https://www.epa.gov/ground-level-ozone-pollution/health-effects-ozone-pollution. Accessed February 2025.

———. 2024b. Basic information about NO_2. Available at: https://www.epa.gov/no2-pollution/basic-information-about-no2#Effects. Accessed February 2025.

———. 2024c. Basic information about carbon monoxide outdoor air pollution. Available at: https://www.epa.gov/indoor-air-quality-iaq/what-carbon-monoxide. Accessed February 2025.

———. 2024d. Particulate matter basics. Available at: https://www.epa.gov/pm-pollution/health-and-environmental-effects-particulate-matter-pm. Accessed February 2025.

———. 2024e. Learn about lead. Available at: https://www.epa.gov/lead/learn-about-lead. Accessed February 2025.

———. 2024f. Green Book. California nonattainment/maintenance status for each county by year for all criteria pollutants. Available at: https://www3.epa.gov/airquality/greenbook/anayo_ca.html. Accessed February 2025.

———. 2024g. *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990–2022*. EPA 430-R-22-003. Available at: ttps://www.epa.gov/system/files/documents/2024-04/us-ghg-inventory-2024-main-text_04-18-2024.pdf. Accessed February 2025.

———. 2025. Sulfur dioxide basics. Available at: https://www.epa.gov/so2-pollution/sulfur-dioxide-basics#effects. Accessed February 2025.

Van Gosen, B.S., and J.P. Clinkenbeard. 2011. *Reported Historic Asbestos Mines, Historic Asbestos Prospects, and Other Natural Occurrences of Asbestos in California*. Open-File Report 2011-1188. Denver, Colorado: U.S. Geological Survey and Sacramento: California Geological Survey. Available at: https://pubs.usgs.gov/of/2011/1188/. Accessed February 2025.

APPENDIX A

CalEEMod Results – Phase 1
Air Pollutant and GHG Emission Calculations

Smith Field Park Improvement Project Detailed Report

Table of Contents

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	Smith Field Park Improvement Project
Construction Start Date	4/1/2026
Operational Year	2026
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	4.70
Precipitation (days)	41.0
Location	203 Wavecrest Rd, Half Moon Bay, CA 94019, USA
County	San Mateo
City	Half Moon Bay
Air District	Bay Area AQMD
Air Basin	San Francisco Bay Area
TAZ	1227
EDFZ	1
Electric Utility	Pacific Gas & Electric Company
Gas Utility	Pacific Gas & Electric
App Version	2022.1.1.29

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
City Park	16.0	Acre	16.0	0.00	435,600	0.00	—	—

Parking Lot	224	Space	2.02	0.00	0.00	0.00	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

Sector	#	Measure Title
Construction	C-10-A	Water Exposed Surfaces
Construction	C-10-B	Water Active Demolition Sites
Construction	C-10-C	Water Unpaved Construction Roads
Construction	C-11	Limit Vehicle Speeds on Unpaved Roads

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	7.59	6.75	54.9	63.1	0.13	2.47	28.5	30.4	2.27	11.1	12.8	—	13,654	13,654	0.61	0.30	3.87	13,730
Mit.	7.59	6.75	54.9	63.1	0.13	2.47	11.6	13.5	2.27	4.89	6.64	—	13,654	13,654	0.61	0.30	3.87	13,730
% Reduced	—	—	—	—	—	—	59%	56%	—	56%	48%	—	—	—	—	—	—	—
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	2.40	1.99	16.4	17.3	0.04	0.71	8.09	8.80	0.66	2.56	3.22	—	3,996	3,996	0.20	0.09	0.41	4,029
Mit.	2.40	1.99	16.4	17.3	0.04	0.71	3.15	3.86	0.66	1.12	1.78	—	3,996	3,996	0.20	0.09	0.41	4,029
% Reduced	—	—	—	—	—	—	61%	56%	—	56%	45%	—	—	—	—	—	—	—
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Unmit.	0.44	0.36	3.00	3.16	0.01	0.13	1.48	1.61	0.12	0.47	0.59	—	662	662	0.03	0.02	0.07	667
Mit.	0.44	0.36	3.00	3.16	0.01	0.13	0.57	0.70	0.12	0.20	0.32	—	662	662	0.03	0.02	0.07	667
% Reduced	—	—	—	—	—	—	61%	56%	—	56%	45%	—	—	—	—	—	—	—

2.2. Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	7.59	6.75	54.9	63.1	0.13	2.47	28.5	30.4	2.27	11.1	12.8	—	13,654	13,654	0.61	0.30	3.87	13,730
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	2.40	1.99	16.4	17.3	0.04	0.71	8.09	8.80	0.66	2.56	3.22	—	3,996	3,996	0.20	0.09	0.41	4,029
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	0.44	0.36	3.00	3.16	0.01	0.13	1.48	1.61	0.12	0.47	0.59	—	662	662	0.03	0.02	0.07	667

2.3. Construction Emissions by Year, Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	7.59	6.75	54.9	63.1	0.13	2.47	11.6	13.5	2.27	4.89	6.64	—	13,654	13,654	0.61	0.30	3.87	13,730
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	2.40	1.99	16.4	17.3	0.04	0.71	3.15	3.86	0.66	1.12	1.78	—	3,996	3,996	0.20	0.09	0.41	4,029
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	0.44	0.36	3.00	3.16	0.01	0.13	0.57	0.70	0.12	0.20	0.32	—	662	662	0.03	0.02	0.07	667

2.4. Operations Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	9.01	8.13	14.4	74.5	0.20	0.66	18.1	18.8	0.62	4.59	5.22	0.74	20,950	20,951	0.74	0.60	58.7	21,206
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	8.94	8.04	15.3	71.4	0.20	0.66	18.1	18.8	0.62	4.59	5.22	0.74	20,091	20,092	0.79	0.66	1.52	20,310
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	2.99	2.68	8.40	20.3	0.05	0.49	3.73	4.22	0.45	0.95	1.40	0.74	5,096	5,097	0.26	0.14	5.36	5,151
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.55	0.49	1.53	3.71	0.01	0.09	0.68	0.77	0.08	0.17	0.26	0.12	844	844	0.04	0.02	0.89	853

2.5. Operations Emissions by Sector, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Sector	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Mobile	6.51	5.88	4.92	62.9	0.19	0.10	18.1	18.2	0.09	4.59	4.69	—	19,237	19,237	0.59	0.58	58.7	19,485
Area	0.29	0.29	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Energy	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	43.0	43.0	0.01	< 0.005	—	43.4
Water	—	—	—	—	—	—	—	—	—	—	—	0.00	9.96	9.96	< 0.005	< 0.005	—	10.1
Waste	—	—	—	—	—	—	—	—	—	—	—	0.74	0.00	0.74	0.07	0.00	—	2.59
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Off-Road	0.77	0.65	5.82	6.82	0.01	0.37	—	0.37	0.34	—	0.34	—	988	988	0.04	0.01	—	991
Stationary	1.44	1.31	3.67	4.76	0.01	0.19	0.00	0.19	0.19	0.00	0.19	0.00	672	672	0.03	0.01	0.00	674
Total	9.01	8.13	14.4	74.5	0.20	0.66	18.1	18.8	0.62	4.59	5.22	0.74	20,950	20,951	0.74	0.60	58.7	21,206
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	6.44	5.79	5.81	59.8	0.18	0.10	18.1	18.2	0.09	4.59	4.69	—	18,379	18,379	0.64	0.64	1.52	18,588
Area	0.29	0.29	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	43.0	43.0	0.01	< 0.005	—	43.4
Water	—	—	—	—	—	—	—	—	—	—	—	0.00	9.96	9.96	< 0.005	< 0.005	—	10.1
Waste	—	—	—	—	—	—	—	—	—	—	—	0.74	0.00	0.74	0.07	0.00	—	2.59
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Off-Road	0.77	0.65	5.82	6.82	0.01	0.37	—	0.37	0.34	—	0.34	—	988	988	0.04	0.01	—	991
Stationary	1.44	1.31	3.67	4.76	0.01	0.19	0.00	0.19	0.19	0.00	0.19	0.00	672	672	0.03	0.01	0.00	674
Total	8.94	8.04	15.3	71.4	0.20	0.66	18.1	18.8	0.62	4.59	5.22	0.74	20,091	20,092	0.79	0.66	1.52	20,310
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	1.34	1.21	1.16	12.3	0.04	0.02	3.73	3.75	0.02	0.95	0.97	—	3,896	3,896	0.13	0.13	5.36	3,943
Area	0.29	0.29	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Energy	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	43.0	43.0	0.01	< 0.005	—	43.4
Water	—	—	—	—	—	—	—	—	—	—	—	0.00	9.96	9.96	< 0.005	< 0.005	—	10.1

Waste	—	—	—	—	—	—	—	—	—	—	—	0.74	0.00	0.74	0.07	0.00	—	2.59
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Off-Road	0.77	0.65	5.73	6.10	0.01	0.39	—	0.39	0.36	—	0.36	—	871	871	0.04	0.01	—	874
Stationary	0.59	0.54	1.51	1.96	< 0.005	0.08	0.00	0.08	0.08	0.00	0.08	0.00	276	276	0.01	< 0.005	0.00	277
Total	2.99	2.68	8.40	20.3	0.05	0.49	3.73	4.22	0.45	0.95	1.40	0.74	5,096	5,097	0.26	0.14	5.36	5,151
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.24	0.22	0.21	2.24	0.01	< 0.005	0.68	0.69	< 0.005	0.17	0.18	—	645	645	0.02	0.02	0.89	653
Area	0.05	0.05	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Energy	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	7.12	7.12	< 0.005	< 0.005	—	7.19
Water	—	—	—	—	—	—	—	—	—	—	—	0.00	1.65	1.65	< 0.005	< 0.005	—	1.66
Waste	—	—	—	—	—	—	—	—	—	—	—	0.12	0.00	0.12	0.01	0.00	—	0.43
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Off-Road	0.14	0.12	1.05	1.11	< 0.005	0.07	—	0.07	0.06	—	0.06	—	144	144	0.01	< 0.005	—	145
Stationary	0.11	0.10	0.28	0.36	< 0.005	0.01	0.00	0.01	0.01	0.00	0.01	0.00	45.7	45.7	< 0.005	< 0.005	0.00	45.8
Total	0.55	0.49	1.53	3.71	0.01	0.09	0.68	0.77	0.08	0.17	0.26	0.12	844	844	0.04	0.02	0.89	853

2.6. Operations Emissions by Sector, Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Sector	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	6.51	5.88	4.92	62.9	0.19	0.10	18.1	18.2	0.09	4.59	4.69	—	19,237	19,237	0.59	0.58	58.7	19,485
Area	0.29	0.29	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Energy	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	43.0	43.0	0.01	< 0.005	—	43.4
Water	—	—	—	—	—	—	—	—	—	—	—	0.00	9.96	9.96	< 0.005	< 0.005	—	10.1

Waste	—	—	—	—	—	—	—	—	—	—	—	0.74	0.00	0.74	0.07	0.00	—	2.59
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Off-Road	0.77	0.65	5.82	6.82	0.01	0.37	—	0.37	0.34	—	0.34	—	988	988	0.04	0.01	—	991
Stationary	1.44	1.31	3.67	4.76	0.01	0.19	0.00	0.19	0.19	0.00	0.19	0.00	672	672	0.03	0.01	0.00	674
Total	9.01	8.13	14.4	74.5	0.20	0.66	18.1	18.8	0.62	4.59	5.22	0.74	20,950	20,951	0.74	0.60	58.7	21,206
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	6.44	5.79	5.81	59.8	0.18	0.10	18.1	18.2	0.09	4.59	4.69	—	18,379	18,379	0.64	0.64	1.52	18,588
Area	0.29	0.29	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	43.0	43.0	0.01	< 0.005	—	43.4
Water	—	—	—	—	—	—	—	—	—	—	—	0.00	9.96	9.96	< 0.005	< 0.005	—	10.1
Waste	—	—	—	—	—	—	—	—	—	—	—	0.74	0.00	0.74	0.07	0.00	—	2.59
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Off-Road	0.77	0.65	5.82	6.82	0.01	0.37	—	0.37	0.34	—	0.34	—	988	988	0.04	0.01	—	991
Stationary	1.44	1.31	3.67	4.76	0.01	0.19	0.00	0.19	0.19	0.00	0.19	0.00	672	672	0.03	0.01	0.00	674
Total	8.94	8.04	15.3	71.4	0.20	0.66	18.1	18.8	0.62	4.59	5.22	0.74	20,091	20,092	0.79	0.66	1.52	20,310
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	1.34	1.21	1.16	12.3	0.04	0.02	3.73	3.75	0.02	0.95	0.97	—	3,896	3,896	0.13	0.13	5.36	3,943
Area	0.29	0.29	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Energy	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	43.0	43.0	0.01	< 0.005	—	43.4
Water	—	—	—	—	—	—	—	—	—	—	—	0.00	9.96	9.96	< 0.005	< 0.005	—	10.1
Waste	—	—	—	—	—	—	—	—	—	—	—	0.74	0.00	0.74	0.07	0.00	—	2.59
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Off-Road	0.77	0.65	5.73	6.10	0.01	0.39	—	0.39	0.36	—	0.36	—	871	871	0.04	0.01	—	874

Stationa	0.59	0.54	1.51	1.96	< 0.005	0.08	0.00	0.08	0.08	0.00	0.08	0.00	276	276	0.01	< 0.005	0.00	277
Total	2.99	2.68	8.40	20.3	0.05	0.49	3.73	4.22	0.45	0.95	1.40	0.74	5,096	5,097	0.26	0.14	5.36	5,151
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.24	0.22	0.21	2.24	0.01	< 0.005	0.68	0.69	< 0.005	0.17	0.18	—	645	645	0.02	0.02	0.89	653
Area	0.05	0.05	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Energy	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	7.12	7.12	< 0.005	< 0.005	—	7.19
Water	—	—	—	—	—	—	—	—	—	—	—	0.00	1.65	1.65	< 0.005	< 0.005	—	1.66
Waste	—	—	—	—	—	—	—	—	—	—	—	0.12	0.00	0.12	0.01	0.00	—	0.43
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Off-Road	0.14	0.12	1.05	1.11	< 0.005	0.07	—	0.07	0.06	—	0.06	—	144	144	0.01	< 0.005	—	145
Stationary	0.11	0.10	0.28	0.36	< 0.005	0.01	0.00	0.01	0.01	0.00	0.01	0.00	45.7	45.7	< 0.005	< 0.005	0.00	45.8
Total	0.55	0.49	1.53	3.71	0.01	0.09	0.68	0.77	0.08	0.17	0.26	0.12	844	844	0.04	0.02	0.89	853

3. Construction Emissions Details

3.1. Demolition (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.22	2.70	23.4	22.1	0.04	0.93	—	0.93	0.85	—	0.85	—	4,428	4,428	0.18	0.04	—	4,444
Demolition	—	—	—	—	—	—	1.61	1.61	—	0.24	0.24	—	—	—	—	—	—	—

Onsite truck	0.01	< 0.005	0.10	0.07	< 0.005	< 0.005	7.36	7.36	< 0.005	0.73	0.73	—	27.0	27.0	0.01	< 0.005	0.04	28.5
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.23	0.19	1.66	1.57	< 0.005	0.07	—	0.07	0.06	—	0.06	—	315	315	0.01	< 0.005	—	317
Demolition	—	—	—	—	—	—	0.11	0.11	—	0.02	0.02	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	0.47	0.47	< 0.005	0.05	0.05	—	1.92	1.92	< 0.005	< 0.005	< 0.005	2.03
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.04	0.30	0.29	< 0.005	0.01	—	0.01	0.01	—	0.01	—	52.2	52.2	< 0.005	< 0.005	—	52.4
Demolition	—	—	—	—	—	—	0.02	0.02	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.08	0.08	< 0.005	0.01	0.01	—	0.32	0.32	< 0.005	< 0.005	< 0.005	0.34
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.06	0.04	0.72	0.00	0.00	0.21	0.21	0.00	0.05	0.05	—	202	202	< 0.005	< 0.005	0.60	203
Vendor	0.02	< 0.005	0.15	0.10	< 0.005	< 0.005	0.03	0.03	< 0.005	0.01	0.01	—	113	113	0.01	0.02	0.27	118
Hauling	0.27	0.04	2.30	1.63	0.01	0.02	0.37	0.39	0.02	0.10	0.12	—	1,537	1,537	0.23	0.24	2.96	1,619
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.05	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	13.6	13.6	< 0.005	< 0.005	0.02	13.8
Vendor	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	8.05	8.05	< 0.005	< 0.005	0.01	8.42
Hauling	0.02	< 0.005	0.17	0.12	< 0.005	< 0.005	0.03	0.03	< 0.005	0.01	0.01	—	110	110	0.02	0.02	0.09	115
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	2.26	2.26	< 0.005	< 0.005	< 0.005	2.29
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	1.33	1.33	< 0.005	< 0.005	< 0.005	1.39
Hauling	< 0.005	< 0.005	0.03	0.02	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	18.1	18.1	< 0.005	< 0.005	0.02	19.1

3.2. Demolition (2026) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.22	2.70	23.4	22.1	0.04	0.93	—	0.93	0.85	—	0.85	—	4,428	4,428	0.18	0.04	—	4,444
Demolition	—	—	—	—	—	—	1.21	1.21	—	0.18	0.18	—	—	—	—	—	—	—
Onsite truck	0.01	< 0.005	0.10	0.07	< 0.005	< 0.005	1.86	1.86	< 0.005	0.19	0.19	—	27.0	27.0	0.01	< 0.005	0.04	28.5
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.23	0.19	1.66	1.57	< 0.005	0.07	—	0.07	0.06	—	0.06	—	315	315	0.01	< 0.005	—	317
Demolition	—	—	—	—	—	—	0.09	0.09	—	0.01	0.01	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	0.12	0.12	< 0.005	0.01	0.01	—	1.92	1.92	< 0.005	< 0.005	< 0.005	2.03
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.04	0.30	0.29	< 0.005	0.01	—	0.01	0.01	—	0.01	—	52.2	52.2	< 0.005	< 0.005	—	52.4
Demolition	—	—	—	—	—	—	0.02	0.02	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	< 0.005	—	0.32	0.32	< 0.005	< 0.005	< 0.005	0.34
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.06	0.04	0.72	0.00	0.00	0.21	0.21	0.00	0.05	0.05	—	202	202	< 0.005	< 0.005	0.60	203
Vendor	0.02	< 0.005	0.15	0.10	< 0.005	< 0.005	0.03	0.03	< 0.005	0.01	0.01	—	113	113	0.01	0.02	0.27	118
Hauling	0.27	0.04	2.30	1.63	0.01	0.02	0.37	0.39	0.02	0.10	0.12	—	1,537	1,537	0.23	0.24	2.96	1,619
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.05	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	13.6	13.6	< 0.005	< 0.005	0.02	13.8
Vendor	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	8.05	8.05	< 0.005	< 0.005	0.01	8.42
Hauling	0.02	< 0.005	0.17	0.12	< 0.005	< 0.005	0.03	0.03	< 0.005	0.01	0.01	—	110	110	0.02	0.02	0.09	115
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	2.26	2.26	< 0.005	< 0.005	< 0.005	2.29

Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	1.33	1.33	< 0.005	< 0.005	< 0.005	1.39
Hauling	< 0.005	< 0.005	0.03	0.02	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	18.1	18.1	< 0.005	< 0.005	0.02	19.1

3.3. Drainage/Utilities (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	5.72	4.81	41.9	41.3	0.09	1.89	—	1.89	1.74	—	1.74	—	9,284	9,284	0.38	0.08	—	9,316
Dust From Material Movement	—	—	—	—	—	—	20.7	20.7	—	10.2	10.2	—	—	—	—	—	—	—
Onsite truck	0.01	< 0.005	0.10	0.07	< 0.005	< 0.005	7.36	7.36	< 0.005	0.73	0.73	—	27.0	27.0	0.01	< 0.005	0.04	28.5
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.82	0.68	5.97	5.88	0.01	0.27	—	0.27	0.25	—	0.25	—	1,323	1,323	0.05	0.01	—	1,327
Dust From Material Movement	—	—	—	—	—	—	2.95	2.95	—	1.46	1.46	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	0.93	0.93	< 0.005	0.09	0.09	—	3.84	3.84	< 0.005	< 0.005	< 0.005	4.05

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.15	0.12	1.09	1.07	< 0.005	0.05	—	0.05	0.05	—	0.05	—	219	219	0.01	< 0.005	—	220
Dust From Material Movement	—	—	—	—	—	—	0.54	0.54	—	0.27	0.27	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.17	0.17	< 0.005	0.02	0.02	—	0.64	0.64	< 0.005	< 0.005	< 0.005	0.67
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.05	0.04	0.58	0.00	0.00	0.17	0.17	0.00	0.04	0.04	—	161	161	< 0.005	< 0.005	0.48	162
Vendor	0.02	< 0.005	0.15	0.10	< 0.005	< 0.005	0.03	0.03	< 0.005	0.01	0.01	—	113	113	0.01	0.02	0.27	118
Hauling	0.16	0.02	1.38	0.98	0.01	0.01	0.22	0.23	0.01	0.06	0.07	—	922	922	0.14	0.15	1.78	971
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.07	0.00	0.00	0.02	0.02	0.00	0.01	0.01	—	21.8	21.8	< 0.005	< 0.005	0.03	22.1
Vendor	< 0.005	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	16.1	16.1	< 0.005	< 0.005	0.02	16.8
Hauling	0.02	< 0.005	0.20	0.14	< 0.005	< 0.005	0.03	0.03	< 0.005	0.01	0.01	—	131	131	0.02	0.02	0.11	138
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	3.61	3.61	< 0.005	< 0.005	< 0.005	3.66
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	2.66	2.66	< 0.005	< 0.005	< 0.005	2.79
Hauling	< 0.005	< 0.005	0.04	0.03	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	21.8	21.8	< 0.005	< 0.005	0.02	22.9

3.4. Drainage/Utilities (2026) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	5.72	4.81	41.9	41.3	0.09	1.89	—	1.89	1.74	—	1.74	—	9,284	9,284	0.38	0.08	—	9,316
Dust From Material Movement	—	—	—	—	—	—	9.32	9.32	—	4.60	4.60	—	—	—	—	—	—	—
Onsite truck	0.01	< 0.005	0.10	0.07	< 0.005	< 0.005	1.86	1.86	< 0.005	0.19	0.19	—	27.0	27.0	0.01	< 0.005	0.04	28.5
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.82	0.68	5.97	5.88	0.01	0.27	—	0.27	0.25	—	0.25	—	1,323	1,323	0.05	0.01	—	1,327
Dust From Material Movement	—	—	—	—	—	—	1.33	1.33	—	0.66	0.66	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	0.23	0.23	< 0.005	0.02	0.02	—	3.84	3.84	< 0.005	< 0.005	< 0.005	4.05
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.15	0.12	1.09	1.07	< 0.005	0.05	—	0.05	0.05	—	0.05	—	219	219	0.01	< 0.005	—	220

Dust From Material Movement	—	—	—	—	—	—	0.24	0.24	—	0.12	0.12	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.04	0.04	< 0.005	< 0.005	< 0.005	—	0.64	0.64	< 0.005	< 0.005	< 0.005	0.67
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.05	0.04	0.58	0.00	0.00	0.17	0.17	0.00	0.04	0.04	—	161	161	< 0.005	< 0.005	0.48	162
Vendor	0.02	< 0.005	0.15	0.10	< 0.005	< 0.005	0.03	0.03	< 0.005	0.01	0.01	—	113	113	0.01	0.02	0.27	118
Hauling	0.16	0.02	1.38	0.98	0.01	0.01	0.22	0.23	0.01	0.06	0.07	—	922	922	0.14	0.15	1.78	971
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.07	0.00	0.00	0.02	0.02	0.00	0.01	0.01	—	21.8	21.8	< 0.005	< 0.005	0.03	22.1
Vendor	< 0.005	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	16.1	16.1	< 0.005	< 0.005	0.02	16.8
Hauling	0.02	< 0.005	0.20	0.14	< 0.005	< 0.005	0.03	0.03	< 0.005	0.01	0.01	—	131	131	0.02	0.02	0.11	138
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	3.61	3.61	< 0.005	< 0.005	< 0.005	3.66
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	2.66	2.66	< 0.005	< 0.005	< 0.005	2.79
Hauling	< 0.005	< 0.005	0.04	0.03	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	21.8	21.8	< 0.005	< 0.005	0.02	22.9

3.5. Rough Grading (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	5.62	4.72	41.9	43.7	0.09	1.75	—	1.75	1.61	—	1.61	—	9,959	9,959	0.40	0.08	—	9,993
Dust From Material Movement	—	—	—	—	—	—	16.3	16.3	—	7.08	7.08	—	—	—	—	—	—	—
Onsite truck	0.01	< 0.005	0.10	0.07	< 0.005	< 0.005	7.36	7.36	< 0.005	0.73	0.73	—	27.0	27.0	0.01	< 0.005	0.04	28.5
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.42	0.35	3.10	3.23	0.01	0.13	—	0.13	0.12	—	0.12	—	737	737	0.03	0.01	—	739
Dust From Material Movement	—	—	—	—	—	—	1.20	1.20	—	0.52	0.52	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	0.48	0.48	< 0.005	0.05	0.05	—	1.99	1.99	< 0.005	< 0.005	< 0.005	2.10
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.08	0.06	0.57	0.59	< 0.005	0.02	—	0.02	0.02	—	0.02	—	122	122	< 0.005	< 0.005	—	122
Dust From Material Movement	—	—	—	—	—	—	0.22	0.22	—	0.10	0.10	—	—	—	—	—	—	—

Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.09	0.09	< 0.005	0.01	0.01	—	0.33	0.33	< 0.005	< 0.005	< 0.005	0.35
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.05	0.04	0.58	0.00	0.00	0.17	0.17	0.00	0.04	0.04	—	161	161	< 0.005	< 0.005	0.48	162
Vendor	0.02	< 0.005	0.15	0.10	< 0.005	< 0.005	0.03	0.03	< 0.005	0.01	0.01	—	113	113	0.01	0.02	0.27	118
Hauling	0.11	0.01	0.92	0.65	< 0.005	0.01	0.15	0.16	0.01	0.04	0.05	—	615	615	0.09	0.10	1.19	647
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.04	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	11.3	11.3	< 0.005	< 0.005	0.02	11.5
Vendor	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	8.36	8.36	< 0.005	< 0.005	0.01	8.74
Hauling	0.01	< 0.005	0.07	0.05	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	45.5	45.5	0.01	0.01	0.04	47.8
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.87	1.87	< 0.005	< 0.005	< 0.005	1.90
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	1.38	1.38	< 0.005	< 0.005	< 0.005	1.45
Hauling	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	7.53	7.53	< 0.005	< 0.005	0.01	7.92

3.6. Rough Grading (2026) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	5.62	4.72	41.9	43.7	0.09	1.75	—	1.75	1.61	—	1.61	—	9,959	9,959	0.40	0.08	—	9,993
Dust From Material Movement	—	—	—	—	—	—	7.33	7.33	—	3.19	3.19	—	—	—	—	—	—	—
Onsite truck	0.01	< 0.005	0.10	0.07	< 0.005	< 0.005	1.86	1.86	< 0.005	0.19	0.19	—	27.0	27.0	0.01	< 0.005	0.04	28.5
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.42	0.35	3.10	3.23	0.01	0.13	—	0.13	0.12	—	0.12	—	737	737	0.03	0.01	—	739
Dust From Material Movement	—	—	—	—	—	—	0.54	0.54	—	0.24	0.24	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	0.12	0.12	< 0.005	0.01	0.01	—	1.99	1.99	< 0.005	< 0.005	< 0.005	2.10
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.08	0.06	0.57	0.59	< 0.005	0.02	—	0.02	0.02	—	0.02	—	122	122	< 0.005	< 0.005	—	122
Dust From Material Movement	—	—	—	—	—	—	0.10	0.10	—	0.04	0.04	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	< 0.005	—	0.33	0.33	< 0.005	< 0.005	< 0.005	0.35
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.05	0.04	0.58	0.00	0.00	0.17	0.17	0.00	0.04	0.04	—	161	161	< 0.005	< 0.005	0.48	162
Vendor	0.02	< 0.005	0.15	0.10	< 0.005	< 0.005	0.03	0.03	< 0.005	0.01	0.01	—	113	113	0.01	0.02	0.27	118
Hauling	0.11	0.01	0.92	0.65	< 0.005	0.01	0.15	0.16	0.01	0.04	0.05	—	615	615	0.09	0.10	1.19	647
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.04	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	11.3	11.3	< 0.005	< 0.005	0.02	11.5
Vendor	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	8.36	8.36	< 0.005	< 0.005	0.01	8.74
Hauling	0.01	< 0.005	0.07	0.05	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	45.5	45.5	0.01	0.01	0.04	47.8
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.87	1.87	< 0.005	< 0.005	< 0.005	1.90
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	1.38	1.38	< 0.005	< 0.005	< 0.005	1.45
Hauling	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	7.53	7.53	< 0.005	< 0.005	0.01	7.92

3.7. Fine Grading (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	4.58	3.84	33.8	36.9	0.08	1.40	—	1.40	1.28	—	1.28	—	8,614	8,614	0.35	0.07	—	8,644

Dust From Material Movement	—	—	—	—	—	—	9.73	9.73	—	3.71	3.71	—	—	—	—	—	—	—
Onsite truck	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.26	0.22	1.94	2.12	< 0.005	0.08	—	0.08	0.07	—	0.07	—	496	496	0.02	< 0.005	—	497
Dust From Material Movement	—	—	—	—	—	—	0.56	0.56	—	0.21	0.21	—	—	—	—	—	—	—
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05	0.04	0.35	0.39	< 0.005	0.01	—	0.01	0.01	—	0.01	—	82.1	82.1	< 0.005	< 0.005	—	82.3
Dust From Material Movement	—	—	—	—	—	—	0.10	0.10	—	0.04	0.04	—	—	—	—	—	—	—
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.05	0.04	0.58	0.00	0.00	0.17	0.17	0.00	0.04	0.04	—	161	161	< 0.005	< 0.005	0.48	162

Vendor	0.02	< 0.005	0.15	0.10	< 0.005	< 0.005	0.03	0.03	< 0.005	0.01	0.01	—	113	113	0.01	0.02	0.27	118
Hauling	0.05	0.01	0.46	0.33	< 0.005	< 0.005	0.07	0.08	< 0.005	0.02	0.02	—	307	307	0.05	0.05	0.59	324
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.03	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	8.80	8.80	< 0.005	< 0.005	0.01	8.93
Vendor	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	6.50	6.50	< 0.005	< 0.005	0.01	6.80
Hauling	< 0.005	< 0.005	0.03	0.02	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	17.7	17.7	< 0.005	< 0.005	0.01	18.6
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.46	1.46	< 0.005	< 0.005	< 0.005	1.48
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	1.08	1.08	< 0.005	< 0.005	< 0.005	1.13
Hauling	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	2.93	2.93	< 0.005	< 0.005	< 0.005	3.08

3.8. Fine Grading (2026) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	4.58	3.84	33.8	36.9	0.08	1.40	—	1.40	1.28	—	1.28	—	8,614	8,614	0.35	0.07	—	8,644
Dust From Material Movement	—	—	—	—	—	—	4.38	4.38	—	1.67	1.67	—	—	—	—	—	—	—
Onsite truck	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	0.00

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.26	0.22	1.94	2.12	< 0.005	0.08	—	0.08	0.07	—	0.07	—	496	496	0.02	< 0.005	—	497
Dust From Material Movement	—	—	—	—	—	—	0.25	0.25	—	0.10	0.10	—	—	—	—	—	—	—
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05	0.04	0.35	0.39	< 0.005	0.01	—	0.01	0.01	—	0.01	—	82.1	82.1	< 0.005	< 0.005	—	82.3
Dust From Material Movement	—	—	—	—	—	—	0.05	0.05	—	0.02	0.02	—	—	—	—	—	—	—
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.05	0.04	0.58	0.00	0.00	0.17	0.17	0.00	0.04	0.04	—	161	161	< 0.005	< 0.005	0.48	162
Vendor	0.02	< 0.005	0.15	0.10	< 0.005	< 0.005	0.03	0.03	< 0.005	0.01	0.01	—	113	113	0.01	0.02	0.27	118
Hauling	0.05	0.01	0.46	0.33	< 0.005	< 0.005	0.07	0.08	< 0.005	0.02	0.02	—	307	307	0.05	0.05	0.59	324
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.03	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	8.80	8.80	< 0.005	< 0.005	0.01	8.93
Vendor	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	6.50	6.50	< 0.005	< 0.005	0.01	6.80
Hauling	< 0.005	< 0.005	0.03	0.02	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	17.7	17.7	< 0.005	< 0.005	0.01	18.6
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.46	1.46	< 0.005	< 0.005	< 0.005	1.48
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	1.08	1.08	< 0.005	< 0.005	< 0.005	1.13
Hauling	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	2.93	2.93	< 0.005	< 0.005	< 0.005	3.08

3.9. Building Construction (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.85	2.39	20.1	25.0	0.04	1.07	—	1.07	0.98	—	0.98	—	4,277	4,277	0.17	0.03	—	4,291
Onsite truck	0.01	< 0.005	0.10	0.07	< 0.005	< 0.005	7.36	7.36	< 0.005	0.73	0.73	—	27.0	27.0	0.01	< 0.005	0.04	28.5
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.33	0.28	2.32	2.88	< 0.005	0.12	—	0.12	0.11	—	0.11	—	492	492	0.02	< 0.005	—	494

Onsite truck	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	0.75	0.75	< 0.005	0.08	0.08	—	3.10	3.10	< 0.005	< 0.005	< 0.005	3.27
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.06	0.05	0.42	0.52	< 0.005	0.02	—	0.02	0.02	—	0.02	—	81.5	81.5	< 0.005	< 0.005	—	81.8
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.14	0.14	< 0.005	0.01	0.01	—	0.51	0.51	< 0.005	< 0.005	< 0.005	0.54
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	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	0.00
Vendor	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	0.00
Hauling	0.03	< 0.005	0.23	0.16	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	154	154	0.02	0.02	0.30	162
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	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	0.00
Vendor	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	0.00
Hauling	< 0.005	< 0.005	0.03	0.02	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	17.7	17.7	< 0.005	< 0.005	0.01	18.6
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	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	0.00
Vendor	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	0.00
Hauling	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	2.93	2.93	< 0.005	< 0.005	< 0.005	3.08

3.10. Building Construction (2026) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.85	2.39	20.1	25.0	0.04	1.07	—	1.07	0.98	—	0.98	—	4,277	4,277	0.17	0.03	—	4,291
Onsite truck	0.01	< 0.005	0.10	0.07	< 0.005	< 0.005	1.86	1.86	< 0.005	0.19	0.19	—	27.0	27.0	0.01	< 0.005	0.04	28.5
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.33	0.28	2.32	2.88	< 0.005	0.12	—	0.12	0.11	—	0.11	—	492	492	0.02	< 0.005	—	494
Onsite truck	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	0.19	0.19	< 0.005	0.02	0.02	—	3.10	3.10	< 0.005	< 0.005	< 0.005	3.27
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.06	0.05	0.42	0.52	< 0.005	0.02	—	0.02	0.02	—	0.02	—	81.5	81.5	< 0.005	< 0.005	—	81.8
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.03	0.03	< 0.005	< 0.005	< 0.005	—	0.51	0.51	< 0.005	< 0.005	< 0.005	0.54
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	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	0.00
Vendor	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	0.00
Hauling	0.03	< 0.005	0.23	0.16	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	154	154	0.02	0.02	0.30	162

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	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	0.00
Vendor	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	0.00
Hauling	< 0.005	< 0.005	0.03	0.02	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	17.7	17.7	< 0.005	< 0.005	0.01	18.6
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	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	0.00
Vendor	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	0.00
Hauling	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	2.93	2.93	< 0.005	< 0.005	< 0.005	3.08

3.11. Paving (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.62	1.36	11.2	13.5	0.02	0.58	—	0.58	0.53	—	0.53	—	2,549	2,549	0.10	0.02	—	2,558
Paving	0.26	0.26	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.01	< 0.005	0.10	0.07	< 0.005	< 0.005	7.36	7.36	< 0.005	0.73	0.73	—	27.0	27.0	0.01	< 0.005	0.04	28.5
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.12	0.10	0.80	0.96	< 0.005	0.04	—	0.04	0.04	—	0.04	—	182	182	0.01	< 0.005	—	182
Paving	0.02	0.02	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	0.47	0.47	< 0.005	0.05	0.05	—	1.92	1.92	< 0.005	< 0.005	< 0.005	2.03
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.02	0.15	0.18	< 0.005	0.01	—	0.01	0.01	—	0.01	—	30.1	30.1	< 0.005	< 0.005	—	30.2
Paving	< 0.005	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.08	0.08	< 0.005	0.01	0.01	—	0.32	0.32	< 0.005	< 0.005	< 0.005	0.34
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.05	0.04	0.64	0.00	0.00	0.18	0.18	0.00	0.04	0.04	—	178	178	< 0.005	< 0.005	0.53	179
Vendor	0.02	< 0.005	0.15	0.10	< 0.005	< 0.005	0.03	0.03	< 0.005	0.01	0.01	—	113	113	0.01	0.02	0.27	118
Hauling	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.04	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	12.0	12.0	< 0.005	< 0.005	0.02	12.2
Vendor	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	8.05	8.05	< 0.005	< 0.005	0.01	8.42
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.98	1.98	< 0.005	< 0.005	< 0.005	2.01
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	1.33	1.33	< 0.005	< 0.005	< 0.005	1.39
Hauling	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	0.00

3.12. Paving (2026) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.62	1.36	11.2	13.5	0.02	0.58	—	0.58	0.53	—	0.53	—	2,549	2,549	0.10	0.02	—	2,558
Paving	0.26	0.26	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.01	< 0.005	0.10	0.07	< 0.005	< 0.005	1.86	1.86	< 0.005	0.19	0.19	—	27.0	27.0	0.01	< 0.005	0.04	28.5
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.12	0.10	0.80	0.96	< 0.005	0.04	—	0.04	0.04	—	0.04	—	182	182	0.01	< 0.005	—	182
Paving	0.02	0.02	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	0.12	0.12	< 0.005	0.01	0.01	—	1.92	1.92	< 0.005	< 0.005	< 0.005	2.03
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.02	0.15	0.18	< 0.005	0.01	—	0.01	0.01	—	0.01	—	30.1	30.1	< 0.005	< 0.005	—	30.2
Paving	< 0.005	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	< 0.005	—	0.32	0.32	< 0.005	< 0.005	< 0.005	0.34

Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.05	0.04	0.64	0.00	0.00	0.18	0.18	0.00	0.04	0.04	—	178	178	< 0.005	< 0.005	0.53	179
Vendor	0.02	< 0.005	0.15	0.10	< 0.005	< 0.005	0.03	0.03	< 0.005	0.01	0.01	—	113	113	0.01	0.02	0.27	118
Hauling	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.04	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	12.0	12.0	< 0.005	< 0.005	0.02	12.2
Vendor	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	8.05	8.05	< 0.005	< 0.005	0.01	8.42
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.98	1.98	< 0.005	< 0.005	< 0.005	2.01
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	1.33	1.33	< 0.005	< 0.005	< 0.005	1.39
Hauling	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	0.00

3.13. Architectural Coating (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.15	0.12	0.86	1.13	< 0.005	0.02	—	0.02	0.02	—	0.02	—	134	134	0.01	< 0.005	—	134

Architectural	4.96	4.96	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.02	0.03	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	3.29	3.29	< 0.005	< 0.005	—	3.30
Architectural Coatings	0.12	0.12	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	< 0.005	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.55	0.55	< 0.005	< 0.005	—	0.55
Architectural Coatings	0.02	0.02	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	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	0.00
Vendor	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	0.00

Hauling	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	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	0.00
Vendor	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	0.00
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	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	0.00
Vendor	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	0.00
Hauling	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	0.00

3.14. Architectural Coating (2026) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.15	0.12	0.86	1.13	< 0.005	0.02	—	0.02	0.02	—	0.02	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	4.96	4.96	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.02	0.03	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	3.29	3.29	< 0.005	< 0.005	—	3.30
Architectural Coatings	0.12	0.12	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	< 0.005	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.55	0.55	< 0.005	< 0.005	—	0.55
Architectural Coatings	0.02	0.02	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	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	0.00
Vendor	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	0.00
Hauling	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	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	0.00
Vendor	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	0.00
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	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	0.00
Vendor	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	0.00
Hauling	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	0.00

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	6.51	5.88	4.92	62.9	0.19	0.10	18.1	18.2	0.09	4.59	4.69	—	19,237	19,237	0.59	0.58	58.7	19,485
Parking Lot	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	0.00
Total	6.51	5.88	4.92	62.9	0.19	0.10	18.1	18.2	0.09	4.59	4.69	—	19,237	19,237	0.59	0.58	58.7	19,485
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	6.44	5.79	5.81	59.8	0.18	0.10	18.1	18.2	0.09	4.59	4.69	—	18,379	18,379	0.64	0.64	1.52	18,588

Parking Lot	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	0.00
Total	6.44	5.79	5.81	59.8	0.18	0.10	18.1	18.2	0.09	4.59	4.69	—	18,379	18,379	0.64	0.64	1.52	18,588
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	0.24	0.22	0.21	2.24	0.01	< 0.005	0.68	0.69	< 0.005	0.17	0.18	—	645	645	0.02	0.02	0.89	653
Parking Lot	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	0.00
Total	0.24	0.22	0.21	2.24	0.01	< 0.005	0.68	0.69	< 0.005	0.17	0.18	—	645	645	0.02	0.02	0.89	653

4.1.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	6.51	5.88	4.92	62.9	0.19	0.10	18.1	18.2	0.09	4.59	4.69	—	19,237	19,237	0.59	0.58	58.7	19,485
Parking Lot	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	0.00
Total	6.51	5.88	4.92	62.9	0.19	0.10	18.1	18.2	0.09	4.59	4.69	—	19,237	19,237	0.59	0.58	58.7	19,485
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	6.44	5.79	5.81	59.8	0.18	0.10	18.1	18.2	0.09	4.59	4.69	—	18,379	18,379	0.64	0.64	1.52	18,588
Parking Lot	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	0.00
Total	6.44	5.79	5.81	59.8	0.18	0.10	18.1	18.2	0.09	4.59	4.69	—	18,379	18,379	0.64	0.64	1.52	18,588
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	0.24	0.22	0.21	2.24	0.01	< 0.005	0.68	0.69	< 0.005	0.17	0.18	—	645	645	0.02	0.02	0.89	653

Parking Lot	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	0.00
Total	0.24	0.22	0.21	2.24	0.01	< 0.005	0.68	0.69	< 0.005	0.17	0.18	—	645	645	0.02	0.02	0.89	653

4.2. Energy

4.2.1. Electricity Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	—	43.0	43.0	0.01	< 0.005	—	43.4
Total	—	—	—	—	—	—	—	—	—	—	—	—	43.0	43.0	0.01	< 0.005	—	43.4
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	—	43.0	43.0	0.01	< 0.005	—	43.4
Total	—	—	—	—	—	—	—	—	—	—	—	—	43.0	43.0	0.01	< 0.005	—	43.4
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	—	7.12	7.12	< 0.005	< 0.005	—	7.19
Total	—	—	—	—	—	—	—	—	—	—	—	—	7.12	7.12	< 0.005	< 0.005	—	7.19

4.2.2. Electricity Emissions By Land Use - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	—	43.0	43.0	0.01	< 0.005	—	43.4
Total	—	—	—	—	—	—	—	—	—	—	—	—	43.0	43.0	0.01	< 0.005	—	43.4
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	—	43.0	43.0	0.01	< 0.005	—	43.4
Total	—	—	—	—	—	—	—	—	—	—	—	—	43.0	43.0	0.01	< 0.005	—	43.4
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	—	7.12	7.12	< 0.005	< 0.005	—	7.19
Total	—	—	—	—	—	—	—	—	—	—	—	—	7.12	7.12	< 0.005	< 0.005	—	7.19

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	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
Parking Lot	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
Total	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	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
Parking Lot	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
Total	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	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
Parking Lot	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
Total	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

4.2.4. Natural Gas Emissions By Land Use - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	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
Parking Lot	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

Total	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	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
Parking Lot	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
Total	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	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
Parking Lot	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
Total	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

4.3. Area Emissions by Source

4.3.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Source	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	0.28	0.28	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.01	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Landscape Equipm	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
Total	0.29	0.29	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	0.28	0.28	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.01	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	0.29	0.29	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	0.05	0.05	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	< 0.005	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	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
Total	0.05	0.05	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00

4.3.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Source	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	0.28	0.28	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.01	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	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
Total	0.29	0.29	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	0.28	0.28	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.01	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	0.29	0.29	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	0.05	0.05	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	< 0.005	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Landscape	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
Total	0.05	0.05	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00

4.4. Water Emissions by Land Use

4.4.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00	9.96	9.96	< 0.005	< 0.005	—	10.1
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.00	9.96	9.96	< 0.005	< 0.005	—	10.1
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00	9.96	9.96	< 0.005	< 0.005	—	10.1
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.00	9.96	9.96	< 0.005	< 0.005	—	10.1
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00	1.65	1.65	< 0.005	< 0.005	—	1.66
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.00	1.65	1.65	< 0.005	< 0.005	—	1.66

4.4.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00	9.96	9.96	< 0.005	< 0.005	—	10.1
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.00	9.96	9.96	< 0.005	< 0.005	—	10.1
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00	9.96	9.96	< 0.005	< 0.005	—	10.1
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.00	9.96	9.96	< 0.005	< 0.005	—	10.1
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00	1.65	1.65	< 0.005	< 0.005	—	1.66
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.00	1.65	1.65	< 0.005	< 0.005	—	1.66

4.5. Waste Emissions by Land Use

4.5.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	—	0.74	0.00	0.74	0.07	0.00	—	2.59
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.74	0.00	0.74	0.07	0.00	—	2.59
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	—	0.74	0.00	0.74	0.07	0.00	—	2.59
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.74	0.00	0.74	0.07	0.00	—	2.59
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	—	0.12	0.00	0.12	0.01	0.00	—	0.43
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.12	0.00	0.12	0.01	0.00	—	0.43

4.5.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	—	0.74	0.00	0.74	0.07	0.00	—	2.59

Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.74	0.00	0.74	0.07	0.00	—	2.59
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	—	0.74	0.00	0.74	0.07	0.00	—	2.59
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.74	0.00	0.74	0.07	0.00	—	2.59
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	—	0.12	0.00	0.12	0.01	0.00	—	0.43
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.12	0.00	0.12	0.01	0.00	—	0.43

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

City Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00

4.6.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Tractors/ Loaders/ Backhoes	0.12	0.10	1.03	1.91	< 0.005	0.03	—	0.03	0.03	—	0.03	—	290	290	0.01	< 0.005	—	291
Crawler Tractors	0.65	0.55	4.79	4.91	0.01	0.33	—	0.33	0.30	—	0.30	—	698	698	0.03	0.01	—	700
Total	0.77	0.65	5.82	6.82	0.01	0.37	—	0.37	0.34	—	0.34	—	988	988	0.04	0.01	—	991
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Tractors/ Loaders/ Backhoes	0.12	0.10	1.03	1.91	< 0.005	0.03	—	0.03	0.03	—	0.03	—	290	290	0.01	< 0.005	—	291
Crawler Tractors	0.65	0.55	4.79	4.91	0.01	0.33	—	0.33	0.30	—	0.30	—	698	698	0.03	0.01	—	700
Total	0.77	0.65	5.82	6.82	0.01	0.37	—	0.37	0.34	—	0.34	—	988	988	0.04	0.01	—	991
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Tractors/ Loaders/ Backhoes	0.01	< 0.005	0.05	0.09	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	12.6	12.6	< 0.005	< 0.005	—	12.7
Crawler Tractors	0.14	0.11	1.00	1.02	< 0.005	0.07	—	0.07	0.06	—	0.06	—	132	132	0.01	< 0.005	—	132
Total	0.14	0.12	1.05	1.11	< 0.005	0.07	—	0.07	0.06	—	0.06	—	144	144	0.01	< 0.005	—	145

4.7.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Tractors/ Loaders/ Backhoes	0.12	0.10	1.03	1.91	< 0.005	0.03	—	0.03	0.03	—	0.03	—	290	290	0.01	< 0.005	—	291
Crawler Tractors	0.65	0.55	4.79	4.91	0.01	0.33	—	0.33	0.30	—	0.30	—	698	698	0.03	0.01	—	700
Total	0.77	0.65	5.82	6.82	0.01	0.37	—	0.37	0.34	—	0.34	—	988	988	0.04	0.01	—	991
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Tractors/ Loaders/ Backhoes	0.12	0.10	1.03	1.91	< 0.005	0.03	—	0.03	0.03	—	0.03	—	290	290	0.01	< 0.005	—	291
Crawler Tractors	0.65	0.55	4.79	4.91	0.01	0.33	—	0.33	0.30	—	0.30	—	698	698	0.03	0.01	—	700
Total	0.77	0.65	5.82	6.82	0.01	0.37	—	0.37	0.34	—	0.34	—	988	988	0.04	0.01	—	991
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Tractors/ Loaders/ Backhoes	0.01	< 0.005	0.05	0.09	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	12.6	12.6	< 0.005	< 0.005	—	12.7
Crawler Tractors	0.14	0.11	1.00	1.02	< 0.005	0.07	—	0.07	0.06	—	0.06	—	132	132	0.01	< 0.005	—	132
Total	0.14	0.12	1.05	1.11	< 0.005	0.07	—	0.07	0.06	—	0.06	—	144	144	0.01	< 0.005	—	145

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipm Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Fire Pump	1.44	1.31	3.67	4.76	0.01	0.19	0.00	0.19	0.19	0.00	0.19	0.00	672	672	0.03	0.01	0.00	674
Total	1.44	1.31	3.67	4.76	0.01	0.19	0.00	0.19	0.19	0.00	0.19	0.00	672	672	0.03	0.01	0.00	674
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Fire Pump	1.44	1.31	3.67	4.76	0.01	0.19	0.00	0.19	0.19	0.00	0.19	0.00	672	672	0.03	0.01	0.00	674
Total	1.44	1.31	3.67	4.76	0.01	0.19	0.00	0.19	0.19	0.00	0.19	0.00	672	672	0.03	0.01	0.00	674
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Fire Pump	0.11	0.10	0.28	0.36	< 0.005	0.01	0.00	0.01	0.01	0.00	0.01	0.00	45.7	45.7	< 0.005	< 0.005	0.00	45.8
Total	0.11	0.10	0.28	0.36	< 0.005	0.01	0.00	0.01	0.01	0.00	0.01	0.00	45.7	45.7	< 0.005	< 0.005	0.00	45.8

4.8.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipm ent Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Fire Pump	1.44	1.31	3.67	4.76	0.01	0.19	0.00	0.19	0.19	0.00	0.19	0.00	672	672	0.03	0.01	0.00	674
Total	1.44	1.31	3.67	4.76	0.01	0.19	0.00	0.19	0.19	0.00	0.19	0.00	672	672	0.03	0.01	0.00	674
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Fire Pump	1.44	1.31	3.67	4.76	0.01	0.19	0.00	0.19	0.19	0.00	0.19	0.00	672	672	0.03	0.01	0.00	674
Total	1.44	1.31	3.67	4.76	0.01	0.19	0.00	0.19	0.19	0.00	0.19	0.00	672	672	0.03	0.01	0.00	674
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Fire Pump	0.11	0.10	0.28	0.36	< 0.005	0.01	0.00	0.01	0.01	0.00	0.01	0.00	45.7	45.7	< 0.005	< 0.005	0.00	45.8
Total	0.11	0.10	0.28	0.36	< 0.005	0.01	0.00	0.01	0.01	0.00	0.01	0.00	45.7	45.7	< 0.005	< 0.005	0.00	45.8

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.9.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.4. Soil Carbon Accumulation By Vegetation Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.5. Above and Belowground Carbon Accumulation by Land Use Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.6. Avoided and Sequestered Emissions by Species - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Demolition	Demolition	4/1/2026	4/30/2026	6.00	26.0	—
Drainage/Utilities	Site Preparation	5/1/2026	6/30/2026	6.00	52.0	—

Rough Grading	Grading	7/1/2026	7/31/2026	6.00	27.0	—
Fine Grading	Grading	8/1/2026	8/31/2026	5.00	21.0	—
Building Construction	Building Construction	8/1/2026	9/18/2026	6.00	42.0	—
Paving	Paving	9/1/2026	9/30/2026	6.00	26.0	—
Architectural Coating	Architectural Coating	9/20/2026	9/30/2026	6.00	9.00	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Demolition	Rubber Tired Dozers	Diesel	Average	2.00	8.00	367	0.40
Demolition	Excavators	Diesel	Average	3.00	6.00	36.0	0.38
Demolition	Concrete/Industrial Saws	Diesel	Average	2.00	8.00	33.0	0.73
Demolition	Dumpers/Tenders	Diesel	Average	2.00	2.00	16.0	0.38
Demolition	Off-Highway Trucks	Diesel	Average	1.00	5.00	376	0.38
Drainage/Utilities	Rubber Tired Dozers	Diesel	Average	3.00	8.00	367	0.40
Drainage/Utilities	Tractors/Loaders/Backhoes	Diesel	Average	2.00	8.00	84.0	0.37
Drainage/Utilities	Forklifts	Diesel	Average	2.00	6.00	82.0	0.20
Drainage/Utilities	Crawler Tractors	Diesel	Average	2.00	8.00	87.0	0.43
Drainage/Utilities	Surfacing Equipment	Diesel	Average	2.00	8.00	399	0.30
Drainage/Utilities	Trenchers	Diesel	Average	2.00	6.00	40.0	0.50
Drainage/Utilities	Pumps	Diesel	Average	2.00	8.00	11.0	0.74
Drainage/Utilities	Generator Sets	Diesel	Average	1.00	8.00	14.0	0.74
Drainage/Utilities	Off-Highway Trucks	Diesel	Average	1.00	5.00	376	0.38
Rough Grading	Graders	Diesel	Average	2.00	8.00	148	0.41
Rough Grading	Excavators	Diesel	Average	2.00	8.00	36.0	0.38

Rough Grading	Tractors/Loaders/Backhoes	Diesel	Average	2.00	8.00	97.0	0.37
Rough Grading	Scrapers	Diesel	Average	2.00	8.00	423	0.48
Rough Grading	Rubber Tired Dozers	Diesel	Average	2.00	8.00	367	0.40
Rough Grading	Skid Steer Loaders	Diesel	Average	2.00	8.00	71.0	0.37
Rough Grading	Off-Highway Trucks	Diesel	Average	1.00	5.00	376	0.38
Fine Grading	Graders	Diesel	Average	2.00	8.00	148	0.41
Fine Grading	Excavators	Diesel	Average	2.00	8.00	36.0	0.38
Fine Grading	Tractors/Loaders/Backhoes	Diesel	Average	2.00	8.00	97.0	0.37
Fine Grading	Scrapers	Diesel	Average	2.00	8.00	423	0.48
Fine Grading	Rubber Tired Dozers	Diesel	Average	1.00	8.00	367	0.40
Fine Grading	Skid Steer Loaders	Diesel	Average	2.00	8.00	71.0	0.37
Fine Grading	Plate Compactors	Diesel	Average	2.00	4.00	8.00	0.43
Fine Grading	Off-Highway Trucks	Diesel	Average	1.00	5.00	376	0.38
Building Construction	Forklifts	Diesel	Average	2.00	6.00	82.0	0.20
Building Construction	Generator Sets	Diesel	Average	1.00	8.00	14.0	0.74
Building Construction	Cranes	Diesel	Average	1.00	7.00	367	0.29
Building Construction	Tractors/Loaders/Backhoes	Diesel	Average	3.00	7.00	97.0	0.37
Building Construction	Cement and Mortar Mixers	Diesel	Average	1.00	4.00	10.0	0.56
Building Construction	Sweepers/Scrubbers	Diesel	Average	2.00	3.00	64.0	0.46
Building Construction	Rubber Tired Loaders	Diesel	Average	2.00	8.00	150	0.36
Building Construction	Signal Boards	Diesel	Average	1.00	8.00	6.00	0.82
Building Construction	Pressure Washers	Diesel	Average	2.00	2.00	14.0	0.30
Building Construction	Crawler Tractors	Diesel	Average	2.00	8.00	87.0	0.43
Building Construction	Dumpers/Tenders	Diesel	Average	2.00	2.00	16.0	0.38
Building Construction	Pumps	Diesel	Average	2.00	8.00	11.0	0.74
Paving	Pavers	Diesel	Average	2.00	8.00	81.0	0.42

Paving	Paving Equipment	Diesel	Average	2.00	8.00	89.0	0.36
Paving	Rollers	Diesel	Average	2.00	8.00	36.0	0.38
Paving	Sweepers/Scrubbers	Diesel	Average	2.00	3.00	64.0	0.46
Paving	Off-Highway Trucks	Diesel	Average	1.00	5.00	376	0.38
Architectural Coating	Air Compressors	Diesel	Average	2.00	3.00	37.0	0.48

5.2.2. Mitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Demolition	Rubber Tired Dozers	Diesel	Average	2.00	8.00	367	0.40
Demolition	Excavators	Diesel	Average	3.00	6.00	36.0	0.38
Demolition	Concrete/Industrial Saws	Diesel	Average	2.00	8.00	33.0	0.73
Demolition	Dumpers/Tenders	Diesel	Average	2.00	2.00	16.0	0.38
Demolition	Off-Highway Trucks	Diesel	Average	1.00	5.00	376	0.38
Drainage/Utilities	Rubber Tired Dozers	Diesel	Average	3.00	8.00	367	0.40
Drainage/Utilities	Tractors/Loaders/Backhoes	Diesel	Average	2.00	8.00	84.0	0.37
Drainage/Utilities	Forklifts	Diesel	Average	2.00	6.00	82.0	0.20
Drainage/Utilities	Crawler Tractors	Diesel	Average	2.00	8.00	87.0	0.43
Drainage/Utilities	Surfacing Equipment	Diesel	Average	2.00	8.00	399	0.30
Drainage/Utilities	Trenchers	Diesel	Average	2.00	6.00	40.0	0.50
Drainage/Utilities	Pumps	Diesel	Average	2.00	8.00	11.0	0.74
Drainage/Utilities	Generator Sets	Diesel	Average	1.00	8.00	14.0	0.74
Drainage/Utilities	Off-Highway Trucks	Diesel	Average	1.00	5.00	376	0.38
Rough Grading	Graders	Diesel	Average	2.00	8.00	148	0.41
Rough Grading	Excavators	Diesel	Average	2.00	8.00	36.0	0.38
Rough Grading	Tractors/Loaders/Backhoes	Diesel	Average	2.00	8.00	97.0	0.37
Rough Grading	Scrapers	Diesel	Average	2.00	8.00	423	0.48

Rough Grading	Rubber Tired Dozers	Diesel	Average	2.00	8.00	367	0.40
Rough Grading	Skid Steer Loaders	Diesel	Average	2.00	8.00	71.0	0.37
Rough Grading	Off-Highway Trucks	Diesel	Average	1.00	5.00	376	0.38
Fine Grading	Graders	Diesel	Average	2.00	8.00	148	0.41
Fine Grading	Excavators	Diesel	Average	2.00	8.00	36.0	0.38
Fine Grading	Tractors/Loaders/Backhoes	Diesel	Average	2.00	8.00	97.0	0.37
Fine Grading	Scrapers	Diesel	Average	2.00	8.00	423	0.48
Fine Grading	Rubber Tired Dozers	Diesel	Average	1.00	8.00	367	0.40
Fine Grading	Skid Steer Loaders	Diesel	Average	2.00	8.00	71.0	0.37
Fine Grading	Plate Compactors	Diesel	Average	2.00	4.00	8.00	0.43
Fine Grading	Off-Highway Trucks	Diesel	Average	1.00	5.00	376	0.38
Building Construction	Forklifts	Diesel	Average	2.00	6.00	82.0	0.20
Building Construction	Generator Sets	Diesel	Average	1.00	8.00	14.0	0.74
Building Construction	Cranes	Diesel	Average	1.00	7.00	367	0.29
Building Construction	Tractors/Loaders/Backhoes	Diesel	Average	3.00	7.00	97.0	0.37
Building Construction	Cement and Mortar Mixers	Diesel	Average	1.00	4.00	10.0	0.56
Building Construction	Sweepers/Scrubbers	Diesel	Average	2.00	3.00	64.0	0.46
Building Construction	Rubber Tired Loaders	Diesel	Average	2.00	8.00	150	0.36
Building Construction	Signal Boards	Diesel	Average	1.00	8.00	6.00	0.82
Building Construction	Pressure Washers	Diesel	Average	2.00	2.00	14.0	0.30
Building Construction	Crawler Tractors	Diesel	Average	2.00	8.00	87.0	0.43
Building Construction	Dumpers/Tenders	Diesel	Average	2.00	2.00	16.0	0.38
Building Construction	Pumps	Diesel	Average	2.00	8.00	11.0	0.74
Paving	Pavers	Diesel	Average	2.00	8.00	81.0	0.42
Paving	Paving Equipment	Diesel	Average	2.00	8.00	89.0	0.36
Paving	Rollers	Diesel	Average	2.00	8.00	36.0	0.38

Paving	Sweepers/Scrubbers	Diesel	Average	2.00	3.00	64.0	0.46
Paving	Off-Highway Trucks	Diesel	Average	1.00	5.00	376	0.38
Architectural Coating	Air Compressors	Diesel	Average	2.00	3.00	37.0	0.48

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Demolition	—	—	—	—
Demolition	Worker	25.0	11.7	LDA,LDT1,LDT2
Demolition	Vendor	4.00	8.40	HHDT,MHDT
Demolition	Hauling	20.0	20.0	HHDT
Demolition	Onsite truck	5.00	1.00	HHDT
Drainage/Utilities	—	—	—	—
Drainage/Utilities	Worker	20.0	11.7	LDA,LDT1,LDT2
Drainage/Utilities	Vendor	4.00	8.40	HHDT,MHDT
Drainage/Utilities	Hauling	12.0	20.0	HHDT
Drainage/Utilities	Onsite truck	5.00	1.00	HHDT
Rough Grading	—	—	—	—
Rough Grading	Worker	20.0	11.7	LDA,LDT1,LDT2
Rough Grading	Vendor	4.00	8.40	HHDT,MHDT
Rough Grading	Hauling	8.00	20.0	HHDT
Rough Grading	Onsite truck	5.00	1.00	HHDT
Building Construction	—	—	—	—
Building Construction	Worker	0.00	11.7	LDA,LDT1,LDT2
Building Construction	Vendor	0.00	8.40	HHDT,MHDT
Building Construction	Hauling	2.00	20.0	HHDT
Building Construction	Onsite truck	5.00	1.00	HHDT

Paving	—	—	—	—
Paving	Worker	22.0	11.7	LDA,LDT1,LDT2
Paving	Vendor	4.00	8.40	HHDT,MHDT
Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	5.00	1.00	HHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	0.00	11.7	LDA,LDT1,LDT2
Architectural Coating	Vendor	0.00	8.40	HHDT,MHDT
Architectural Coating	Hauling	0.00	20.0	HHDT
Architectural Coating	Onsite truck	0.00	0.00	HHDT
Fine Grading	—	—	—	—
Fine Grading	Worker	20.0	11.7	LDA,LDT1,LDT2
Fine Grading	Vendor	4.00	8.40	HHDT,MHDT
Fine Grading	Hauling	4.00	20.0	HHDT
Fine Grading	Onsite truck	0.00	0.00	HHDT

5.3.2. Mitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Demolition	—	—	—	—
Demolition	Worker	25.0	11.7	LDA,LDT1,LDT2
Demolition	Vendor	4.00	8.40	HHDT,MHDT
Demolition	Hauling	20.0	20.0	HHDT
Demolition	Onsite truck	5.00	1.00	HHDT
Drainage/Utilities	—	—	—	—
Drainage/Utilities	Worker	20.0	11.7	LDA,LDT1,LDT2
Drainage/Utilities	Vendor	4.00	8.40	HHDT,MHDT
Drainage/Utilities	Hauling	12.0	20.0	HHDT
Drainage/Utilities	Onsite truck	5.00	1.00	HHDT

Rough Grading	—	—	—	—
Rough Grading	Worker	20.0	11.7	LDA,LDT1,LDT2
Rough Grading	Vendor	4.00	8.40	HHDT,MHDT
Rough Grading	Hauling	8.00	20.0	HHDT
Rough Grading	Onsite truck	5.00	1.00	HHDT
Building Construction	—	—	—	—
Building Construction	Worker	0.00	11.7	LDA,LDT1,LDT2
Building Construction	Vendor	0.00	8.40	HHDT,MHDT
Building Construction	Hauling	2.00	20.0	HHDT
Building Construction	Onsite truck	5.00	1.00	HHDT
Paving	—	—	—	—
Paving	Worker	22.0	11.7	LDA,LDT1,LDT2
Paving	Vendor	4.00	8.40	HHDT,MHDT
Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	5.00	1.00	HHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	0.00	11.7	LDA,LDT1,LDT2
Architectural Coating	Vendor	0.00	8.40	HHDT,MHDT
Architectural Coating	Hauling	0.00	20.0	HHDT
Architectural Coating	Onsite truck	0.00	0.00	HHDT
Fine Grading	—	—	—	—
Fine Grading	Worker	20.0	11.7	LDA,LDT1,LDT2
Fine Grading	Vendor	4.00	8.40	HHDT,MHDT
Fine Grading	Hauling	4.00	20.0	HHDT
Fine Grading	Onsite truck	0.00	0.00	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Non-applicable. No control strategies activated by user.

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
Architectural Coating	0.00	0.00	1,500	1,900	5,269

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (Cubic Yards)	Material Exported (Cubic Yards)	Acres Graded (acres)	Material Demolished (Ton of Debris)	Acres Paved (acres)
Demolition	0.00	0.00	0.00	1,800	—
Drainage/Utilities	1,403	0.00	16.0	0.00	—
Rough Grading	0.00	0.00	80.0	0.00	—
Fine Grading	0.00	0.00	80.0	0.00	—
Paving	0.00	0.00	0.00	0.00	2.59

5.6.2. Construction Earthmoving Control Strategies

Non-applicable. No control strategies activated by user.

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
City Park	0.00	0%
Parking Lot	2.59	100%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2026	0.00	204	0.03	< 0.005

5.9. Operational Mobile Sources

5.9.1. Unmitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
City Park	160	2,000	160	154,343	2,062	25,773	2,062	1,988,938
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

5.9.2. Mitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
City Park	160	2,000	160	154,343	2,062	25,773	2,062	1,988,938
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

5.10. Operational Area Sources

5.10.1. Hearths

5.10.1.1. Unmitigated

5.10.1.2. Mitigated

5.10.2. Architectural Coatings

Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
0	0.00	1,500	1,900	5,269

5.10.3. Landscape Equipment

Season	Unit	Value
Snow Days	day/yr	0.00
Summer Days	day/yr	180

5.10.4. Landscape Equipment - Mitigated

Season	Unit	Value
Snow Days	day/yr	0.00
Summer Days	day/yr	180

5.11. Operational Energy Consumption

5.11.1. Unmitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
City Park	0.00	204	0.0330	0.0040	0.00
Parking Lot	76,928	204	0.0330	0.0040	0.00

5.11.2. Mitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
City Park	0.00	204	0.0330	0.0040	0.00
Parking Lot	76,928	204	0.0330	0.0040	0.00

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
City Park	0.00	3,611,204

Parking Lot	0.00	0.00

5.12.2. Mitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
City Park	0.00	3,611,204
Parking Lot	0.00	0.00

5.13. Operational Waste Generation

5.13.1. Unmitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
City Park	1.38	—
Parking Lot	0.00	—

5.13.2. Mitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
City Park	1.38	—
Parking Lot	0.00	—

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced
City Park	Other commercial A/C and heat pumps	R-410A	2,088	< 0.005	4.00	4.00	18.0
City Park	Stand-alone retail refrigerators and freezers	R-134a	1,430	0.04	1.00	0.00	1.00

5.14.2. Mitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced
City Park	Other commercial A/C and heat pumps	R-410A	2,088	< 0.005	4.00	4.00	18.0
City Park	Stand-alone retail refrigerators and freezers	R-134a	1,430	0.04	1.00	0.00	1.00

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Tractors/Loaders/Backhoes	Diesel	Average	1.00	8.00	84.0	0.37
Crawler Tractors	Diesel	Average	2.00	8.00	87.0	0.43

5.15.2. Mitigated

Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Tractors/Loaders/Backhoes	Diesel	Average	1.00	8.00	84.0	0.37
Crawler Tractors	Diesel	Average	2.00	8.00	87.0	0.43

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

Equipment Type	Fuel Type	Number per Day	Hours per Day	Hours per Year	Horsepower	Load Factor
Fire Pump	Diesel	2.00	4.00	600	100	0.73

5.16.2. Process Boilers

Equipment Type	Fuel Type	Number	Boiler Rating (MMBtu/hr)	Daily Heat Input (MMBtu/day)	Annual Heat Input (MMBtu/yr)

5.17. User Defined

Equipment Type	Fuel Type
—	—

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

5.18.2.2. Mitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

Cal-Adapt midcentury 2040–2059 average projections for four hazards are reported below for your project location. These are under Representation Concentration Pathway (RCP) 8.5 which assumes GHG emissions will continue to rise strongly through 2050 and then plateau around 2100.

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	8.22	annual days of extreme heat
Extreme Precipitation	9.70	annual days with precipitation above 20 mm
Sea Level Rise	—	meters of inundation depth
Wildfire	106	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (Radke et al., 2017, CEC-500-2017-008), and consider inundation location and depth for the San Francisco Bay, the Sacramento-San Joaquin River Delta and California coast resulting different increments of sea level rise coupled with extreme storm events. Users may select from four scenarios to view the range in potential inundation depth for the grid cell. The four scenarios are: No rise, 0.5 meter, 1.0 meter, 1.41 meters
Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	N/A	N/A	N/A	N/A
Extreme Precipitation	3	0	0	N/A
Sea Level Rise	1	0	0	N/A

Wildfire	1	0	0	N/A
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	0	0	0	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	N/A	N/A	N/A	N/A
Extreme Precipitation	3	1	1	3
Sea Level Rise	1	1	1	2
Wildfire	1	1	1	2
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	1	1	1	2

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Exposure Indicators	—
AQ-Ozone	7.52
AQ-PM	12.5
AQ-DPM	6.27
Drinking Water	43.1
Lead Risk Housing	24.4
Pesticides	81.0
Toxic Releases	24.8
Traffic	55.9
Effect Indicators	—
CleanUp Sites	17.1
Groundwater	22.1
Haz Waste Facilities/Generators	62.5
Impaired Water Bodies	12.5
Solid Waste	91.0
Sensitive Population	—
Asthma	32.8
Cardio-vascular	5.96
Low Birth Weights	26.9
Socioeconomic Factor Indicators	—
Education	52.9
Housing	35.8
Linguistic	42.8
Poverty	24.7
Unemployment	11.9

7.2. Healthy Places Index Scores

The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Economic	—
Above Poverty	77.74926216
Employed	89.43924034
Median HI	85.71795201
Education	—
Bachelor's or higher	77.49262158
High school enrollment	100
Preschool enrollment	63.67252663
Transportation	—
Auto Access	62.47914795
Active commuting	37.66200436
Social	—
2-parent households	68.35621712
Voting	89.81136918
Neighborhood	—
Alcohol availability	78.73732837
Park access	29.65481843
Retail density	13.48646221
Supermarket access	28.41011164
Tree canopy	89.88836135
Housing	—
Homeownership	68.76684204
Housing habitability	85.51263955
Low-inc homeowner severe housing cost burden	55.97330938
Low-inc renter severe housing cost burden	89.60605672

Uncrowded housing	50.16040036
Health Outcomes	—
Insured adults	81.97099962
Arthritis	0.0
Asthma ER Admissions	69.5
High Blood Pressure	0.0
Cancer (excluding skin)	0.0
Asthma	0.0
Coronary Heart Disease	0.0
Chronic Obstructive Pulmonary Disease	0.0
Diagnosed Diabetes	0.0
Life Expectancy at Birth	79.8
Cognitively Disabled	85.7
Physically Disabled	68.4
Heart Attack ER Admissions	96.4
Mental Health Not Good	0.0
Chronic Kidney Disease	0.0
Obesity	0.0
Pedestrian Injuries	52.6
Physical Health Not Good	0.0
Stroke	0.0
Health Risk Behaviors	—
Binge Drinking	0.0
Current Smoker	0.0
No Leisure Time for Physical Activity	0.0
Climate Change Exposures	—
Wildfire Risk	4.9
SLR Inundation Area	74.1

Children	79.8
Elderly	9.2
English Speaking	45.8
Foreign-born	53.4
Outdoor Workers	37.1
Climate Change Adaptive Capacity	—
Impervious Surface Cover	83.0
Traffic Density	52.2
Traffic Access	23.0
Other Indices	—
Hardship	32.0
Other Decision Support	—
2016 Voting	88.9

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	19.0
Healthy Places Index Score for Project Location (b)	87.0
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	No
Project Located in a Low-Income Community (Assembly Bill 1550)	No
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.
b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

Screen	Justification
Land Use	A 29.25 parcel with approx. 16 acres of disturbance
Construction: Construction Phases	Anticipated Schedule
Construction: Off-Road Equipment	Anticipated Equipment
Construction: Dust From Material Movement	Anticipated grading
Construction: Trips and VMT	Anticipated worker/vendor/haul truck trips
Construction: Paving	Phase I a total of 112558 SF of hardscape (concrete and paving)
Operations: Off-Road Equipment	Polaris – Approximately 416 hours per year (1 day a week for 8 hours a day) Backhoe – Approximately 96 hours per year (1 day a month for 8 hours per day) Mower – Approximately 416 hours per year (Mow 1 day a week for 8 hours a day)
Operations: Vehicle Data	approximately 2000 trips on the most extreme days, assuming an average of 150 trips per day on the slower days.
Operations: Architectural Coatings	all existing and new buildings are assumed to be painted
Construction: Architectural Coatings	All existing and new buildings are assumed to be painted
Operations: Emergency Generators and Fire Pumps	Irrigation pump

APPENDIX B

CalEEMod Results – Phase 2
Air Pollutant and GHG Emission Calculations

Smith Field Park Improvement Project v2 Detailed Report

Table of Contents

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	Smith Field Park Improvement Project v2
Construction Start Date	1/1/2027
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	4.70
Precipitation (days)	41.0
Location	203 Wavecrest Rd, Half Moon Bay, CA 94019, USA
County	San Mateo
City	Half Moon Bay
Air District	Bay Area AQMD
Air Basin	San Francisco Bay Area
TAZ	1227
EDFZ	1
Electric Utility	Pacific Gas & Electric Company
Gas Utility	Pacific Gas & Electric
App Version	2022.1.1.29

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
City Park	16.0	Acre	16.0	0.00	435,600	0.00	—	—
Parking Lot	224	Space	2.02	0.00	0.00	0.00	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

Sector	#	Measure Title
Construction	C-10-A	Water Exposed Surfaces
Construction	C-10-B	Water Active Demolition Sites
Construction	C-10-C	Water Unpaved Construction Roads
Construction	C-11	Limit Vehicle Speeds on Unpaved Roads

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	9.31	7.59	65.4	78.0	0.17	2.68	19.4	22.1	2.47	6.17	8.64	—	18,596	18,596	0.94	0.46	4.77	18,761
Mit.	9.31	7.59	65.4	78.0	0.17	2.68	7.87	10.6	2.47	2.77	5.24	—	18,596	18,596	0.94	0.46	4.77	18,761
% Reduced	—	—	—	—	—	—	60%	52%	—	55%	39%	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	9.31	7.58	65.6	77.9	0.17	2.68	19.4	22.1	2.47	6.17	8.64	—	18,574	18,574	0.94	0.46	0.12	18,735
Mit.	9.31	7.58	65.6	77.9	0.17	2.68	7.87	10.6	2.47	2.77	5.24	—	18,574	18,574	0.94	0.46	0.12	18,735
% Reduced	—	—	—	—	—	—	60%	52%	—	55%	39%	—	—	—	—	—	—	—
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	6.67	5.42	46.1	55.2	0.11	1.90	15.8	17.7	1.75	5.20	6.95	—	12,575	12,575	0.67	0.37	1.76	12,703

Mit.	6.67	5.42	46.1	55.2	0.11	1.90	6.46	8.36	1.75	2.34	4.09	—	12,575	12,575	0.67	0.37	1.76	12,703
% Reduced	—	—	—	—	—	—	59%	53%	—	55%	41%	—	—	—	—	—	—	—
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.22	0.99	8.42	10.1	0.02	0.35	2.89	3.23	0.32	0.95	1.27	—	2,082	2,082	0.11	0.06	0.29	2,103
Mit.	1.22	0.99	8.42	10.1	0.02	0.35	1.18	1.53	0.32	0.43	0.75	—	2,082	2,082	0.11	0.06	0.29	2,103
% Reduced	—	—	—	—	—	—	59%	53%	—	55%	41%	—	—	—	—	—	—	—

2.2. Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	9.31	7.59	65.4	78.0	0.17	2.68	19.4	22.1	2.47	6.17	8.64	—	18,596	18,596	0.94	0.46	4.77	18,761
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	9.31	7.58	65.6	77.9	0.17	2.68	19.4	22.1	2.47	6.17	8.64	—	18,574	18,574	0.94	0.46	0.12	18,735
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	6.67	5.42	46.1	55.2	0.11	1.90	15.8	17.7	1.75	5.20	6.95	—	12,575	12,575	0.67	0.37	1.76	12,703
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	1.22	0.99	8.42	10.1	0.02	0.35	2.89	3.23	0.32	0.95	1.27	—	2,082	2,082	0.11	0.06	0.29	2,103

2.3. Construction Emissions by Year, Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	9.31	7.59	65.4	78.0	0.17	2.68	7.87	10.6	2.47	2.77	5.24	—	18,596	18,596	0.94	0.46	4.77	18,761
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	9.31	7.58	65.6	77.9	0.17	2.68	7.87	10.6	2.47	2.77	5.24	—	18,574	18,574	0.94	0.46	0.12	18,735
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	6.67	5.42	46.1	55.2	0.11	1.90	6.46	8.36	1.75	2.34	4.09	—	12,575	12,575	0.67	0.37	1.76	12,703
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	1.22	0.99	8.42	10.1	0.02	0.35	1.18	1.53	0.32	0.43	0.75	—	2,082	2,082	0.11	0.06	0.29	2,103

3. Construction Emissions Details

3.1. Demolition (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.45	2.89	24.1	27.9	0.07	0.94	—	0.94	0.87	—	0.87	—	7,881	7,881	0.32	0.06	—	7,908
Demolition	—	—	—	—	—	—	0.27	0.27	—	0.04	0.04	—	—	—	—	—	—	—
Onsite truck	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	0.00

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.45	2.89	24.1	27.9	0.07	0.94	—	0.94	0.87	—	0.87	—	7,881	7,881	0.32	0.06	—	7,908
Demolition	—	—	—	—	—	—	0.27	0.27	—	0.04	0.04	—	—	—	—	—	—	—
Onsite truck	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.46	1.23	10.2	11.9	0.03	0.40	—	0.40	0.37	—	0.37	—	3,347	3,347	0.14	0.03	—	3,358
Demolition	—	—	—	—	—	—	0.11	0.11	—	0.02	0.02	—	—	—	—	—	—	—
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.27	0.22	1.87	2.17	0.01	0.07	—	0.07	0.07	—	0.07	—	554	554	0.02	< 0.005	—	556
Demolition	—	—	—	—	—	—	0.02	0.02	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	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	0.00
Vendor	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	0.00

Hauling	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	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	0.00
Vendor	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	0.00
Hauling	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	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	0.00
Vendor	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	0.00
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	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	0.00
Vendor	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	0.00
Hauling	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	0.00

3.2. Demolition (2027) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.45	2.89	24.1	27.9	0.07	0.94	—	0.94	0.87	—	0.87	—	7,881	7,881	0.32	0.06	—	7,908
Demolition	—	—	—	—	—	—	0.20	0.20	—	0.03	0.03	—	—	—	—	—	—	—
Onsite truck	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	0.00

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.45	2.89	24.1	27.9	0.07	0.94	—	0.94	0.87	—	0.87	—	7,881	7,881	0.32	0.06	—	7,908
Demolition	—	—	—	—	—	—	0.20	0.20	—	0.03	0.03	—	—	—	—	—	—	—
Onsite truck	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.46	1.23	10.2	11.9	0.03	0.40	—	0.40	0.37	—	0.37	—	3,347	3,347	0.14	0.03	—	3,358
Demolition	—	—	—	—	—	—	0.09	0.09	—	0.01	0.01	—	—	—	—	—	—	—
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.27	0.22	1.87	2.17	0.01	0.07	—	0.07	0.07	—	0.07	—	554	554	0.02	< 0.005	—	556
Demolition	—	—	—	—	—	—	0.02	0.02	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	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	0.00
Vendor	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	0.00

Hauling	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	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	0.00
Vendor	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	0.00
Hauling	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	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	0.00
Vendor	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	0.00
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	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	0.00
Vendor	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	0.00
Hauling	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	0.00

3.3. Construction (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	4.52	3.80	32.0	39.1	0.07	1.39	—	1.39	1.28	—	1.28	—	7,207	7,207	0.29	0.06	—	7,232
Dust From Material Movement	—	—	—	—	—	—	10.9	10.9	—	5.17	5.17	—	—	—	—	—	—	—

Onsite truck	0.01	< 0.005	0.09	0.06	< 0.005	< 0.005	7.36	7.36	< 0.005	0.73	0.73	—	26.4	26.4	0.01	< 0.005	0.03	27.9
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	4.52	3.80	32.0	39.1	0.07	1.39	—	1.39	1.28	—	1.28	—	7,207	7,207	0.29	0.06	—	7,232
Dust From Material Movement	—	—	—	—	—	—	10.9	10.9	—	5.17	5.17	—	—	—	—	—	—	—
Onsite truck	0.01	< 0.005	0.10	0.07	< 0.005	< 0.005	7.36	7.36	< 0.005	0.73	0.73	—	26.4	26.4	0.01	< 0.005	< 0.005	27.9
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.88	3.25	27.5	33.5	0.06	1.19	—	1.19	1.10	—	1.10	—	6,180	6,180	0.25	0.05	—	6,202
Dust From Material Movement	—	—	—	—	—	—	9.35	9.35	—	4.43	4.43	—	—	—	—	—	—	—
Onsite truck	0.01	< 0.005	0.08	0.06	< 0.005	< 0.005	5.60	5.60	< 0.005	0.56	0.56	—	22.7	22.7	0.01	< 0.005	0.01	23.9
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.71	0.59	5.01	6.11	0.01	0.22	—	0.22	0.20	—	0.20	—	1,023	1,023	0.04	0.01	—	1,027
Dust From Material Movement	—	—	—	—	—	—	1.71	1.71	—	0.81	0.81	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	0.02	0.01	< 0.005	< 0.005	1.02	1.02	< 0.005	0.10	0.10	—	3.75	3.75	< 0.005	< 0.005	< 0.005	3.96

Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.11	0.11	0.07	1.35	0.00	0.00	0.41	0.41	0.00	0.10	0.10	—	396	396	0.01	< 0.005	1.05	398
Vendor	0.01	< 0.005	0.15	0.09	< 0.005	< 0.005	0.03	0.03	< 0.005	0.01	0.01	—	110	110	0.01	0.02	0.24	116
Hauling	0.32	0.05	2.74	1.99	0.01	0.02	0.46	0.49	0.02	0.13	0.15	—	1,874	1,874	0.26	0.30	3.44	1,974
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.11	0.11	0.09	1.25	0.00	0.00	0.41	0.41	0.00	0.10	0.10	—	374	374	0.01	< 0.005	0.03	375
Vendor	0.01	< 0.005	0.15	0.10	< 0.005	< 0.005	0.03	0.03	< 0.005	0.01	0.01	—	110	110	0.01	0.02	0.01	115
Hauling	0.32	0.05	2.88	1.99	0.01	0.02	0.46	0.49	0.02	0.13	0.15	—	1,874	1,874	0.26	0.30	0.09	1,971
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.09	0.09	0.08	1.03	0.00	0.00	0.35	0.35	0.00	0.08	0.08	—	322	322	0.01	< 0.005	0.39	323
Vendor	0.01	< 0.005	0.13	0.08	< 0.005	< 0.005	0.02	0.03	< 0.005	0.01	0.01	—	94.7	94.7	0.01	0.01	0.09	99.0
Hauling	0.28	0.04	2.42	1.71	0.01	0.02	0.39	0.41	0.02	0.11	0.13	—	1,607	1,607	0.22	0.26	1.27	1,691
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.01	0.19	0.00	0.00	0.06	0.06	0.00	0.01	0.01	—	53.3	53.3	< 0.005	< 0.005	0.06	53.5
Vendor	< 0.005	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	15.7	15.7	< 0.005	< 0.005	0.01	16.4
Hauling	0.05	0.01	0.44	0.31	< 0.005	< 0.005	0.07	0.07	< 0.005	0.02	0.02	—	266	266	0.04	0.04	0.21	280

3.4. Construction (2027) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road	4.52	3.80	32.0	39.1	0.07	1.39	—	1.39	1.28	—	1.28	—	7,207	7,207	0.29	0.06	—	7,232
Dust From Material Movement	—	—	—	—	—	—	4.90	4.90	—	2.33	2.33	—	—	—	—	—	—	—
Onsite truck	0.01	< 0.005	0.09	0.06	< 0.005	< 0.005	1.86	1.86	< 0.005	0.19	0.19	—	26.4	26.4	0.01	< 0.005	0.03	27.9
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	4.52	3.80	32.0	39.1	0.07	1.39	—	1.39	1.28	—	1.28	—	7,207	7,207	0.29	0.06	—	7,232
Dust From Material Movement	—	—	—	—	—	—	4.90	4.90	—	2.33	2.33	—	—	—	—	—	—	—
Onsite truck	0.01	< 0.005	0.10	0.07	< 0.005	< 0.005	1.86	1.86	< 0.005	0.19	0.19	—	26.4	26.4	0.01	< 0.005	< 0.005	27.9
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.88	3.25	27.5	33.5	0.06	1.19	—	1.19	1.10	—	1.10	—	6,180	6,180	0.25	0.05	—	6,202
Dust From Material Movement	—	—	—	—	—	—	4.21	4.21	—	1.99	1.99	—	—	—	—	—	—	—
Onsite truck	0.01	< 0.005	0.08	0.06	< 0.005	< 0.005	1.41	1.41	< 0.005	0.14	0.14	—	22.7	22.7	0.01	< 0.005	0.01	23.9
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.71	0.59	5.01	6.11	0.01	0.22	—	0.22	0.20	—	0.20	—	1,023	1,023	0.04	0.01	—	1,027

Dust From Material Movement	—	—	—	—	—	—	0.77	0.77	—	0.36	0.36	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	0.02	0.01	< 0.005	< 0.005	0.26	0.26	< 0.005	0.03	0.03	—	3.75	3.75	< 0.005	< 0.005	< 0.005	3.96
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.11	0.11	0.07	1.35	0.00	0.00	0.41	0.41	0.00	0.10	0.10	—	396	396	0.01	< 0.005	1.05	398
Vendor	0.01	< 0.005	0.15	0.09	< 0.005	< 0.005	0.03	0.03	< 0.005	0.01	0.01	—	110	110	0.01	0.02	0.24	116
Hauling	0.32	0.05	2.74	1.99	0.01	0.02	0.46	0.49	0.02	0.13	0.15	—	1,874	1,874	0.26	0.30	3.44	1,974
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.11	0.11	0.09	1.25	0.00	0.00	0.41	0.41	0.00	0.10	0.10	—	374	374	0.01	< 0.005	0.03	375
Vendor	0.01	< 0.005	0.15	0.10	< 0.005	< 0.005	0.03	0.03	< 0.005	0.01	0.01	—	110	110	0.01	0.02	0.01	115
Hauling	0.32	0.05	2.88	1.99	0.01	0.02	0.46	0.49	0.02	0.13	0.15	—	1,874	1,874	0.26	0.30	0.09	1,971
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.09	0.09	0.08	1.03	0.00	0.00	0.35	0.35	0.00	0.08	0.08	—	322	322	0.01	< 0.005	0.39	323
Vendor	0.01	< 0.005	0.13	0.08	< 0.005	< 0.005	0.02	0.03	< 0.005	0.01	0.01	—	94.7	94.7	0.01	0.01	0.09	99.0
Hauling	0.28	0.04	2.42	1.71	0.01	0.02	0.39	0.41	0.02	0.11	0.13	—	1,607	1,607	0.22	0.26	1.27	1,691
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.01	0.19	0.00	0.00	0.06	0.06	0.00	0.01	0.01	—	53.3	53.3	< 0.005	< 0.005	0.06	53.5
Vendor	< 0.005	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	15.7	15.7	< 0.005	< 0.005	0.01	16.4
Hauling	0.05	0.01	0.44	0.31	< 0.005	< 0.005	0.07	0.07	< 0.005	0.02	0.02	—	266	266	0.04	0.04	0.21	280

3.5. Paving (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.87	0.73	6.24	7.51	0.01	0.33	—	0.33	0.30	—	0.30	—	1,101	1,101	0.04	0.01	—	1,105
Paving	0.01	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.87	0.73	6.24	7.51	0.01	0.33	—	0.33	0.30	—	0.30	—	1,101	1,101	0.04	0.01	—	1,105
Paving	0.01	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.75	0.63	5.35	6.44	0.01	0.28	—	0.28	0.26	—	0.26	—	944	944	0.04	0.01	—	948
Paving	0.01	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.14	0.11	0.98	1.18	< 0.005	0.05	—	0.05	0.05	—	0.05	—	156	156	0.01	< 0.005	—	157

Paving	< 0.005	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	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	0.00
Vendor	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	0.00
Hauling	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	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	0.00
Vendor	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	0.00
Hauling	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	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	0.00
Vendor	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	0.00
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	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	0.00
Vendor	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	0.00
Hauling	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	0.00

3.6. Paving (2027) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.87	0.73	6.24	7.51	0.01	0.33	—	0.33	0.30	—	0.30	—	1,101	1,101	0.04	0.01	—	1,105
Paving	0.01	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.87	0.73	6.24	7.51	0.01	0.33	—	0.33	0.30	—	0.30	—	1,101	1,101	0.04	0.01	—	1,105
Paving	0.01	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.75	0.63	5.35	6.44	0.01	0.28	—	0.28	0.26	—	0.26	—	944	944	0.04	0.01	—	948
Paving	0.01	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.14	0.11	0.98	1.18	< 0.005	0.05	—	0.05	0.05	—	0.05	—	156	156	0.01	< 0.005	—	157
Paving	< 0.005	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	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	0.00
Vendor	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	0.00
Hauling	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	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	0.00
Vendor	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	0.00
Hauling	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	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	0.00
Vendor	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	0.00
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	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	0.00
Vendor	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	0.00
Hauling	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	0.00

3.7. Architectural Coating (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.14	0.11	0.83	1.13	< 0.005	0.02	—	0.02	0.02	—	0.02	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	0.28	0.28	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.14	0.11	0.83	1.13	< 0.005	0.02	—	0.02	0.02	—	0.02	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	0.28	0.28	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.06	0.05	0.36	0.49	< 0.005	0.01	—	0.01	0.01	—	0.01	—	57.8	57.8	< 0.005	< 0.005	—	58.0
Architectural Coatings	0.12	0.12	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.07	0.09	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	9.57	9.57	< 0.005	< 0.005	—	9.60
Architectural Coatings	0.02	0.02	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	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	0.00
Vendor	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	0.00
Hauling	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	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	0.00
Vendor	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	0.00
Hauling	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	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	0.00
Vendor	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	0.00
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	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	0.00
Vendor	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	0.00
Hauling	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	0.00

3.8. Architectural Coating (2027) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.14	0.11	0.83	1.13	< 0.005	0.02	—	0.02	0.02	—	0.02	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	0.28	0.28	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.14	0.11	0.83	1.13	< 0.005	0.02	—	0.02	0.02	—	0.02	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	0.28	0.28	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.06	0.05	0.36	0.49	< 0.005	0.01	—	0.01	0.01	—	0.01	—	57.8	57.8	< 0.005	< 0.005	—	58.0

Architect Coatings	0.12	0.12	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.07	0.09	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	9.57	9.57	< 0.005	< 0.005	—	9.60
Architectural Coatings	0.02	0.02	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	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	0.00
Vendor	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	0.00
Hauling	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	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	0.00
Vendor	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	0.00
Hauling	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	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	0.00
Vendor	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	0.00
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	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	0.00
Vendor	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	0.00
Hauling	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	0.00

4. Operations Emissions Details

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.4. Soil Carbon Accumulation By Vegetation Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.5. Above and Belowground Carbon Accumulation by Land Use Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.6. Avoided and Sequestered Emissions by Species - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Demolition	Demolition	1/1/2027	6/30/2027	6.00	155	—
Construction	Site Preparation	1/1/2027	12/31/2027	6.00	313	—
Paving	Paving	1/1/2027	12/31/2027	6.00	313	—
Architectural Coating	Architectural Coating	7/1/2027	12/31/2027	6.00	158	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Demolition	Excavators	Diesel	Average	2.00	6.00	36.0	0.38
Demolition	Concrete/Industrial Saws	Diesel	Average	2.00	8.00	33.0	0.73
Demolition	Dumpers/Tenders	Diesel	Average	2.00	2.00	16.0	0.38
Demolition	Surfacing Equipment	Diesel	Average	2.00	8.00	399	0.30
Demolition	Graders	Diesel	Average	2.00	8.00	148	0.41
Demolition	Scrapers	Diesel	Average	2.00	8.00	423	0.48
Construction	Rubber Tired Dozers	Diesel	Average	2.00	6.00	367	0.40
Construction	Tractors/Loaders/Backhoes	Diesel	Average	2.00	8.00	84.0	0.37
Construction	Forklifts	Diesel	Average	2.00	6.00	82.0	0.20
Construction	Crawler Tractors	Diesel	Average	2.00	8.00	87.0	0.43
Construction	Trenchers	Diesel	Average	2.00	6.00	40.0	0.50
Construction	Pumps	Diesel	Average	2.00	8.00	11.0	0.74
Construction	Generator Sets	Diesel	Average	1.00	8.00	14.0	0.74
Construction	Off-Highway Trucks	Diesel	Average	1.00	5.00	376	0.38
Construction	Aerial Lifts	Diesel	Average	2.00	2.00	46.0	0.31
Construction	Bore/Drill Rigs	Diesel	Average	1.00	3.00	83.0	0.50
Construction	Cement and Mortar Mixers	Diesel	Average	1.00	4.00	10.0	0.56
Construction	Cranes	Diesel	Average	1.00	2.00	367	0.29
Construction	Plate Compactors	Diesel	Average	2.00	4.00	8.00	0.43
Construction	Pressure Washers	Diesel	Average	2.00	2.00	14.0	0.30
Construction	Rubber Tired Loaders	Diesel	Average	2.00	8.00	150	0.36
Construction	Signal Boards	Diesel	Average	1.00	8.00	6.00	0.82
Construction	Skid Steer Loaders	Diesel	Average	2.00	8.00	71.0	0.37
Construction	Sweepers/Scrubbers	Diesel	Average	2.00	3.00	36.0	0.46

Paving	Pavers	Diesel	Average	2.00	4.00	81.0	0.42
Paving	Paving Equipment	Diesel	Average	2.00	4.00	89.0	0.36
Paving	Rollers	Diesel	Average	2.00	8.00	36.0	0.38
Paving	Sweepers/Scrubbers	Diesel	Average	2.00	3.00	64.0	0.46
Architectural Coating	Air Compressors	Diesel	Average	2.00	3.00	37.0	0.48

5.2.2. Mitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Demolition	Excavators	Diesel	Average	2.00	6.00	36.0	0.38
Demolition	Concrete/Industrial Saws	Diesel	Average	2.00	8.00	33.0	0.73
Demolition	Dumpers/Tenders	Diesel	Average	2.00	2.00	16.0	0.38
Demolition	Surfacing Equipment	Diesel	Average	2.00	8.00	399	0.30
Demolition	Graders	Diesel	Average	2.00	8.00	148	0.41
Demolition	Scrapers	Diesel	Average	2.00	8.00	423	0.48
Construction	Rubber Tired Dozers	Diesel	Average	2.00	6.00	367	0.40
Construction	Tractors/Loaders/Backhoes	Diesel	Average	2.00	8.00	84.0	0.37
Construction	Forklifts	Diesel	Average	2.00	6.00	82.0	0.20
Construction	Crawler Tractors	Diesel	Average	2.00	8.00	87.0	0.43
Construction	Trenchers	Diesel	Average	2.00	6.00	40.0	0.50
Construction	Pumps	Diesel	Average	2.00	8.00	11.0	0.74
Construction	Generator Sets	Diesel	Average	1.00	8.00	14.0	0.74
Construction	Off-Highway Trucks	Diesel	Average	1.00	5.00	376	0.38
Construction	Aerial Lifts	Diesel	Average	2.00	2.00	46.0	0.31
Construction	Bore/Drill Rigs	Diesel	Average	1.00	3.00	83.0	0.50
Construction	Cement and Mortar Mixers	Diesel	Average	1.00	4.00	10.0	0.56
Construction	Cranes	Diesel	Average	1.00	2.00	367	0.29

Construction	Plate Compactors	Diesel	Average	2.00	4.00	8.00	0.43
Construction	Pressure Washers	Diesel	Average	2.00	2.00	14.0	0.30
Construction	Rubber Tired Loaders	Diesel	Average	2.00	8.00	150	0.36
Construction	Signal Boards	Diesel	Average	1.00	8.00	6.00	0.82
Construction	Skid Steer Loaders	Diesel	Average	2.00	8.00	71.0	0.37
Construction	Sweepers/Scrubbers	Diesel	Average	2.00	3.00	36.0	0.46
Paving	Pavers	Diesel	Average	2.00	4.00	81.0	0.42
Paving	Paving Equipment	Diesel	Average	2.00	4.00	89.0	0.36
Paving	Rollers	Diesel	Average	2.00	8.00	36.0	0.38
Paving	Sweepers/Scrubbers	Diesel	Average	2.00	3.00	64.0	0.46
Architectural Coating	Air Compressors	Diesel	Average	2.00	3.00	37.0	0.48

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Demolition	—	—	—	—
Demolition	Worker	0.00	11.7	LDA,LDT1,LDT2
Demolition	Vendor	0.00	8.40	HHDT,MHDT
Demolition	Hauling	0.00	20.0	HHDT
Demolition	Onsite truck	0.00	1.00	HHDT
Construction	—	—	—	—
Construction	Worker	50.0	11.7	LDA,LDT1,LDT2
Construction	Vendor	4.00	8.40	HHDT,MHDT
Construction	Hauling	25.0	20.0	HHDT
Construction	Onsite truck	5.00	1.00	HHDT
Paving	—	—	—	—
Paving	Worker	0.00	11.7	LDA,LDT1,LDT2

Paving	Vendor	0.00	8.40	HHDT,MHDT
Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	0.00	0.00	HHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	0.00	11.7	LDA,LDT1,LDT2
Architectural Coating	Vendor	0.00	8.40	HHDT,MHDT
Architectural Coating	Hauling	0.00	20.0	HHDT
Architectural Coating	Onsite truck	0.00	0.00	HHDT

5.3.2. Mitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Demolition	—	—	—	—
Demolition	Worker	0.00	11.7	LDA,LDT1,LDT2
Demolition	Vendor	0.00	8.40	HHDT,MHDT
Demolition	Hauling	0.00	20.0	HHDT
Demolition	Onsite truck	0.00	1.00	HHDT
Construction	—	—	—	—
Construction	Worker	50.0	11.7	LDA,LDT1,LDT2
Construction	Vendor	4.00	8.40	HHDT,MHDT
Construction	Hauling	25.0	20.0	HHDT
Construction	Onsite truck	5.00	1.00	HHDT
Paving	—	—	—	—
Paving	Worker	0.00	11.7	LDA,LDT1,LDT2
Paving	Vendor	0.00	8.40	HHDT,MHDT
Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	0.00	0.00	HHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	0.00	11.7	LDA,LDT1,LDT2

Architectural Coating	Vendor	0.00	8.40	HHDT,MHDT
Architectural Coating	Hauling	0.00	20.0	HHDT
Architectural Coating	Onsite truck	0.00	0.00	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Non-applicable. No control strategies activated by user.

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
Architectural Coating	0.00	0.00	1,500	1,900	5,269

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (Cubic Yards)	Material Exported (Cubic Yards)	Acres Graded (acres)	Material Demolished (Ton of Debris)	Acres Paved (acres)
Demolition	0.00	0.00	0.00	1,800	—
Construction	28,539	0.00	80.0	0.00	—
Paving	0.00	0.00	0.00	0.00	0.72

5.6.2. Construction Earthmoving Control Strategies

Non-applicable. No control strategies activated by user.

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
City Park	0.00	0%
Parking Lot	0.72	100%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2027	0.00	204	0.03	< 0.005

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

5.18.2.2. Mitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

Cal-Adapt midcentury 2040–2059 average projections for four hazards are reported below for your project location. These are under Representation Concentration Pathway (RCP) 8.5 which assumes GHG emissions will continue to rise strongly through 2050 and then plateau around 2100.

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	8.22	annual days of extreme heat
Extreme Precipitation	9.70	annual days with precipitation above 20 mm
Sea Level Rise	—	meters of inundation depth
Wildfire	106	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (Radke et al., 2017, CEC-500-2017-008), and consider inundation location and depth for the San Francisco Bay, the Sacramento-San Joaquin River Delta and California coast resulting different increments of sea level rise coupled with extreme storm events. Users may select from four scenarios to view the range in potential inundation depth for the grid cell. The four scenarios are: No rise, 0.5 meter, 1.0 meter, 1.41 meters
Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	N/A	N/A	N/A	N/A
Extreme Precipitation	3	0	0	N/A
Sea Level Rise	1	0	0	N/A
Wildfire	1	0	0	N/A

Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	0	0	0	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	N/A	N/A	N/A	N/A
Extreme Precipitation	3	1	1	3
Sea Level Rise	1	1	1	2
Wildfire	1	1	1	2
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	1	1	1	2

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Exposure Indicators	—
AQ-Ozone	7.52
AQ-PM	12.5
AQ-DPM	6.27
Drinking Water	43.1
Lead Risk Housing	24.4
Pesticides	81.0
Toxic Releases	24.8
Traffic	55.9
Effect Indicators	—
CleanUp Sites	17.1
Groundwater	22.1
Haz Waste Facilities/Generators	62.5
Impaired Water Bodies	12.5
Solid Waste	91.0
Sensitive Population	—
Asthma	32.8
Cardio-vascular	5.96
Low Birth Weights	26.9
Socioeconomic Factor Indicators	—
Education	52.9
Housing	35.8
Linguistic	42.8
Poverty	24.7
Unemployment	11.9

7.2. Healthy Places Index Scores

The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Economic	—
Above Poverty	77.74926216
Employed	89.43924034
Median HI	85.71795201
Education	—
Bachelor's or higher	77.49262158
High school enrollment	100
Preschool enrollment	63.67252663
Transportation	—
Auto Access	62.47914795
Active commuting	37.66200436
Social	—
2-parent households	68.35621712
Voting	89.81136918
Neighborhood	—
Alcohol availability	78.73732837
Park access	29.65481843
Retail density	13.48646221
Supermarket access	28.41011164
Tree canopy	89.88836135
Housing	—
Homeownership	68.76684204
Housing habitability	85.51263955
Low-inc homeowner severe housing cost burden	55.97330938
Low-inc renter severe housing cost burden	89.60605672

Uncrowded housing	50.16040036
Health Outcomes	—
Insured adults	81.97099962
Arthritis	0.0
Asthma ER Admissions	69.5
High Blood Pressure	0.0
Cancer (excluding skin)	0.0
Asthma	0.0
Coronary Heart Disease	0.0
Chronic Obstructive Pulmonary Disease	0.0
Diagnosed Diabetes	0.0
Life Expectancy at Birth	79.8
Cognitively Disabled	85.7
Physically Disabled	68.4
Heart Attack ER Admissions	96.4
Mental Health Not Good	0.0
Chronic Kidney Disease	0.0
Obesity	0.0
Pedestrian Injuries	52.6
Physical Health Not Good	0.0
Stroke	0.0
Health Risk Behaviors	—
Binge Drinking	0.0
Current Smoker	0.0
No Leisure Time for Physical Activity	0.0
Climate Change Exposures	—
Wildfire Risk	4.9
SLR Inundation Area	74.1

Children	79.8
Elderly	9.2
English Speaking	45.8
Foreign-born	53.4
Outdoor Workers	37.1
Climate Change Adaptive Capacity	—
Impervious Surface Cover	83.0
Traffic Density	52.2
Traffic Access	23.0
Other Indices	—
Hardship	32.0
Other Decision Support	—
2016 Voting	88.9

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	19.0
Healthy Places Index Score for Project Location (b)	87.0
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	No
Project Located in a Low-Income Community (Assembly Bill 1550)	No
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.
b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

Screen	Justification
Land Use	A 29.25 parcel with approx. 16 acres of disturbance
Construction: Construction Phases	Anticipated Schedule
Construction: Off-Road Equipment	Anticipated Equipment
Construction: Dust From Material Movement	Anticipated grading
Construction: Trips and VMT	Anticipated worker/vendor/haul truck trips
Construction: Paving	For phase II, a total of 31623 SF of hardscape
Operations: Off-Road Equipment	Polaris – Approximately 416 hours per year (1 day a week for 8 hours a day) Backhoe – Approximately 96 hours per year (1 day a month for 8 hours per day) Mower – Approximately 416 hours per year (Mow 1 day a week for 8 hours a day)
Operations: Vehicle Data	approximately 2000 trips on the most extreme days, assuming an average of 150 trips per day on the slower days.
Operations: Architectural Coatings	all existing and new buildings are assumed to be painted
Construction: Architectural Coatings	All existing and new buildings are assumed to be painted
Operations: Emergency Generators and Fire Pumps	Irrigation pump

APPENDIX D

Biological Resources Evaluation

Final Biological Resources Evaluation for the Smith Field Project, Half Moon Bay, San Mateo County, California

JANUARY 2023

PREPARED FOR

City of Half Moon Bay

PREPARED BY

SWCA Environmental Consultants

FINAL BIOLOGICAL RESOURCES EVALUATION FOR THE SMITH FIELD PROJECT, HALF MOON BAY, SAN MATEO COUNTY, CALIFORNIA

Prepared for

City of Half Moon Bay
501 Main Street
Half Moon Bay, California 94019
Attn: John Doughty, Public Works Director

Prepared by

SWCA Environmental Consultants
60 Stone Pine Road, Suite 100
Half Moon Bay, California 94019
(650) 440-4160
www.swca.com

SWCA Project No. 76060

January 2023

EXECUTIVE SUMMARY

The City of Half Moon Bay (City) is proposing the Smith Field Park Facilities Master Plan Project (Project), which includes upgrades to the existing Smith Field Park in the city of Half Moon Bay, San Mateo County, California.

The City retained SWCA Environmental Consultants (SWCA) to provide environmental support services, including conducting a biological resources survey and preparing a Biological Resources Evaluation (BRE), in support of the Project. The purpose of this BRE is to document the biological resources within the Project biological study area (BSA), which consists of the Project footprint (Project area) and an adjacent 200-foot buffer. SWCA conducted a literature review of existing sources of information regarding occurrences of special-status species and sensitive resources near the BSA. A field survey was conducted within the BSA to document biological resources, including special-status plant and animal species, potentially jurisdictional wetlands and other waters, and environmentally sensitive habitat areas (ESHA) as defined by the City Local Coastal Land Use Plan (LCLUP).

Based on the results of the literature review and field surveys, the BSA contains terrestrial, non-aquatic habitat for special-status and unique species and a watercourse that would likely be considered an ESHA. Wavecrest watercourse, an intermittent stormwater drainage channel, bisects the BSA and empties into the Pacific Ocean to the west via Seymour Ditch located north of the BSA. Although this feature lacked continuous surface flow at the time of the site assessment, it has a well-defined bed and bank morphology and is likely considered jurisdictional under the U.S. Army Corps of Engineers (USACE), California Department of Fish and Wildlife (CDFW), and Regional Water Quality Control Board (RWQCB). Additionally, a complex of seasonal wetlands were identified throughout the BSA during the field surveys that are likely only jurisdictional under the City's certified Local Coastal Program and California Coastal Act (LCP/CCA).

The BSA also has a moderate to high potential to support two special-status plant species—Choris' popcorn flower (*Plagiobothrys chorisianus* var. *chorisianus*) and perennial goldfields (*Lasthenia californica* ssp. *macrantha*)—and one special-status animal species—California red-legged frog (*Rana draytonii*). There is no U.S. Fish and Wildlife Service (USFWS)-designated critical habitat or National Oceanic and Atmospheric Administration (NOAA) designated critical habitat located within the BSA. All seven vegetation communities observed in the BSA provide suitable nesting and foraging habitat for nesting birds covered under the Migratory Bird Treaty Act (MBTA) and California Fish and Game Code (CFGC).

CONTENTS

Appendices

Appendix A. USFWS Records Search Results
Appendix B. CNDDB Occurrence Maps and Special-Status Species List
Appendix C. Critical Habitat Map
Appendix D. Special-Status Species Considered for Potential Occurrence in the Biological Study Area
Appendix E. NWI / NHD Records and Soils Map
Appendix F. Plant and Animal Species Observed During Field Survey
Appendix G. Photo Documentation

Figures

1 INTRODUCTION

1.1 Purpose of Biological Resources Evaluation

This Biological Resources Evaluation (BRE) has been prepared by SWCA Environmental Consultants (SWCA) at the request of the City of Half Moon Bay (City) in support of the Smith Field Park Facilities Master Plan Project (Project). The intent of this BRE is to identify sensitive biological resources and environmentally sensitive habitat areas (ESHAs), as defined by the City Local Coastal Program (LCLUP), that may be impacted by proposed upgrades to Smith Field Park. This BRE includes the results from a desktop review, literature search, and field survey of the Project area, including areas within a 200-foot buffer, referred to hereafter as the biological study area (BSA) (Figure 2).

1.2 Project Location and Description

The Project is located at the western terminus of Wavecrest Road in the City of Half Moon Bay, in San Mateo County, California (Figure 1). The latitude and longitude of the Project are 37.4474386 and −122.4355175, respectively. The project is located in Sections 5 and 32, Townships 5S and 6S, and Range 5W and lies within the extent of the Half Moon Bay, California (7.5-minute) U.S. Geological Survey (USGS) topographic quadrangle.

In January 2019, the City adopted a Parks Master Plan, which provides guidance on future planned improvements to existing parks, and construction of new parks within the City's jurisdiction. As part of this plan, upgrades to the existing Smith Field Park were proposed, which may include installation of a new waterline within the right-of-way at Wavecrest Road, upgrades to the park's parking area to include paved access and paved parking spaces (including accessible spaces), youth baseball fields, an all-weather multi-use field (soccer, baseball, softball), establishment of a picnic/BBQ area and interpretive walking trail, expanded dog park (conceptually separated into large and small dog areas), installation of a children's play area, potentially additional active sport court uses, potential installation of field lighting, and upgrades to park landscaping.

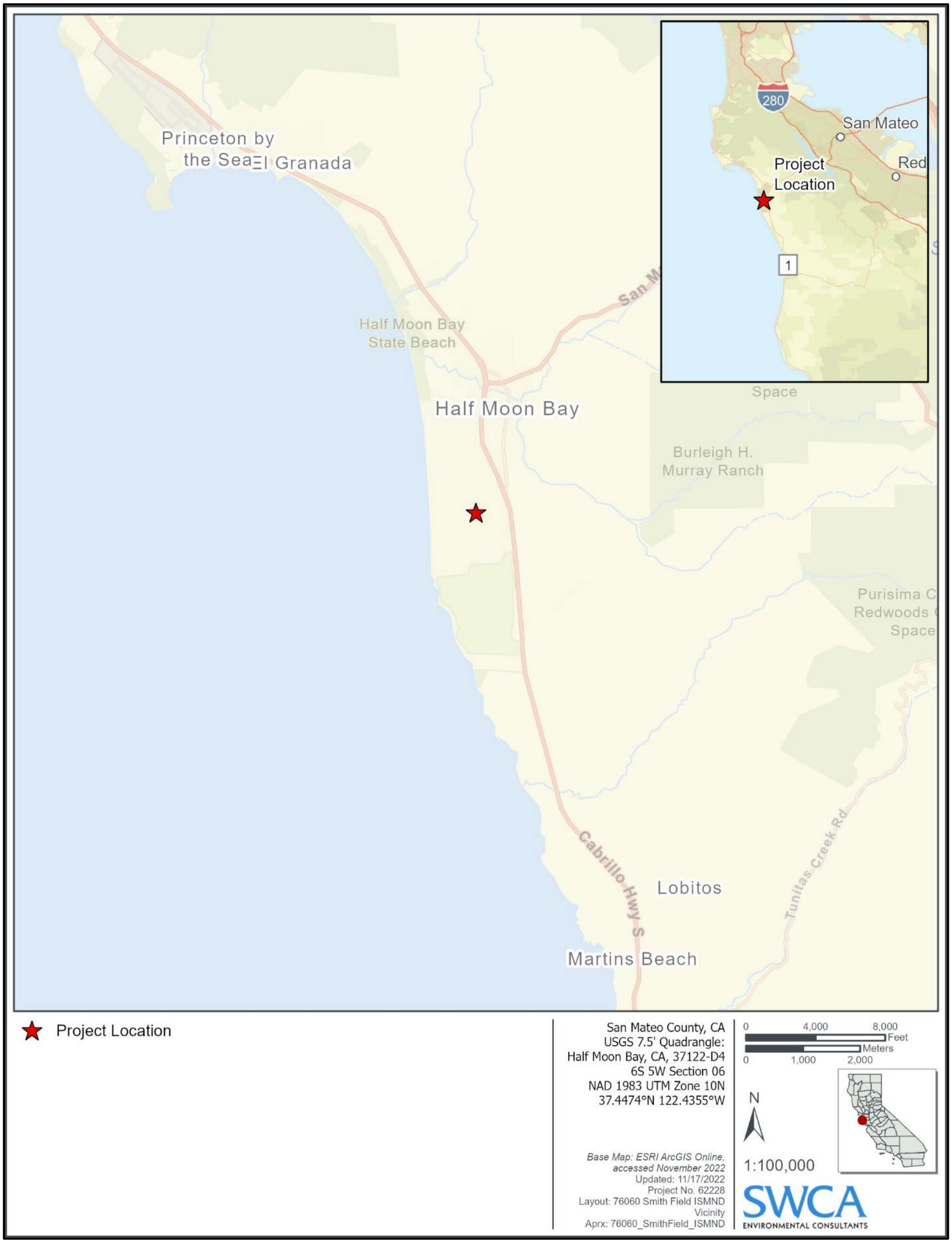


Figure 1. Project location map.

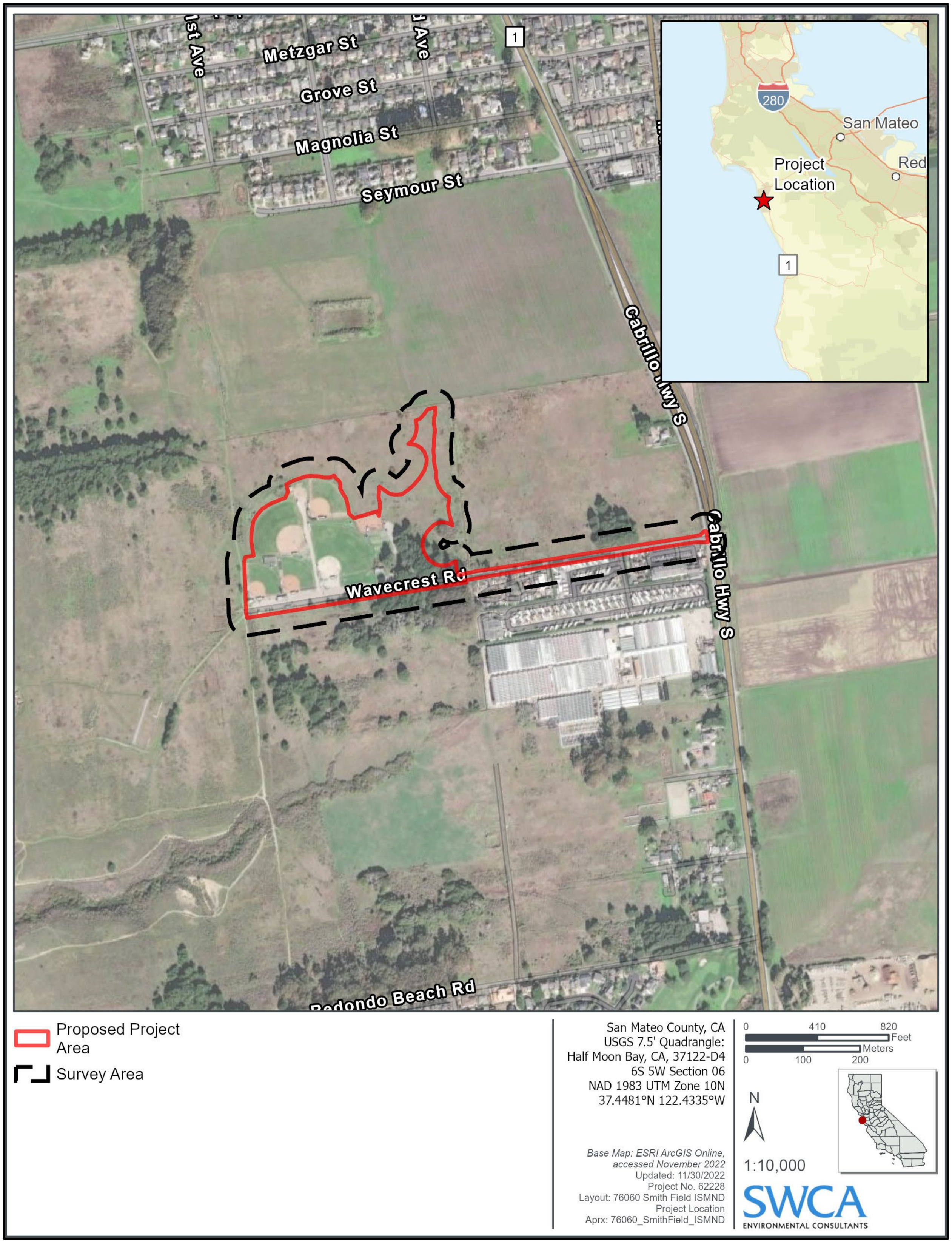


Figure 2. Project vicinity map.

2 REGULATORY SETTING

2.1 Federal

2.1.1 *Clean Water Act*

The purpose of the Clean Water Act (CWA) (33 United States Code [USC] 1251 et seq.) is to "restore and maintain the chemical, physical, and biological integrity of the nation's waters." The U.S. Army Corps of Engineers (USACE) has the authority to permit the discharge of dredged or fill material in "waters of the United States" (WOTUS) under Section 404 of the CWA and to permit work and the placement of structures in navigable WOTUS under Sections 9 and 10 of the Rivers and Harbors Act (33 Code of Federal Regulations [CFR] 320–332).

On June 22, 2015, the USACE and U.S. Environmental Protection Agency (USEPA) published the Clean Water Rule: Definition of "Waters of the United States;" Final Rule (40 CFR 110, 112, 116, 117, 122, 230, 232, 300, 302, and 401). This rule was intended to clarify which waters are considered WOTUS and are therefore subject to jurisdiction. In February 2019, the USACE and USEPA issued a new draft rule, now the Navigable Waters Protection Rule (NWPR), providing a revised definition of WOTUS (USACE and USEPA 2020). This final rule was published April 21, 2020 (*Federal Register* Vol. 85, No. 77) and became effective June 22, 2020. Accordingly, all approved jurisdictional determinations (AJDs) will be processed by the USACE using the NWPR's criteria and guidelines. The most significant change in the new rule is the exclusion of all ephemeral waters, and a new set of criteria for which wetland and non-wetland waters are considered "adjacent" to other WOTUS (and therefore jurisdictional).

The new NWPR defines four categories of federally regulated waters and wetlands (and 12 categories of exclusions that are not subject to regulation under the CWA). The four categories of WOTUS and wetlands are:

(1) the territorial seas and traditional navigable waters;

(2) perennial and intermittent tributaries to those waters;

(3) certain lakes, ponds, and impoundments; and

(4) wetlands adjacent to jurisdictional waters.

The USACE delineates non-wetland waters in the Arid West Region based on the extent of the ordinary high water mark (OHWM) in ephemeral and intermittent channels, following guidance published in *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (USACE 2008a).

Section 401 of the CWA requires all Section 404 permit actions to obtain a state Water Quality Certification or waiver, which is issued by the state's nine Regional Water Quality Control Boards (RWQCBs).

2.1.2 *Endangered Species Act*

The Federal Endangered Species Act (FESA) of 1973 is administered by the U.S. Fish and Wildlife Service (USFWS) and prevents the unlawful "take" of listed fish, animal, and plant species. Section 9(a)(1)(B) specifically states take of species listed as threatened or endangered is unlawful. Take is defined as any action that would harass, harm, pursue, hunt, wound, shoot, kill, trap, capture, or collect any threatened or endangered species. Section 10 of the FESA allows the USFWS to issue incidental take permits if take of a listed species may occur during otherwise lawful activities. Section 10(a)(1)(B) requires a Habitat Conservation Plan for an incidental take permit on non-federal lands.

2.1.3 *Migratory Bird Treaty Act*

The Migratory Bird Treaty Act (MBTA) of 1918 (16 USC 703–711) prohibits taking, killing, possessing, transporting, and importing of migratory birds, parts of migratory birds, and their eggs and nests, except when specifically authorized by the U.S. Department of the Interior. As used in the MBTA, the term "take" is defined as meaning, "to pursue, hunt, capture, collect, kill or attempt to pursue, hunt, shoot, capture, collect or kill, unless the context otherwise requires." An April 11, 2018, memorandum from the USFWS, which enforces the MBTA, provided guidance to "clarify what constitutes prohibited take" (USFWS 2018). The USFWS memorandum stated that the "take of birds, eggs or nests" was prohibited only when the purpose of the activity was to conduct take but was not prohibited when the purpose of the activity was not to conduct take. On January 7, 2021, the USFWS published the Final Rule formalizing this interpretation of the MBTA (USFWS 2021). Therefore, the MBTA is currently limited to purposeful actions, such as directly and knowingly removing a nest to construct a project, hunting, and poaching and not to actions resulting in incidental take. This rule should be monitored closely as it may change again in the near future under the current administration.

2.2 State

2.2.1 *California Endangered Species Act*

The California Endangered Species Act (CESA) of 1970 generally parallels the main provisions of the FESA, but unlike its federal counterpart, the CESA applies the take prohibitions to species proposed for listing (called "candidates" by the state). Section 2080 of the California Fish and Game Code (CFGC) prohibits the take, possession, purchase, sale, and import or export of endangered, threatened, or candidate species, unless otherwise authorized by permit or in the regulations. Take is defined in CFGC Section 86 as to "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." The CESA allows for take incidental to otherwise lawful activities under CFGC Section 2081. Project proponents wishing to obtain incidental take permits are able to do so through a permitting process outlined in California Code of Regulations (CCR) Section 783.

2.2.2 *California Fish and Game Code*

2.2.2.1 FULLY PROTECTED SPECIES

The State of California first began to designate species as "Fully Protected" before the creation of the FESA and CESA. Lists of Fully Protected Species were initially developed to provide protection to those animals that were rare or faced possible extinction, and included fish, mammals, amphibians, reptiles, and birds. Most Fully Protected Species have since been listed as threatened or endangered under the FESA and/or CESA. The Fully Protected Species Statute (CFGC Section 4700) provides that Fully Protected Species may not be taken or possessed at any time. Furthermore, the California Department of Fish and Wildlife (CDFW) may authorize take of Fully Protected Species only in very limited circumstances, such as for necessary scientific research.

2.2.2.2 PROTECTION FOR BIRDS

According to CFGC Section 3503, it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird (with limited exceptions). Section 3503.5 specifically protects birds in the orders Falconiformes and Strigiformes (birds of prey). Section 3513 essentially overlaps with the MBTA, prohibiting the take or possession of any migratory non-game bird. Disturbance that causes nest abandonment and/or loss of reproductive effort is considered "take" by the CDFW.

2.2.2.3 PROTECTION FOR PLANTS

The Native Plant Protection Act (NPPA) of 1977 (CFGC Sections 1900–1913) includes provisions that prohibit the take of endangered or rare native plants. The CDFW administers the NPPA and generally regards as rare many plant species with a California Rare Plant Rank (CRPR) of 1A, 1B, 2A, and 2B in the California Native Plant Society (CNPS) Rare Plant Inventory (CNPS 2022a). In addition, sometimes CRPR 3 and 4 plants are considered if the population has local significance in the area and is impacted by the Project. CFGC Section 191(b) includes a specific provision to allow for the incidental removal of endangered or rare plant species, if not otherwise salvaged by CDFW, within a right-of-way to allow a public utility to fulfill its obligation to provide service to the public.

2.2.2.4 LAKE AND STREAMBED ALTERATION AGREEMENT

Section 1602 of the CFGC requires that a Lake and Streambed Alteration Application be submitted to the CDFW for "An entity may not substantially divert or obstruct the natural flow of, or substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake, or deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake." Evaluation of CDFW jurisdiction followed guidance in the CFGC and *A Review of Stream Processes and Forms in Dryland Watersheds* (CDFW 2010). In general, under CFGC Section 1602, CDFW jurisdiction extends to the maximum extent or expression of a stream on the landscape (CDFW 2010).

2.2.3 *California Species of Special Concern*

Species of Special Concern (SSC) is a category conferred by the CDFW to fish and animal species that meet the state definition of threatened or endangered, but have not been formally listed (e.g., federally or state-listed species), or are considered at risk of qualifying for threatened or endangered status in the future based on known threats. SSC is an administrative classification only, but these species should be considered "special-status" for the purposes of the California Environmental Quality Act (CEQA) analysis (see Section 3.1.1, *Special-Status Plant Species*, and Section 3.1.2, *Special-Status Animal Species*).

2.2.4 *Porter-Cologne Water Quality Control Act*

The RWQCB regulates activities pursuant to Section 401(a)(1) of the CWA. Section 401 specifies that certification from the state is required for any applicant requesting a federal license or permit to conduct any activity, including, but not limited to, the construction or operation of facilities that may result in any discharge into navigable waters. Through the Porter-Cologne Water Quality Control Act (Porter-Cologne Act), the RWQCB asserts jurisdiction over "Waters of the State" (WOTS), which are generally identical in extent to WOTUS, but may also include waterbodies not currently under federal jurisdiction, such as isolated, intrastate waters. The Porter-Cologne Act defines WOTS as "surface water or ground water, including saline waters, within the boundaries of the state."

2.3 Local

2.3.1 *California Coastal Act and City of Half Moon Bay Local Coastal Program*

The California Coastal Act (CCA) of 1976 governs the decisions made by the CCC regarding coastal issues, such as shoreline public access and recreation, terrestrial and marine habitat protection, water quality, commercial fisheries, and development within the California coastal zone. Development within the coastal zone would require either a Coastal Development Permit (CDP) or CDP Exemption from the CCC or from a local government with a CCC-certified Local Coastal Land Use Plan (LCLUP).

The LCLUP has been developed and certified in compliance with the CCA on April 15, 2021 (Local Coastal Program [LCP] Amendment Number LCP-2-HMB-20-0081-2). The Implementation Plan [IP] of the LCP includes Title 17 and 18 of the City Municipal Code (City of Half Moon Bay 2020a). In accordance with City Code Section 18.38, Coastal Resource Conservation Standards, SWCA conducted the biological resource survey and prepared this BRE to assess whether the Project would impact ESHAs, as defined by the LCLUP. Chapter 6, Policy 6-1 of the LCLUP defines ESHAs as follows:

> **ESHA Definition.** An ESHA is any area in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which could be easily disturbed or degraded by human activities and developments, including the following:
>
> a. Any habitat area that is rare or especially valuable from a local, regional, or statewide basis.
>
> b. Areas that contribute to the viability of plant or animal species designated as rare, threatened, or endangered under State or Federal law.
>
> c. Areas that contribute to the viability of species designated as Fully Protected or Species of Special Concern under State law or regulations.
>
> d. Areas that contribute to the viability of plant species for which there is compelling evidence of rarity, for example, those designated 1b (Rare or endangered in California and elsewhere) or 2 (rare, threatened or endangered in California but more common elsewhere) by the California Native Plant Society.

The City LCP establishes a method for identifying and designating ESHAs and provides policies to preserve and protect the resources in these areas as consistent with the CCA. ESHAs are categorized into three types: terrestrial, wetlands, and watercourses. In Half Moon Bay, these areas include, but are not limited to, terrestrial ESHAs (marine environment, sea cliffs, dunes, coastal terrace prairie, and non-aquatic habitat for special-status or unique species), wetlands, and watercourses similar to sensitive resources described as Coastal Resource Areas (CRAs) in City Code Title 18.

The City regulates activities in wetlands and other ESHAs through its LCP as consistent with the CCA. Unlike the federal government, the CCA uses the one-parameter Cowardin et al. (1979) definition of wetlands:

> Wetlands are lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface of the land or is covered by shallow water. For purposes of this classification, wetlands must have one or more of the following three attributes: (1) at least periodically, the land supports predominantly hydrophytes (at least 50 percent of the aerial vegetative cover); (2) the substrate is predominantly undrained hydric soil; and (3) the substrate is

nonsoil and is saturated with water or covered by shallow water at some time during the growing season of each year.

The Project would be subject to permitted uses, buffer zones, and standards for terrestrial, wetland, and watercourse ESHAs as defined in the LCLUP.

3 METHODOLOGY

3.1 Literature and Records Review

SWCA performed an extensive literature review, to gain familiarity with the Project and to identify potential sensitive biological features, including ESHAs, target flora and fauna species, and wetlands or other waters that have the potential to occur in the BSA (Figure 3). The review consisted of a records search of current versions of the USFWS online Information for Planning and Consultation (IPaC) species list system (USFWS 2022a) (Appendix A), CDFW California Natural Diversity Database (CNDDB 2022) (Appendix B), and CNPS Online Inventory of Rare and Endangered Plants (CNPS 2022a) within the Half Moon Bay, California, USGS quadrangle (USGS 2022a). The CNDDB search was further refined to a 2-mile search surrounding the Project area (see Appendix B). The USFWS Critical Habitat Mapper (USFWS 2022b) was queried to identify critical habitat for terrestrial and aquatic species near the BSA (Appendix C). All of the special-status species and sensitive habitats found in the literature review were compiled into a table for use during the field survey, as described in Section 3.2, *Field Survey* (Appendix D).

The National Wetlands Inventory (NWI) Database (USFWS 2022c) and USGS National Hydrography Dataset (NHD) (USGS 2022b) (Appendix E), U.S. Department of Agriculture Natural Resources Conservation Service (NRCS) Soil Survey for San Mateo County (NRCS 2022) (Appendix E), and aerial imagery were also reviewed to provide additional information for soils and potential wetland features known to occur in the BSA.

3.1.1 *Special-Status Plant Species*

For the purposes of this BRE, special-status plant species are defined as the following:

- Plants listed or proposed for listing as threatened or endangered under the FESA (50 CFR 17.12 for listed plants and various notices in the *Federal Register* for proposed species).
- Plants that are candidates for possible future listing as threatened or endangered under the FESA.
- Plants considered by the CNPS to be “rare, threatened, or endangered” in California (CRPR 1A, 1B, 2A, and 2B in CNPS [2022b]).
- Plants listed or proposed for listing by the State of California as threatened or endangered under the CESA (14 CCR Section 670.5).
- Plants listed under the NPPA (CFGC Section 1900 et seq.).
- Plants considered sensitive by other federal agencies (e.g., U.S. Forest Service, U.S. Bureau of Land Management), state and local agencies, or jurisdictions.

Figure 3. Biological resources map: vegetation communities.

3.1.2 *Special-Status Animal Species*

For the purposes of this BRE, special-status animal species are defined as the following:

- Animals listed or proposed for listing as threatened or endangered under the FESA (50 CFR 17.11 for listed animals and various notices in the *Federal Register* for proposed species).
- Animals that are candidates for possible future listing as threatened or endangered under the FESA.
- Animals listed or proposed for listing by the State of California as threatened and endangered under the CESA (14 CCR 670.5).
- Animal species of special concern to the CDFW.
- Animal species that are fully protected in California (CFGC Sections 3511 [birds], 4700 [mammals], and 5050 [reptiles and amphibians]).

3.2 Field Survey

On November 21 and November 22, 2022, SWCA biologists Erich Schickenberg and Charlotte Soergel conducted a reconnaissance-level survey of the BSA. The purpose of the field survey was to evaluate the presence or absence of suitable habitat for special-status species determined to have the potential to occur in the BSA, sensitive habitats with potential to occur, potentially jurisdictional wetland features, and other ESHAs as defined by the City LCLUP. In addition, the surveyor identified and mapped vegetation communities using *A Manual of California Vegetation,* 2nd ed. (Sawyer et al. 2009). The survey included walking throughout the Project area and the surrounding 200-foot buffer (BSA) where accessible (see Figure 3).

A complete list of plant and animal species observed within the BSA during the field survey is included in Appendix F. When necessary, the biologist referred to *The Jepson Manual* (Baldwin et al. 2012) to identify plant species. Representative photographs depicting existing conditions are included in Appendix G.

A formal wetland delineation was also conducted concurrently with the reconnaissance level surveys on November 21 and 22, 2022. The results of the wetland delineation will be presented in a separate report; however, the results of wetland mapping are included in this report to inform the potential for sensitive plant and wildlife species occurrence within the BSA. Determination of wetland areas in the BSA were based on a review of pertinent literature and the on-site investigation. The biologists used the routine wetland determination methodology as described in the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987) and *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (Version 2.0) (USACE 2008b) to determine areas that could potentially meet a one-parameter wetland definition per the CCC (CCC 2011).

During the field survey, the biologist also investigated upland areas beyond the extent of the Project work located within the BSA for potential USACE and CDFW jurisdictional features, including resources classified as ESHAs defined by LCLUP Chapter 6, Policy 6-1.

4 RESULTS

4.1 Soils, Topography, and Elevation

The topography within the BSA is generally flat and gently slopes westward toward the Pacific Ocean. The BSA contains several minor ephemeral stormwater drainage ditches and one minor intermittent stormwater drainage ditch known as the Wavecrest Watercourse. The banks of the Wavecrest Watercourse range from gently sloping, to moderately steep and incised. Additionally, the BSA contains several shallow anthropogenic depressions, such as tire ruts, that are likely a result of historic off-road vehicle use or agricultural practices. Elevations within the BSA range from approximately 74 to 96 feet above mean sea level.

According to the NRCS Web Soil Survey (NRCS 2022), soils in the BSA consist of one soil type: Watsonville loam, nearly level (see Appendix E).

4.2 Vegetation Communities

The BSA consists of an asphalted roadway, commercial development, recreational development (including baseball fields, a dog park, and horseshoe pits), and undeveloped land dominated by a mix of native and non-native vegetation. Seven habitat types were mapped in the BSA and were classified using the naming conventions of *A Manual of California Vegetation*, 2nd ed. (Sawyer et al. 2009). Vegetation communities present in the BSA include coyote brush scrub (*Baccharis pilularis* Shrubland Alliance), perennial rye grass fields, soft and western rush – sedge marshes (*Juncus* [*effuses, patens*] – *Carex* [*pansa, praegracilis*] Herbaceous Alliance), poison hemlock or fennel patches (*Conium maculatum* – *Foeniculum vulgare* Herbaceous Semi-Natural Alliance), Monterey cypress – Monterey pine woodland stands (*Hesperocyparis macrocarpa* – *Pinus radiata* Forest and Woodland Semi-Natural Alliance), eucalyptus – tree of heaven – black locust groves (*Eucalyptus* spp. – *Ailanthus altissima* – *Robinia pseudoacacia* Woodland Semi-Natural Alliance), and developed/disturbed areas.

Photographs (see Appendix G) and mapping (see Figure 3) depict the characteristics and locations of vegetation communities within the BSA.

4.2.1 *Coyote Brush Scrub*

Coyote brush scrub is characterized by coyote brush as dominant or co-dominant in the shrub canopy along with coastal sage brush (*Artemisia californica*), blueblossom (*Ceanothus thyrsiflorus*), beaked hazelnut (*Corylus cornuta*), sticky monkeyflower (*Diplacus aurantiacus*), California buckwheat (*Eriogonum fasciculatum*), lizard tail (*Eriophyllum staechadifolium*), California coffeeberry (*Frangula californica*), coast silk tassel (*Garrya elliptica*), salal (*Gaultheria shallon*), oceanspray (*Holodiscus discolor*), deerweed (*Acmispon glaber*), coastal bush lupine (*Lupinus arboreus*), California wax myrtle, California blackberry, white sage (*Salvia apiana*), purple sage (*Salvia leucophylla*), and poison oak (*Toxicodendron diversilobum*). Emergent trees may be present at low cover, including Bishop pine (*Pinus muricata*), Douglas fir (*Pseudotsuga menziesii*), coast live oak (*Quercus agrifolia*), or California bay (*Umbellularia californica*). This vegetation community occurs on river mouths, stream sides, terraces, stabilized dunes of coastal bars, spits along the coastline, coastal bluffs, open slopes, and ridges with variable soils ranging from sandy to relatively heavy clay (Sawyer et al. 2009).

This habitat occurs throughout the undeveloped portions of the BSA, primarily in the western and northeastern extents of the BSA. In the BSA, coyote brush is the dominant species observed within this vegetation community, with California blackberry and California horkelia (*Horkelia californica*) at lower cover. Coyote brush scrub habitat in the BSA has the potential to serve as upland dispersal habitat for California red-legged frog and may support special-status plant species, including Choris' popcorn-flower and perennial goldfields. In addition, this community has the potential to support nesting and foraging birds protected under the MBTA.

4.2.2 *Perennial Rye Grass Fields*

Perennial rye grass fields are characterized by a dominance or co-dominance of perennial rye grass in the herbaceous layer along with redtop (*Agrostis stolonifera*), wild oats (*Avena fatua*), black mustard (*Brassica nigra*), ripgut brome (B*romus diandrus*), soft chess (*Bromus hordeaceus*), bull thistle (*Cirsium vulgare*), reed fescue (*Festuca arundinacea)*, common velvetgrass (*Holcus lanatus*), seaside barley (*Hordeum marinum*), hawkbit (*Leontodon saxatilis*), bird's foot trefoil (*Lotus corniculatus*), Harding grass (*Phalaris aquatica*), Kentucky blue grass (*Poa pratensis*), curly dock (*Rumex crispus*), and various clover species (*Trifolium* spp.).

This vegetation community occurs primarily in the northeast portion of the BSA and is dominated by perennial rye grass, Harding grass, four seeded vetch (*Vicia tetrasperma*), and soft chess. Elements of this vegetation community can also be found within the Wavecrest Watercourse. Perennial rye grass field habitat in the BSA has the potential to serve as upland dispersal habitat for California red-legged frog and may support special-status plant species, including Choris' popcorn-flower and perennial goldfields. In addition, this community has the potential to support nesting and foraging birds protected under the MBTA.

4.2.3 *Soft and Western Rush – Sedge Marshes*

Soft and western rush – sedge marshes are characterized by a dominance or co-dominance of ample leaved sedge (*Carex amplifolia*), sedge (*Carex densa*), Olney's hairy sedge (*Carex gynodynama*), sand dune sedge (*Carex pansa*), field sedge (*Carex praegracilis*), bifid sedge (*Carex serratodens*), small bract sedge (*Carex subbracteata*), split awn sedge (*Carex tumulicola*), Coville's rush (*Juncus covillei*), common bog rush (*Juncus effusus*), coast rush (*Juncus hesperius*), slender rush (*Juncus occidentalis*), common rush (*Juncus patens*) and/or brown headed rush (*Juncus phaeocephalus*) in the herbaceous layer with mountain dandelion (*Agoseris heterophylla*), Pacific potentilla (*Potentilla anserina*), bull thistle, common velvetgrass, hairy cats ear (*Hypochaeris radicata*), Mexican rush (*Juncus mexicanus*), common toad rush (*Juncus bufonius*), beardless wild rye (*Elymus triticoides*), perennial rye grass, pennyroyal (*Mentha pulegium*), ribwort (*Plantago lanceolata*), and California coffeeberry. Emergent shrubs may be present at low cover, including coyote brush or California blackberry.

Soft and western rush – sedge marshes within the BSA occur as a mosaic of clonal, often monotypic patches of either field sedge or brown headed rush with common rush present at low to moderate cover. Seasonal wetland features identified within the BSA were dominated by this habitat type. Coyote brush scrub habitat in the BSA has the potential to serve as upland dispersal habitat for California red-legged frog. In addition, this community has the potential to support nesting and foraging birds protected under the MBTA.

4.2.4 *Poison Hemlock or Fennel Patches*

Poison hemlock or fennel patches are characterized by a dominance or co-dominance of poison hemlock, fennel, or another non-native invasive plant of the carrot family (Apiaceae) with other non-native plants in the herbaceous layer. Emergent trees or shrubs may be present at low cover. This vegetation community can be found in all topographic settings, including both wetlands and uplands (Sawyer et al. 2009).

This vegetation community was observed in patches throughout the undeveloped portions of the BSA in locations that have been subjected to historical disturbances such as adjacent to stormwater ditches (including the Wavecrest Watercourse) or on raised remnant soil stockpiles. Within this portion of the BSA, poison hemlock is co-dominant with upland plant species including sweet fennel, wild radish, and Bermuda buttercup. Poison hemlock or fennel patch habitat in the BSA has the potential to serve as upland dispersal habitat for California red-legged frog. In addition, this community has the potential to support nesting and foraging birds protected under the MBTA.

4.2.5 *Monterey Cypress – Monterey Pine Woodland Stands*

Monterey cypress – Monterey pine woodland stands are characterized by a predominance of Monterey cypress, Canary Island pine (*Pinus canariensis*), Aleppo pine (*Pinus halepensis*), Italian stone pine (*Pinus pinea*), and Monterey pine in the tree canopy along with coast wattle (*Acacia cyclops*) and eucalyptus species. This vegetation community is naturalized on the coast and is often planted as trees, groves, and windbreaks (Sawyer et al. 2009).

Within the BSA, this vegetation community occurs as ornamental or windrow plantings along Wavecrest Road and is dominated by Monterey cypress with Monterey pine at low cover. This community has the potential to support nesting and foraging birds protected under the MBTA and may provide marginal overwintering habitat for monarch butterfly.

4.2.6 *Eucalyptus – Tree of Heaven – Black Locust Groves*

Eucalyptus – tree of heaven – black locust groves are typically dominated by eucalyptus species, tree of heaven, or black locust in the tree canopy. The herbaceous and shrub layers may be present at sparse to intermittent cover. This vegetation community is typically planted as trees, groves, and windbreaks, and in California, is naturalized on uplands or bottomlands and adjacent to stream courses, lakes, or levees (Sawyer et al. 2009). This habitat occurs southern portion of the BSA and is composed mostly of mature blue gum eucalyptus and blackwood acacia (*Acacia melanoxylon*) trees with a sparse understory dominated by poison oak and California blackberry. This community has the potential to support nesting and foraging birds protected under the MBTA and may provide marginal overwintering habitat for monarch butterfly.

4.2.7 *Developed/Disturbed*

Developed/disturbed areas are generally characterized by residential or commercial development dominated by a mix of exotic ornamental and native plant species. Vegetation density, canopy cover, and species composition will vary based on purpose and/or design. This habitat type occurs on the south and west sides of the BSA and includes Wavecrest Road, the Smith Field recreational area, and the developed areas south of Wavecrest Road. These areas are characterized by commercial development, paved public roadways, and recreational facilities (including manicured sports fields, a dog park, and horsehoe pits). Vegetation types in these areas include manicured grass fields and ornamental trees and shrubs.

4.3 Critical Habitat

There is no federally listed critical habitat within the Project area or BSA. However, there is USFWS federally designated critical habitat for four species within 2 miles of the Project area: California red-legged frog (a federally threatened species and CDFW SSC) critical habitat is approximately 1 mile north east of the Project area, western snowy plover (a federally threatened species and CDFW SSC) critical habitat is located approximately 1 mile north west of the Project area, and steelhead (*Oncorhynchus mykiss*; a federally threatened species and CDFW SSC) and coho salmon (*Oncorhynchus kisutch*; a federally threatened and state threatened species) critical habitat is located in Arroyo Leon, approximately 0.7 mile east of the Project area.

Additionally, there is National Oceanic and Atmospheric Administration (NOAA) federally designated critical habitat for five marine species within 2 miles of the Project area within the Pacific Ocean: black abalone (*Haliotis cracherodii*, a federally endangered species) critical habitat is located approximately 0.5 mile west of the Project area, leatherback sea turtle (*Dermochelys coriacea*, a federally endangered species) critical habitat is located approximately 0.7 mile west of the Project area, green sturgeon (*Acipenser medirostris*, a federally threatened species), killer whale (*Orcinus orca*, a federally endangered species) critical habitat is located approximately 1 mile west of the Project area, and humpback whale (*Megaptera novaeangliae,* a federally endangered species) critical habitat is located approximately 1.5 miles west of the Project area.

No critical habitat will be affected by the Project (see Appendix C).

4.4 Special-Status Species with Potential to Occur

Based on the existing biological conditions in and adjacent to the BSA, a review of relevant literature, the known occurrences of special-status species in the area, and SWCA biologists' local knowledge of the region, five special-status plants and 11 special-status animal species with potential to occur on-site were identified within the Half Moon Bay, California, USGS 7.5-minute quadrangle. Summary descriptions for these species are provided below, and descriptions of other plants and animal species that were evaluated for potential occurrence are provided in Appendix D.

4.4.1 *Special-Status Plant Species*

Based on CNDDB and CNPS queries, five special-status plant species (as defined in Section 3.1.1 above) were identified with potential to occur in the Half Moon Bay, California, USGS 7.5-minute quadrangle. SWCA further evaluated the species and their habitat requirements to identify which special-status plant species have the potential to occur within the BSA. This analysis compared the known habitat requirements of the five species with the BSA's existing conditions, elevation, and soils. The evaluation also took into consideration which species had recent occurrences within 2 miles of the BSA (see Appendix B).

No special-status plant species identified during the desktop review were observed during the field survey. However, the survey was conducted outside the bloom windows for all of the plant species analyzed except for perennial goldfields, which is known to bloom between January and November. One historic occurrence of Choris' popcorn flower was identified in 2015 within the southwest corner of the BSA (CNDDB 2022); however, this species was not observed during the November 2022 field survey. Of the five species considered for potential occurrence (see Appendix D, Table D-1), one species, coastal marsh milkvetch (*Astragalus pycnostachyus* var. *pycnostachyus*), was determined to have no potential to occur due to lack of suitable habitat, soils, or elevation requirements. Rose leptosiphon (*Leptosiphon rosaceus*) and Kellogg's horkelia (*Horkelia cuneata*) were determined to have low potential due to a lack of high-quality suitable habitat and the absence of recent occurrences within the 2-mile records search. The following two special-status plant species were determined to have high and moderate potential to occur within the BSA:

- Choris' popcorn flower (*Plagiobothrys chorisianus* var. *chorisianus*): CRPR 1B.2 (high potential)
- perennial goldfields (*Lasthenia californica* ssp. *macrantha*): CRPR 1B.2 (moderate potential)

Species that were determined to have low potential to occur or be absent from the BSA are not discussed further in this BRE. Additionally, four plant species with CRPR Rank 3 or 4 were identified during the CNPS query as having potential to occur within the Half Moon Bay, California, USGS 7.5-minute quadrangle: coast iris (*Iris longipetala*; CRPR Rank 4.2), harlequin lotus (*Hosackia gracilis*; CRPR Rank 4.2), San Mateo tree lupine (*Lupinus arboreus* var. *eximius*; CRPR Rank 3.2), and Hickman's popcornflower (*Plagiobothrys chorisianus* var. *hickmanii*; CRPR Rank 4.2), however these species are not discussed further in this BRE as these species are not known to occur within the BSA and are not considered locally significant under the City of Half Moon Bay LCLUP. Special-status plant species habitat descriptions and rationale for potential to occur in the BSA are provided in Appendix D. Given the above information, in addition to the implementation of avoidance and minimization measures provided in Section 5, *Avoidance and Minimization Measures*, no impacts to special-status plants are anticipated.

4.4.1.1 CHORIS' POPCORN FLOWER

Choris' popcorn flower is an annual herb in the borage family (Boraginaceae) that blooms from March to June. It typically occurs in mesic areas in coastal prairie, chaparral, northern coastal scrub, and wetland riparian areas, at elevations ranging from 20 to 525 feet (Baldwin et al. 2012; Calflora 2021; CNPS 2022a, 2022b).

There are four CNDDB records of Choris' popcorn flower within 2 miles of the of the BSA (CNDDB 2022), one of which was documented in 2015, overlapping the southwest corner of the BSA. Prior to the site visit, it was determined that Choris' popcorn flower has a high potential to occur within or adjacent to the BSA due to the suitable mesic coastal scrub habitat. No Choris' popcorn flower was observed at the time of the November 2022 site assessment; however, the survey did not occur during the blooming period for this species. Vegetation communities within the BSA that could potentially support this species are limited to coyote brush scrub and perennial rye grass fields. Coyote brush scrub and perennial rye grass field vegetation communities are located within areas that are potentially within the work area; therefore, a preconstruction survey for this species, during the appropriate bloom period of March to June, is recommended. With implementation of avoidance and minimization measures, including preconstruction survey and special-status plant avoidance, provided in Section 5, *Avoidance and Minimization Measures*, no Project impacts to Choris' popcorn flower are anticipated.

4.4.1.2 PERENNIAL GOLDFIELDS

Perennial goldfields is a perennial herb in the daisy family (Asteraceae) that blooms from January to November, but mostly May to August. It occurs in grassland and dunes along the coast at elevations less than 1,600 feet (Baldwin et al. 2012; Calflora 2021; CNPS 2022a, 2022b).

There is one CNDDB record within 2 miles of the of the BSA (CNDDB 2022), which was documented in 2015 at the bluff top of the coastal trail near Francis State Beach, approximately 1.9 miles south of the Project area. Prior to the site visit, it was determined that perennial goldfields has a moderate potential to occur within the BSA due to suitable habitat present along the coast trail located at the western edge of the BSA. No perennial goldfields occurrences were observed at the time of the November 2022 site assessment; however, the survey occurred at the end of the blooming period for this species. Vegetation communities within the BSA that could potentially support this species are limited to coyote brush scrub and perennial rye grass fields. Coyote brush scrub and perennial rye grass vegetation communities are located within areas that are potentially within the work area; therefore, a preconstruction survey for this species, during the appropriate bloom period of January to November, is recommended. With implementation of avoidance and minimization measures, including preconstruction survey and special-status plant avoidance, provided in Section 5, *Avoidance and Minimization Measures*, no Project impacts to perennial goldfields are anticipated.

4.4.2 *Special-Status Animal Species*

Based on a CNDDB query and a review of existing literature, 11 special-status animal species were identified in the Half Moon Bay, California, USGS 7.5-minute quadrangle. None of the 11 special-status animal species identified during desktop review were observed during the field survey.

SWCA evaluated the species to identify which special-status animal species have the potential to occur within the BSA. This analysis compared the known habitat requirements of those species with the BSA's existing conditions. The evaluation also took into consideration which species have been recorded in the CNDDB within 2 miles of the BSA (see Appendix B).

Of the 11 species considered for potential occurrence, five were determined to have potential to occur within the Project area and BSA, and the remaining six species were determined to have no potential to occur or be absent from the Project area and BSA due to a lack of suitable foraging and/or breeding habitat, aestivating habitat, life history, and/or other biotic considerations.

California red-legged frog, federally threatened, CDFW SSC, was determined to have high potential to occur in the BSA. The following four special-status animal species have low potential to occur within the BSA:

- Western bumble bee (*Bombus occidentalis*): California candidate endangered (low potential)
- Monarch butterfly (*Danaus plexippus*): federal candidate species (low potential)
- Saltmarsh common yellowthroat (*Geothlypis trichas sinuosa*): CDFW SSC (low potential)
- San Francisco garter snake (*Thamnophis sirtalis tetrataenia*): federally and state endangered, CDFW Fully Protected Species (low potential)

California red-legged frog, the special-status animal species that has high potential to occur, is discussed in the following section. Species that were determined to have low potential to occur or be absent from the BSA (see Appendix D, Table D-1) are not discussed further in this BRE.

4.4.2.1 CALIFORNIA RED-LEGGED FROG

California red-legged frog, a federally threatened species and CDFW SSC, occurs in various different habitat types, depending on its life cycle stage. Breeding areas include aquatic habitats, such as lagoons, streams, and natural and humanmade ponds. The species prefers aquatic habitats with little or no flow, the presence of surface water to at least early June, surface water depths to approximately 2 feet, and the presence of emergent vegetation (e.g., cattails, bulrush). During periods of wet weather, some individuals may make overland dispersals through adjacent upland habitats of distances up to 1 mile (USFWS 2002). Upland habitats, including small mammal burrows and woody debris, can also be used as refuge during the summer if water is scarce or unavailable (Jennings and Hayes 1994). California red-legged frogs typically travel between sites and are unaffected by topography and vegetation types during migration. Dispersal habitat makes it possible for California red-legged frog to locate to new breeding and non-breeding sites and is crucial for conservation of the species.

Eight California red-legged frog occurrences have been recorded within 2 miles of the BSA between 2001 and 2020 (CNDDB 2022). The closest CNDDB occurrence (2004) was recorded within the northern portion of the BSA (see Appendix B). While no suitable aquatic breeding habitat was observed onsite, potentially suitable upland dispersal habitat for this species is present within the BSA. Additionally, the Wavecrest watercourse may provide marginally suitable aquatic dispersal habitat during periods of inundation during the wet season. The species was not observed in the BSA during the field survey.

Based on the above information and number of known occurrences within 2 miles of the Project area and within the BSA, there is high potential for dispersing California red-legged frog to occur in the BSA and Project area during wet season (October 15–May 31), and low to moderate potential for the species to occur in the BSA during the dry season (June 1–October 15). With implementation of avoidance and minimization measures, including having a biological monitor present during Project initial ground-disturbing activities and installation of wildlife exclusion fencing, provided in Section 5, *Avoidance and Minimization Measures*, Project impacts to California red-legged frog are not anticipated.

4.5 Nesting Migratory Passerine Birds and Raptors

The BSA contains suitable nesting and foraging habitat for avian species protected under the MBTA and CFGC Sections 3503 and 3513 during the typical nesting season (February 15–September 15). Suitable nesting and forging habitats would include the non-native grassland areas, shrubs, and trees within and adjacent to the Project area. Nesting is unlikely outside of the typical nesting season, although some avian species may forage year-round near the site. Avian species protected by the MBTA and CFGC observed in the BSA during the November 2022 field survey included American crow (*Corvus brachyrhynchos*), American kestrel (*Falco sparverius*), black phoebe (*Sayornis nigricans*), Brewer's blackbird (*Euphagus cyanocephalus*), common raven (*Corvus corax*), European starling (*Sturnus vulgaris*), house finch (*Haemorhous mexicanus*), house wren (*Troglodytes aedon*), killdeer (*Charadrius vociferus*), red-shouldered hawk (*Buteo lineatus*), red-tailed hawk (*Buteo jamaicensis*), savannah sparrow (*Passerculus sandwichensis*), song sparrow (*Melospiza melodia*), and turkey vulture (*Cathartes aura*).

No nesting birds were observed during the field survey, which occurred after the typical nesting season.

The Project has the potential to impact nesting birds, including their eggs or young, covered under the MBTA and CFGC. However, with the implementation of avoidance and minimization measures provided in Section 5, *Avoidance and Minimization Measures*, no impacts to these avian species are anticipated.

4.6 Wildlife Habitat and Movement Corridors

Suitable migration habitat for amphibians, reptiles, birds, and mammals are present along the Pacific Ocean coastline to the west of the BSA, and large collections of migrating raptors are known to use the Wavecrest Open Space, adjacent to the Project area, during the fall. However, there are no known migratory corridors that intersect the BSA. Although the BSA does contain upland dispersal habitat for California red-legged frog, San Francisco garter snake, and common wildlife species, the proposed project will not include the construction of structures that would inhibit the dispersal of these species when attempting to move through the BSA. Furthermore, the temporary and short duration of construction activities are unlikely to substantially disrupt the migration of animals through the coastline to the west of the BSA. The Project is not expected to interfere substantially with the movement of any native resident or migratory animals.

4.7 Environmentally Sensitive Habitat Areas

Because the Project occurs within or adjacent to terrestrial, non-aquatic habitat for special-status and unique species and watercourse ESHAs, it may be subject to permitted uses, buffer zones, and standards for terrestrial and watercourse ESHAs, as defined in the LCLUP.

4.7.1 *Terrestrial ESHA*

Regarding terrestrial ESHAs, Policy 6-16 of the LCLUP states that non-aquatic habitat associated with special-status or unique species shall be protected against significant disruption of habitat values, which is discussed further in Section 4.7.2, *Watercourse ESHA*.

Regarding work within a terrestrial ESHA, Policy 6-16 also states, "Temporary disruption (e.g., less than six months) for the construction, alteration, repair, and maintenance of existing or newly permitted facilities or structures is allowed if there are no feasible alternatives and the disruption is repaired and restored to at least an equivalent condition within one year." While Policy 6-17 describes required buffer zones for work occurring next to a terrestrial ESHA, which "shall have a minimum buffer width of 100 feet." To avoid adverse impacts to habitat associated with special-status or unique species or other sensitive resources, construction best management practices (BMPs) would be implemented such as Policy 6-63, which states the following regarding construction and ESHA:

> Ensure that construction does not adversely impact sensitive bird or other animal species in on-site or nearby ESHA, wetlands, or watercourses by requiring construction projects to implement best management practices (e.g., pre-construction surveys, construction and/or tree removal timing restrictions, exclusionary fencing), and, as appropriate based on project scope and site conditions, noise and vibration reduction measures and monitoring by a qualified biologist during construction.

The proposed Project area contains potential habitat associated with special-status or unique species, including California red-legged frog and San Francisco garter snake. The northeastern extent of the BSA is depicted in Figure 6-3 of the LCLUP as a mapped ESHA for California red-legged frog upland, foraging, and dispersal habitat and San Francisco garter snake habitat. As such, the Project may result in impacts to these terrestrial ESHAs. However, proposed work within the mapped terrestrial ESHA will be limited to installation of a pedestrian trail and picnic area within what is potential upland dispersal habitat for the species. The proposed development is not anticipated to create a barrier to California red-legged frog or San Francisco garter snake dispersal or significantly impact upland dispersal habitat, given the extent of undisturbed area surrounding the development area and location of the disturbance (i.e., not located directly between known breeding ponds and persistent water features where dispersal movements are concentrated). Furthermore, with implementation of the avoidance and minimization measures in Section 5, *Avoidance and Minimization Measures*, impacts to the terrestrial ESHA will be minimized.

4.7.1.1 NON-AQUATIC HABITAT FOR SPECIAL-STATUS AND UNIQUE SPECIES

Policy 6-32 of the LCLUP defines special-status species as species that are listed or proposed for listing as rare, threatened, endangered, or of special concern by the federal and/or state government. Additionally, Policy 6-33 defines unique species as an organism or group of organisms that has scientific or historic value, has few indigenous habitats, has some characteristic(s) that draw attention or are locally uncommon, or are common only locally or are of limited range.

As previously discussed in Section 4.4.2, *Special-Status Animal Species*, potential habitat for special-status or unique species, including California red-legged frog and San Francisco garter snake, may occur within the BSA. However, with implementation of the avoidance and minimization measures in Section 5, *Avoidance and Minimization Measures*, no impacts to special-status and unique species are anticipated.

4.7.2 *Watercourse ESHA*

The LCLUP discusses hydrology and water quality of Half Moon Bay as it relates to the larger watershed areas, surface waters (i.e., watercourses), and groundwater. The LCLUP has mapped the seasonal drainage features along the north and eastern extents of the BSA as "minor" watercourse—features. These drainages generally may not support as diverse resources and uses as the larger drainages, but contribute to flora and fauna habitat, wetlands, groundwater recharge, stormwater conveyance, and local flood management. These features are also subject to potential erosion and flood hazard. Furthermore, single parameter wetlands were identified within the BSA during the November 2022 wetland delineation.

In accordance with Policy 6-46 of the LCLUP, City policies associated with watercourse ESHAs include a definition of riparian corridors as follows:

> Riparian corridors are defined on the ground by an association of native, and in some cases non-native, plant, and animal species within or adjacent to a watercourse that contribute to the function or distinction of the riparian habitat. Boundaries of riparian corridors are determined by the limit of riparian vegetation or top of bank, or other confining topography, whichever is greater. The limit of riparian vegetation is determined by the drip line of riparian canopy trees or the limit of riparian shrubs or herbaceous vegetation.

Policy 6-48 of the LCLUP establishes that work within or adjacent to a watercourse/riparian corridor ESHA must conform to a set of standard practices, which include minimizing removal of native vegetation, land exposure during construction, and erosion, sedimentation and runoff; using only native plant species when replanting; providing sufficient passage upstream and downstream for native and anadromous fish; minimizing the adverse effects of any wastewater discharges; preventing depletion of groundwater supplies and substantial interference with surface and subsurface waters; encouraging wastewater reclamation; maintaining natural vegetation buffer areas; minimizing alternation of natural streams; minimizing risks and avoiding contribution to flood and erosion hazards; maintaining hydrologic function and sediment transport function of drainage; and providing mitigation and long-term monitoring and reporting for any adverse impacts incurred upstream or downstream.

Furthermore, Policy 6-49 of the LCLUP states that intermittent watercourses, shall require that a buffer zone extend a minimum of 35 feet from the outer limit of the riparian vegetation or from the top of bank, whichever is greater.

Additionally, Policy 6-51 of the LCLUP allows for "temporary disruption (e.g., less than six months) for the construction, alteration, repair and maintenance of existing or newly permitted facilities or structures if there are no feasible alternatives and the disruption is repaired and restored to at least an equivalent condition . . . ."

The Project has been designed to avoid impacts to wetlands and drainages within the BSA, and therefore no permanent impacts to watercourses are anticipated. Furthermore, with the implementation of standard LCLUP practices and mitigation for work within watercourse/riparian corridor ESHAs and their associated buffer zones and avoidance and minimization measures in Section 5, *Avoidance and Minimization Measures*, no permanent impacts to the watercourse ESHAs are anticipated.

4.8 Wetlands, Floodplains, and Waters of the United States

One intermittent stormwater drainage channel, the Wavecrest Watercourse, an intermittent watercourse, was observed in the BSA and is discussed in the following sections. Additionally, the BSA contains a mosaic of seasonal wetland features that were identified by the presence of hydrophytic vegetation and some patches of hydric soils, but lacked hydrology indicators and therefore are likely to only be considered jurisdictional by the LCP/CCA (Figure 4).

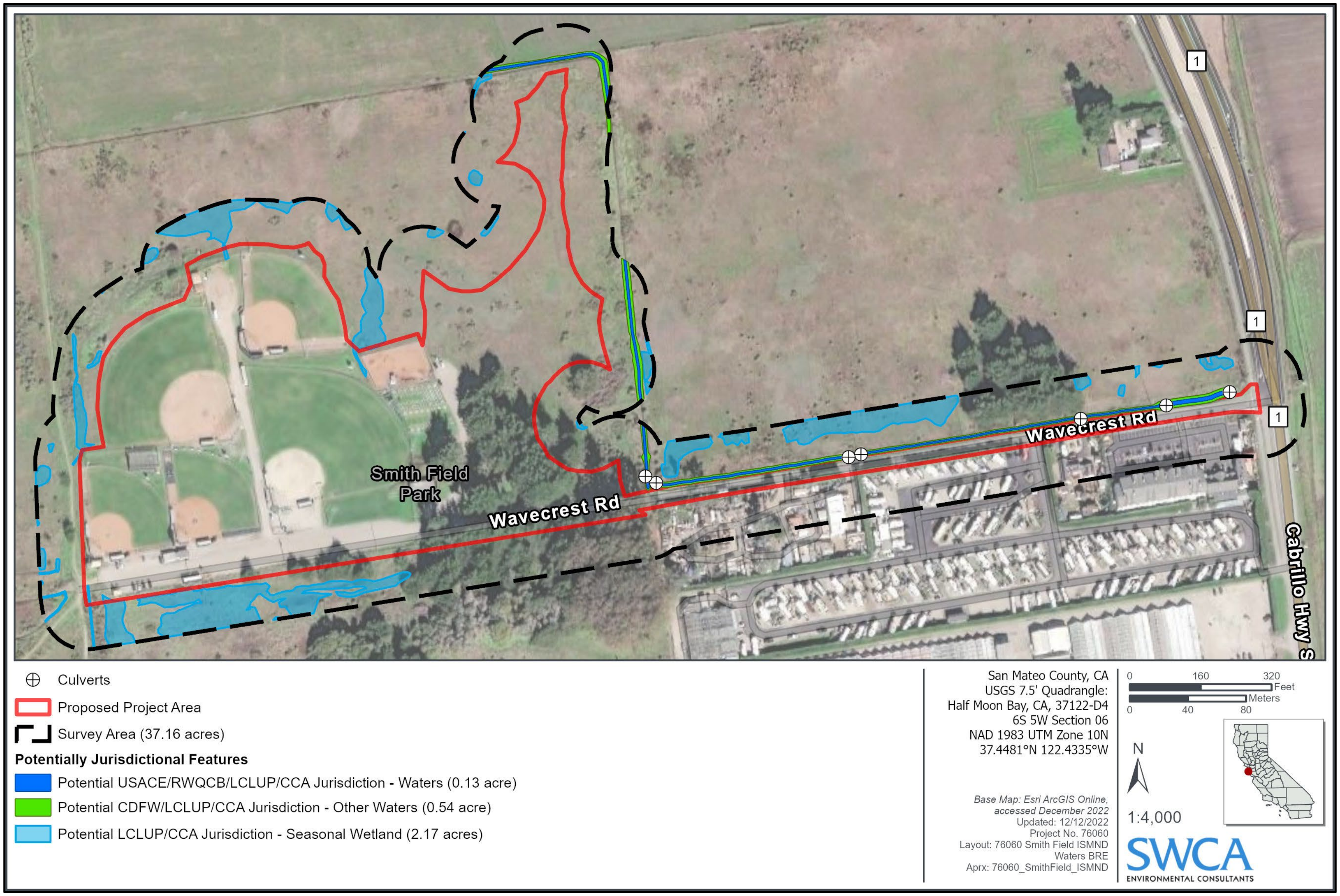


Figure 4. Biological resources map: wetlands and other waters.

4.8.1 *U.S. Army Corps of Engineers*

USACE typically considers any body of water displaying an OHWM for designation as WOTUS, subject to guidance derived from Supreme Court decisions. USACE jurisdiction over non-tidal WOTUS extends laterally to the OHWM or beyond the OHWM to the limit of any adjacent wetlands, if present (33 CFR 328.4).

The NWPR defines four categories of federally regulated waters and wetlands (and 12 categories of exclusions that are not subject to regulation under the CWA). The four categories of WOTUS and wetlands are: (1) the territorial seas and traditional navigable waters; (2) perennial and intermittent tributaries to those waters; (3) certain lakes, ponds, and impoundments; and (4) wetlands adjacent to jurisdictional waters.

Wavecrest Watercourse has clearly definable bed, banks, and an OHWM and appears to have connectivity to the Pacific Ocean via its connectivity to Seymour Ditch located north of the BSA. Therefore this feature is likely be considered a USACE jurisdictional water feature, and work within the watercourse would be regulated under CWA Section 404. However, no impacts to Wavecrest Watercourse are anticipated as the Project has been specifically designed to avoid these features. Implementation of the avoidance and minimization measures in Section 5, *Avoidance and Minimization Measures*, will further minimize any potential impacts to this feature.

4.8.2 *California Department of Fish and Wildlife*

Section 1602 of the CFGC states that it is unlawful for an entity to "substantially divert or obstruct the natural flow of, or substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake" without first notifying the CDFW of that activity. "Stream" is not defined in the CFGC, and CDFW has not endorsed any regulation that defines "stream." However, the CFGC has defined "stream" in 14 CCR 1.72 as follows (CFGC 2021):

> [A] body of water that flows at least periodically or intermittently through a bed or channel having banks and supports fish or other aquatic life. This includes watercourses having a surface or subsurface flow that supports or has supported riparian vegetation.

Wavecrest Watercourse contained clearly definable bed with hydrogeomorphic top-of-bank limits and therefore is likely to be a CDFW jurisdictional water feature that would be regulated by the CDFW under Section 1602 of the CFGC (see Figure 4). Furthermore, Wavecrest watercourse may potentially support unique and/or special-status species, such as California red-legged frog, dependent on aquatic systems. However, no impacts to Wavecrest Watercourse are anticipated as the Project has been specifically designed to avoid these features. Implementation of the avoidance and minimization measures in Section 5, *Avoidance and Minimization Measures*, will further minimize any potential impacts to this feature.

4.8.3 *Regional Water Quality Control Board*

The RWQCB regulates activities pursuant to Section 401(a)(1) of the CWA. Section 401 specifies that certification from the State of California is required for any applicant requesting a federal license or permit to conduct any activity, including the construction or operation of facilities that may result in any discharge into navigable waters. Through the Porter-Cologne Act, the RWQCB asserts jurisdiction over WOTS, which are generally identical in extent to WOTUS, but may also include waterbodies not currently under federal jurisdiction, such as isolated, intrastate waters. The Porter-Cologne Act defines WOTS as "surface water or ground water, including saline waters, within the boundaries of the state."

Wavecrest Watercourse would likely be considered an RWQCB jurisdictional feature that would be regulated under CWA Section 404/401 (State Water Resources Control Board [SWRCB] 2019) (see Figure 4). However, no impacts to Wavecrest Watercourse are anticipated as the Project has been specifically designed to avoid these features. Implementation of the avoidance and minimization measures in Section 5, *Avoidance and Minimization Measures*, will further minimize any potential impacts to this feature.

4.8.4 *California Coastal Commission*

The Project is located within the coastal zone. The LCLUP together with the City Code, Subdivision Ordinance, and zoning map constitute the LCP for the City's coastal zone.

A CDP is required for construction of the Project, and the City would be the designated agency responsible for CDP approval of the Project. However, no impacts to LCP/CCA jurisdictional seasonal wetlands are anticipated as the Project has been specifically designed to avoid these features.

5 AVOIDANCE AND MINIMIZATION MEASURES

The following avoidance and minimization measures are designed to prevent the Project from having a potentially significant biological impact:

1. Prior to the start of the Project, all construction crew members will attend an environmental awareness training presented by a qualified biologist. A training brochure describing special-status species, Project avoidance and minimization measures, key contacts, and potential consequences of impacts to special-status species and potentially jurisdictional features will be distributed to the crew members during the training. Trainees will sign an environmental training attendance sheet.
2. A qualified biological monitor shall be present during all initial ground-disturbing activities, including grubbing and/or vegetation removal and installation of the wildlife exclusion fence.
3. Disturbance to vegetation shall be kept to the minimum necessary to complete the Project activities. To minimize impacts to vegetation, a qualified biologist shall work with the contractor to designate the work area and any staging areas and clearly delineate areas that shall be avoided with exclusion fencing (e.g., high-visibility orange construction fencing, silt fence, ERTEC fencing, or other similar material).
4. Construction activities (e.g., grubbing, grading) shall occur during the dry season (June 1–October 15) to facilitate avoidance of California red-legged frog.
5. To avoid impacts to California red-legged frog and other sensitive wildlife species, a wildlife exclusion fence (silt fence, ERTEC fencing, or other similar material) shall be installed around the perimeter of the project, at the discretion of the qualified biological monitor.
6. During the dry season (June 1–October 15), the wildlife exclusion fence shall be inspected by a qualified biological monitor on a weekly basis to ensure that the fence is functioning as intended throughout the duration of construction activities. If work must occur during the wet season (October 15–May 31), a qualified biologist shall perform a preconstruction survey of all Project areas (including staging areas) prior to construction activities on a daily basis to ensure that no California red-legged frog or other sensitive species are present and that no wildlife are stranded along the wildlife exclusion fencing.
7. Before completion of the Project, all exposed or disturbed surfaces shall be permanently protected from erosion with reseeding and landscaping.

8. If any animals are encountered during Project activities, said animals shall be allowed to leave the work area unharmed. Animals shall not be picked up or moved in any way.
9. All spoils, such as dirt, excavated material, debris, and construction-related materials, generated during Project activities shall be placed where they cannot enter the drainage ditch, culvert inlet, or nearby vernal marshes. Spoils shall be covered or secured to prevent sediment from escaping. Once the spoil pile is no longer active, it shall be removed from the work area and disposed of lawfully at an appropriate facility.
10. All exposed soils in the work area resulting from Project activities shall be stabilized immediately following the completion of work to prevent erosion. Erosion and sediment control BMPs, such as silt fences, straw hay bales, gravel or rock-lined drainages, water check bars, and broadcast straw, can be used. BMPs shall be made of certified weed-free materials. Straw wattles, if used, shall be made of biodegradable fabric (e.g., burlap) and free of monofilament netting. At no time shall silt-laden runoff be allowed to enter any drainages or other sensitive areas.
11. Regardless of the season, construction shall adhere to SWRCB BMPs, and no construction shall occur within 24 hours following a significant rain event (defined as greater than ¼ inch in a 24-hour period). Following a significant rain event and the 24-hour drying-out period, a qualified biologist shall conduct a preconstruction survey for California red-legged frog and other sensitive species prior to the restart of any Project activities.
12. Prior to the start of construction, a plant survey for perennial goldfields and Choris' popcorn flower shall be conducted during the appropriate blooming period. Perennial goldfields or Choris' popcorn flower occurrences within 50 feet of the Project work areas shall be flagged for avoidance by the Project. If the Project cannot avoid impacts to this species, the City shall consult with the CDFW on appropriate measures and/or actions to protect or salvage the plant(s) prior to beginning construction.
13. To protect burrows that may provide refuge for protected animals such as the California red-legged frog, no soil or materials shall be stockpiled on the ground where burrows are present.
14. During Project activities, all trash that may attract predators shall be properly contained, removed, and disposed of regularly. Following construction, trash/construction debris shall be removed from work areas.
15. Construction materials, including but not limited to wooden pallets, BMPs, equipment, or other materials, that are left on the ground for more than 24 hours shall be inspected before and during moving of the materials to prevent potential impacts to animals that may have used the materials as a temporary refuge. Plastic pipes, if used, shall be covered with material to prevent animals from entering the pipes.
16. The number of access routes, number and size of staging areas, and total area of the activity shall be limited to the minimum necessary to complete the Project, and their boundaries shall be clearly demarcated.
17. All fueling and maintenance of vehicles and other equipment and staging areas shall occur at least 100 feet from any drainages and other water features. Crew members shall ensure that contamination of habitat does not occur during such operations. Prior to the onset of work, the construction contractor shall prepare a plan to be approved by the City before construction begins to allow a prompt and effective response to any accidental spills. All workers shall be informed of the importance of preventing spills and the appropriate measures to take should a spill occur.
18. If Project activities, including grass mowing and tree trimming/removal, are conducted during nesting bird season (February 15–September 15), preconstruction nest surveys shall be conducted in and near the Project area (within 250 feet for large raptors and 100 feet for all other birds) by a

qualified biologist within 7 days of the start of construction. If nesting birds are identified during the preconstruction survey, then the Project shall be modified (i.e., a no-work exclusion buffer of appropriate size [to be determined by the qualified Project biologist] shall be erected around active nests) and/or delayed as necessary to avoid impacts to the identified nests, eggs, and/or young.

6 LITERATURE CITED

Baldwin, B., D. Goldman, D. Keil, R. Patterson, and T. Rosatti (editors). 2012. *The Jepson Manual: Vascular Plants of California*. 2nd ed. Berkeley, California: University of California Press.

Calflora. 2021. Information on California plants for education, research and conservation (Calflora). Berkeley, California. Available at: https://www.calflora.org/. Accessed October 18, 2022.

California Coastal Commission (CCC). 2011. *Definition and Delineation of Wetlands in the Coastal Zone*. San Francisco, California: State of California Resources Agency, California Coastal Commission.

California Department of Fish and Wildlife (CDFW). 2010. *A Review of Stream Processes and Forms in Dryland Watersheds*.

California Fish and Game Commission (CFGC). 2021. California Code of Regulations (Including Title 14) Available at: https://govt.westlaw.com/calregs/index?__lrTS=20210217052444549&transitionType=Default&contextData=%28sc.Default%29. Accessed November 20, 2022.

California Native Plant Society (CNPS). 2022a. Rare Plant Inventory (online edition, v9-01 1.5). California Native Plant Society Rare Plant Program. Available at: https://www.rareplants.cnps.org. Accessed November 20, 2022.

———. 2022b. Manual of California Vegetation Online. California Native Plant Society. Available at: http://cnps.org/. Accessed November 20, 2022.

California Natural Diversity Data Base (CNDDB). 2022. Rarefind data for the Half Moon Bay 7.5-minute U.S. Geological Survey topographic quadrangle.

City of Half Moon Bay. 2020a. *Half Moon Bay Municipal Code, Title 18: Zoning*. Available at: https://www.codepublishing.com/CA/HalfMoonBay/#!/HalfMoonBay18/HalfMoonBay1838.html#18.38.020. Accessed November 20, 2022.

———. 2020b. *City of Half Moon Bay Local Coastal Land Use Plan, Chapter 6: Natural Resources*. Available at: https://www.half-moon-bay.ca.us/DocumentCenter/View/3784/Full-Combined-2020-HMB-LCLUP. Accessed November 20, 2022.

Cowardin, L. M., V. Carter, F. C. Golet, E. T. LaRoe. 1979. *Classification of Wetlands and Deepwater Habitats of the United States*. U.S. Department of the Interior, Fish and Wildlife Service, Washington, D.C. 131 pp.

Environmental Laboratory. 1987. *Corps of Engineers Wetland Delineation Manual*. Technical Report Y-87-1. Vicksburg, MS: U.S. Army Corps of Engineers Waterways Experiment Station. Available at: https://www.lrh.usace.army.mil/Portals/38/docs/USACE%2087%20Wetland%20Delineation%20Manual.pdf. Accessed November 20, 2022.

Jennings, M.R., and M.P. Hayes. 1994. *Amphibian and Reptile Species of Concern in California*. Sacramento, California: California Department of Fish and Game.

Sawyer, J.O., T. Keeler-Wolf, and J.M. Evens. 2009. *A Manual of California Vegetation, Second Edition*. Sacramento, California: California Native Plant Society. 1,300 pp.

State Water Resources Control Board (SWRCB). 2019. *State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State*. Adopted April 2. Available at: https://www.waterboards.ca.gov/water_issues/programs/cwa401/wrapp.html. Accessed October 18, 2022.

U.S. Army Corps of Engineers (USACE). 2008a. *A Field Guide to the Identification of Ordinary High Water Mark (OHWM) in the Arid West Region of the United States*. Robert W. Lichvar and Shawn M. McColley (editors). ERDC/CRREL TR-08-12. Hanover, NH: U.S. Army Engineer Research and Development Center. Available at: https://www.spk.usace.army.mil/Portals/12/documents/regulatory/pdf/Ordinary_High_Watermark_Manual_Aug_2008.pdf. Accessed November 20, 2022.

———. 2008b. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)*. J. S. Wakeley, R. W. Lichvar, and C. V. Noble (editors). ERDC/EL TR-06-16. Vicksburg, MS: U.S. Army Engineer Research and Development Center. Available at: https://usace.contentdm.oclc.org/utils/getfile/collection/p266001coll1/id/7627. Accessed October 18, 2022.

U.S. Army Corps of Engineers (USACE) and U.S. Environmental Protection Agency (USEPA). 2020. *The Navigable Waters Protection Rule: Definition of "Waters of the United States;" Final Rule*. *Federal Register* 85(77):22250–22342. April 21. Available at: https://www.govinfo.gov/content/pkg/FR-2020-04-21/pdf/2020-02500.pdf. Accessed November 20, 2022.

U.S. Department of Agriculture Natural Resources Conservation Service (NRCS). 2022. Web Soil Survey. Available at: https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm. Accessed November 20, 2022.

U.S. Fish and Wildlife Service (USFWS). 2002. *Recovery Plan for the California Red-legged Frog (*Rana aurora draytonii*)*. Portland, Oregon: U.S. Fish and Wildlife Service.

———. 2018. Guidance on The Recent M-Opinion Affecting The Migratory Bird Treaty Act. Available at: *guidance memorandum (bna.com)*. Accessed November 20, 2022.

———. 2021. *Regulations Governing Take of Migratory Birds; Final Rule*. *Federal Register* 86(4):1134–1165. January 7. Available at: https://www.huntonnickelreportblog.com/wp-content/uploads/sites/30/2021/01/Final-MBTA-Rule-Jan-7-2021.pdf. Accessed November 20, 2022.

———. 2022a. Information for Planning and Consultation (IPaC). Available at: http://ecos.fws.gov/ipac/. Accessed November 20, 2022.

———. 2022b. Critical Habitat Portal. Available at: http://criticalhabitat.fws.gov/. Accessed November 20, 2022.

———. 2022c. National Wetlands Inventory. Available at: http://www.fws.gov/wetlands/. Accessed November 20, 2022.

U.S. Forest Service (USFS). 2021. Western Bumble Bee (*Bombus occidentalis*) species profile. Available at: https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprd534364.pdf. Accessed November 20, 2021.

U.S. Geological Survey (USGS). 2022a. USGS Topographic Maps of California. Available at: https://www.library.ucsb.edu/src/maps/usgs-topo-maps-california. Accessed November 20, 2022.

———. 2022b. National Hydrography Dataset GIS Data. Available at: http://nhd.usgs.gov/. Accessed October 18, 2022.

Xerces Society. 2021. Western Bumble Bee (*Bombus occidentalis*) species profile. Available at: https://xerces.org/endangered-species/species-profiles/at-risk-bumble-bees/western-bumble-bee. Accessed November 20, 2022.

APPENDIX A

USFWS Records Search Results

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

San Mateo County, California

Local office

Sacramento Fish And Wildlife Office

(916) 414-6600
(916) 414-6713

Federal Building

Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846

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. IPaC only shows species that are regulated by USFWS (see FAQ).

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 Least Tern Sterna antillarum browni Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/8104	Endangered
Marbled Murrelet Brachyramphus marmoratus There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/4467	Threatened
Western Snowy Plover Charadrius nivosus nivosus There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/8035	Threatened

Reptiles

NAME	STATUS
Green Sea Turtle Chelonia mydas No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/6199	Threatened
San Francisco Garter Snake Thamnophis sirtalis tetrataenia Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/5956	Endangered

Amphibians

NAME	STATUS

California Red-legged Frog Rana draytonii Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/2891	Threatened

Fishes

NAME	STATUS
Delta Smelt Hypomesus transpacificus Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/321	Threatened
Tidewater Goby Eucyclogobius newberryi Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/57	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 https://www.fws.gov/program/migratory-birds/species
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf

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
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.	Breeds Jan 1 to Aug 31
Belding's Savannah Sparrow Passerculus sandwichensis beldingi 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/8	Breeds Apr 1 to Aug 15

Black Oystercatcher Haematopus bachmani — Breeds Apr 15 to Oct 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9591

Black Scoter Melanitta nigra — Breeds elsewhere

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 Skimmer Rynchops niger — Breeds May 20 to Sep 15

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/5234

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 Turnstone Arenaria melanocephala — Breeds elsewhere

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

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

Black-legged Kittiwake Rissa tridactyla — Breeds elsewhere

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.

Brown Pelican Pelecanus occidentalis — Breeds Jan 15 to Sep 30

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.

Bullock's Oriole Icterus bullockii — Breeds Mar 21 to Jul 25

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

California Gull Larus californicus — Breeds Mar 1 to Jul 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

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.

Clark's Grebe Aechmophorus clarkii — Breeds Jun 1 to Aug 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Common Loon gavia immer — Breeds Apr 15 to Oct 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/4464

Common Murre Uria aalge — Breeds Apr 15 to Aug 15

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.

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

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

Long-tailed Duck Clangula hyemalis — Breeds elsewhere

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/7238

Manx Shearwater Puffinus puffinus — Breeds Apr 15 to Oct 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.

Marbled Godwit Limosa fedoa — 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/9481

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

Olive-sided Flycatcher Contopus cooperi — Breeds May 20 to Aug 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/3914

Pomarine Jaeger Stercorarius pomarinus — Breeds elsewhere

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.

Red Phalarope Phalaropus fulicarius — Breeds elsewhere

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.

Red-breasted Merganser Mergus serrator — Breeds elsewhere

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.

Red-necked Phalarope Phalaropus lobatus — Breeds elsewhere

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.

Red-throated Loon Gavia stellata — Breeds elsewhere

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.

Ring-billed Gull Larus delawarensis — Breeds elsewhere

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.

Royal Tern Thalasseus maximus — Breeds Apr 15 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.

Scripps's Murrelet Synthliboramphus scrippsi — Breeds Feb 20 to Jul 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Short-billed Dowitcher Limnodromus griseus — 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/9480

South Polar Skua Stercorarius maccormicki — Breeds elsewhere

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.

Surf Scoter Melanitta perspicillata — Breeds elsewhere

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.

Tricolored Blackbird Agelaius tricolor — Breeds Mar 15 to Aug 10

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/3910

Western Grebe aechmophorus occidentalis — Breeds Jun 1 to Aug 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/6743

White-winged Scoter Melanitta fusca — Breeds elsewhere

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.

Willet Tringa semipalmata — Breeds elsewhere

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Wilson's Storm-petrel Oceanites oceanicus — Breeds elsewhere

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.

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.

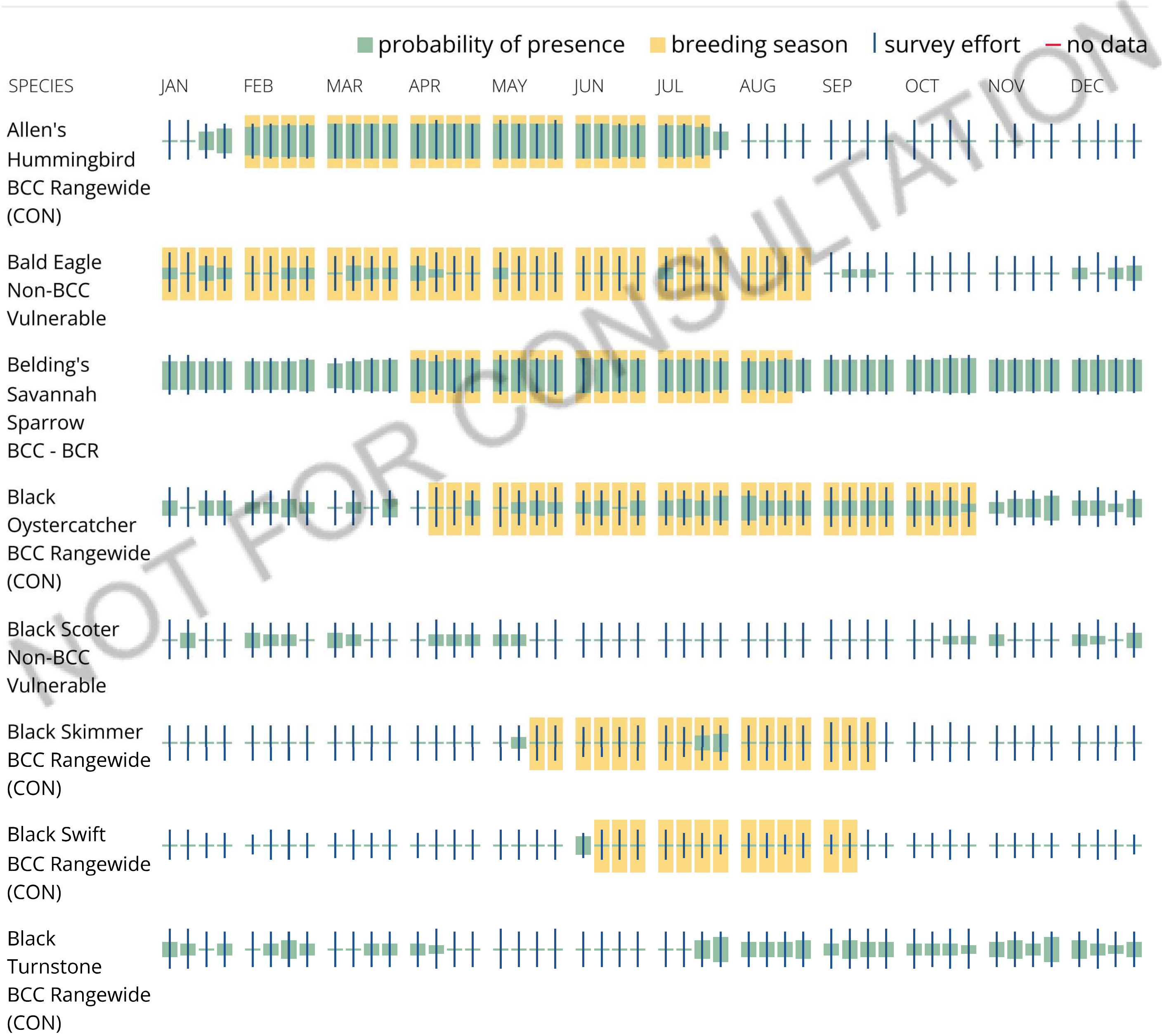
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

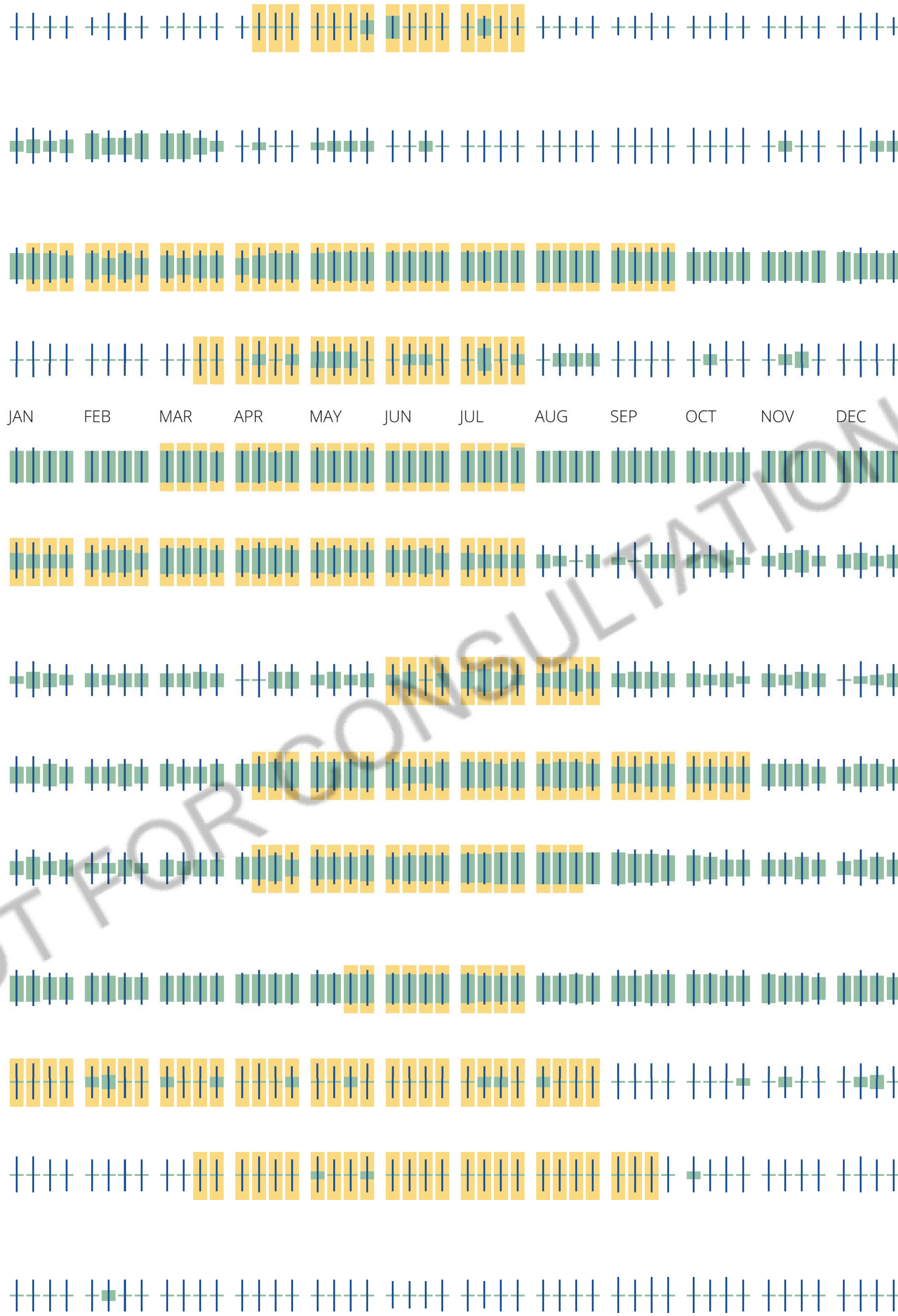
No Data (–)

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.





Black-chinned Sparrow
BCC Rangewide (CON)

Black-legged Kittiwake
Non-BCC Vulnerable

Brown Pelican
Non-BCC Vulnerable

Bullock's Oriole
BCC - BCR

SPECIES

California Gull
BCC Rangewide (CON)

California Thrasher
BCC Rangewide (CON)

Clark's Grebe
BCC Rangewide (CON)

Common Loon
Non-BCC Vulnerable

Common Murre
Non-BCC Vulnerable

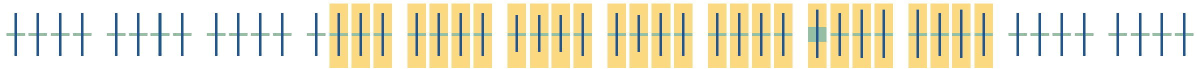
Common Yellowthroat
BCC - BCR

Golden Eagle
Non-BCC Vulnerable

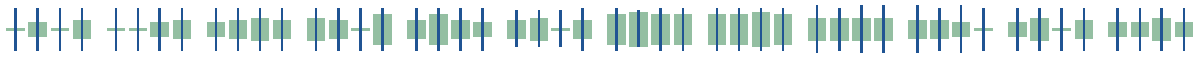
Lawrence's Goldfinch
BCC Rangewide (CON)

Long-tailed Duck
Non-BCC Vulnerable

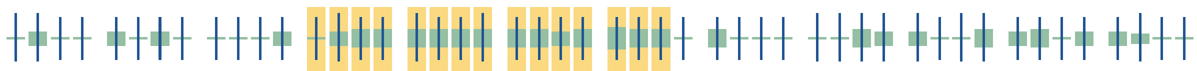
Manx Shearwater
Non-BCC Vulnerable



Marbled Godwit
BCC Rangewide (CON)

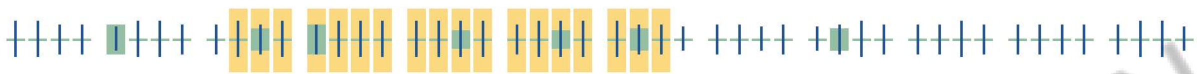


Nuttall's Woodpecker
BCC - BCR

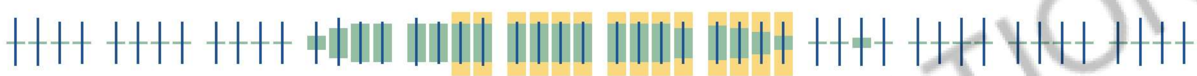


SPECIES	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC

Oak Titmouse
BCC Rangewide (CON)



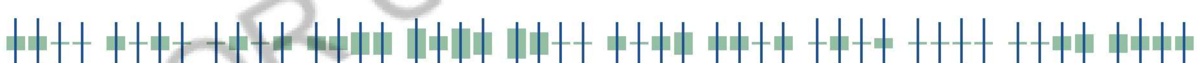
Olive-sided Flycatcher
BCC Rangewide (CON)



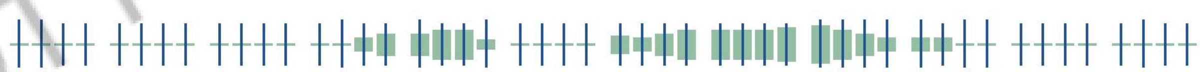
Pomarine Jaeger
Non-BCC Vulnerable

Red Phalarope
Non-BCC Vulnerable

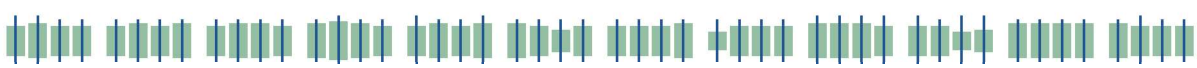
Red-breasted Merganser
Non-BCC Vulnerable



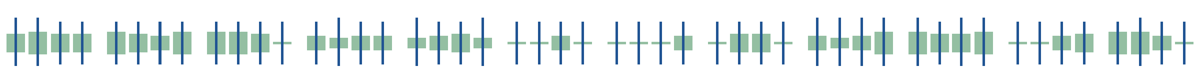
Red-necked Phalarope
Non-BCC Vulnerable



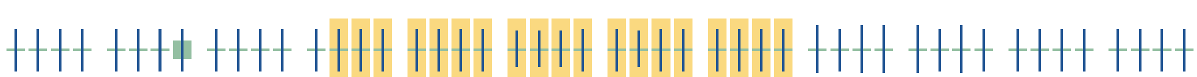
Red-throated Loon
Non-BCC Vulnerable



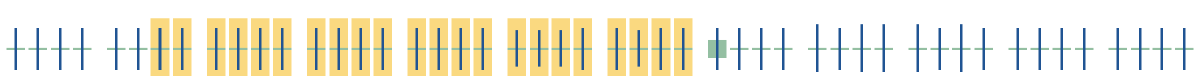
Ring-billed Gull
Non-BCC Vulnerable

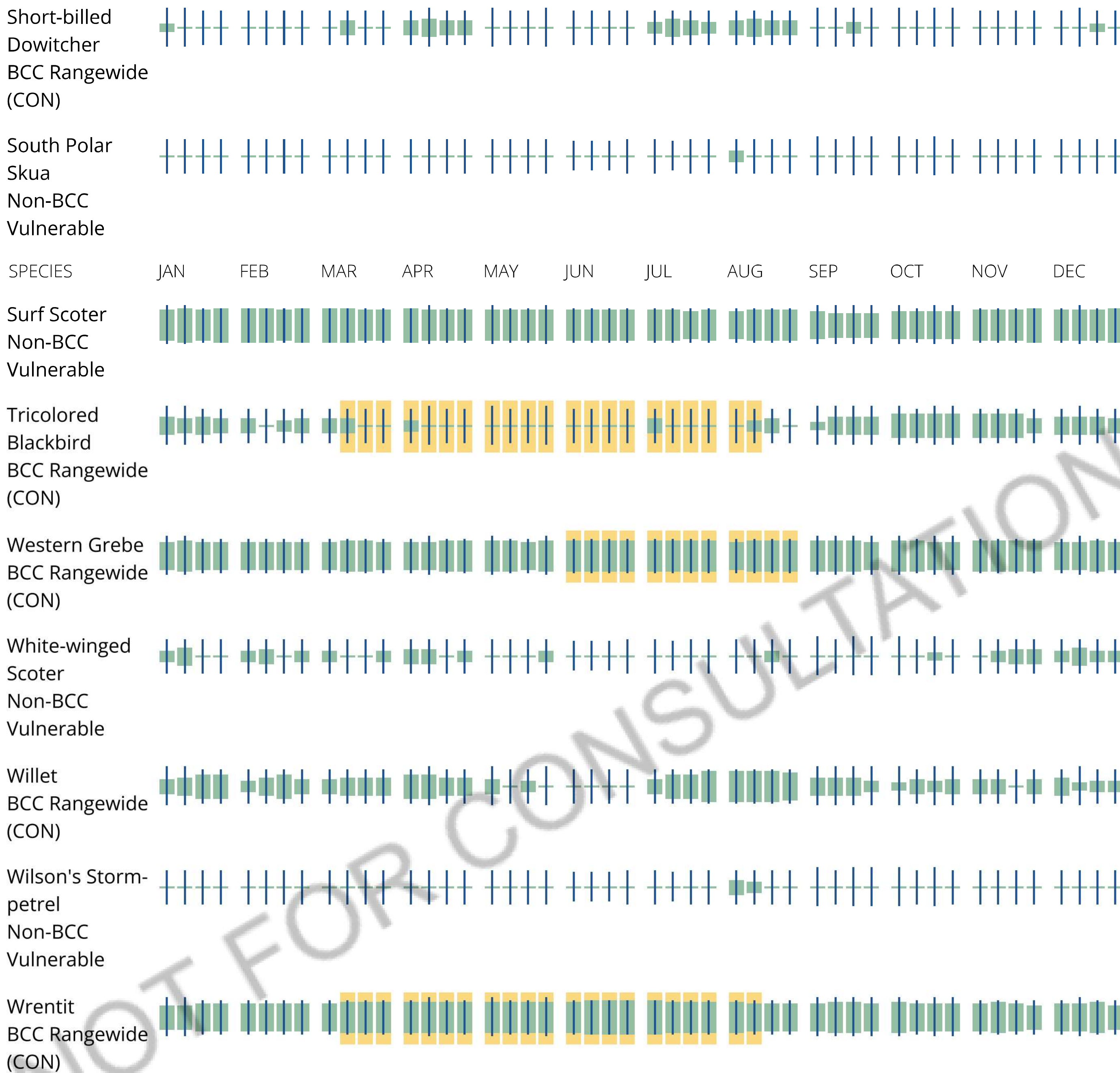


Royal Tern
Non-BCC Vulnerable



Scripps's Murrelet
BCC Rangewide (CON)





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 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 list of migratory birds that potentially occur 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 Rapid Avian Information Locator (RAIL) 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 or migrating in my 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 query your location using the RAIL Tool and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. 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.

Coastal Barrier Resources System

Projects within the John H. Chafee Coastal Barrier Resources System (CBRS) may be subject to the restrictions on Federal expenditures and financial assistance and the consultation requirements of the Coastal Barrier Resources Act (CBRA) (16 U.S.C. 3501 et seq.). For more information, please contact the local Ecological Services Field Office or visit the CBRA

Consultations website. The CBRA website provides tools such as a flow chart to help determine whether consultation is required and a template to facilitate the consultation process.

There are no known coastal barriers at this location.

Data limitations

The CBRS boundaries used in IPaC are representations of the controlling boundaries, which are depicted on the official CBRS maps. The boundaries depicted in this layer are not to be considered authoritative for in/out determinations close to a CBRS boundary (i.e., within the "CBRS Buffer Zone" that appears as a hatched area on either side of the boundary). For projects that are very close to a CBRS boundary but do not clearly intersect a unit, you may contact the Service for an official determination by following the instructions here: https://www.fws.gov/service/coastal-barrier-resources-system-property-documentation

Data exclusions

CBRS units extend seaward out to either the 20- or 30-foot bathymetric contour (depending on the location of the unit). The true seaward extent of the units is not shown in the CBRS data, therefore projects in the offshore areas of units (e.g., dredging, breakwaters, offshore wind energy or oil and gas projects) may be subject to CBRA even if they do not intersect the CBRS data. For additional information, please contact CBRA@fws.gov.

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 (NWI)

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.

This location did not intersect any wetlands mapped by NWI.

NOTE: This initial screening does **not** replace an on-site delineation to determine whether wetlands occur. Additional information on the NWI data is provided below.

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 B

CNDDB Occurrence Maps and Special-Status Species List

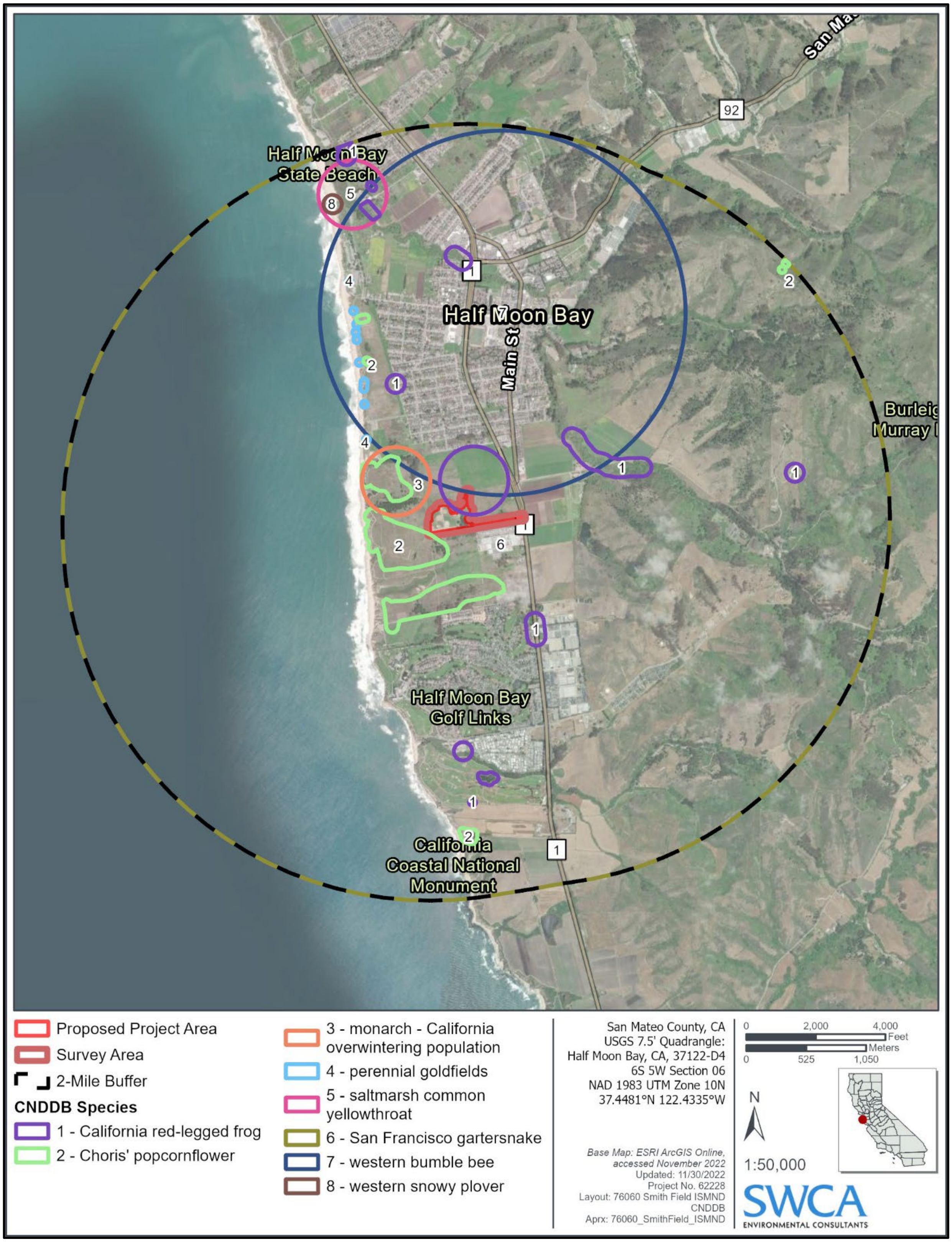


Figure B-1. Two-mile CNDDB sensitive species map.*

* Note that in order to keep locality data confidential for some species, CDFW suppresses coordinate data for San Francisco garter snake. As such, although this species' location data is not shown in the above 2-mile radius map, it is understood that this species does occur within 2 miles of the Project area as listed below in Table B-1.

Table B-1. Special-Status Species List

Scientific Name	Common Name	EONDX	ACCURACY	SITEDATE	FEDLIST	CALLIST	CRPR	CDFW STATUS
Bombus occidentalis	western bumble bee	100351	1 mile	19530328	None	None		
Charadrius nivosus nivosus	western snowy plover	104890	80 meters	20160503	Threatened	None		SSC
Danaus plexippus plexippus pop. 1	monarch - California overwintering population	99755	1/5 mile	19980105	Candidate	None		
Geothlypis trichas sinuosa	saltmarsh common yellowthroat	13461	1/5 mile	19900602	None	None		SSC
Lasthenia californica ssp. *macrantha*	perennial goldfields	103072	specific area	20150409	None	None	1B.2	
Plagiobothrys chorisianus var. *chorisianus*	Choris' popcornflower	57049	specific area	20150328	None	None	1B.2	
Plagiobothrys chorisianus var. *chorisianus*	Choris' popcornflower	94290	specific area	20070424	None	None	1B.2	
Plagiobothrys chorisianus var. *chorisianus*	Choris' popcornflower	94292	specific area	20150409	None	None	1B.2	
Plagiobothrys chorisianus var. *chorisianus*	Choris' popcornflower	94297	specific area	20150417	None	None	1B.2	
Rana draytonii	California red-legged frog	56076	1/5 mile	20040607	Threatened	None		SSC
Rana draytonii	California red-legged frog	119807	specific area	200111XX	Threatened	None		SSC
Rana draytonii	California red-legged frog	42675	non-specific area	20170109	Threatened	None		SSC
Rana draytonii	California red-legged frog	119810	specific area	201901XX	Threatened	None		SSC
Rana draytonii	California red-legged frog	78886	specific area	20100305	Threatened	None		SSC
Rana draytonii	California red-legged frog	70285	specific area	20061011	Threatened	None		SSC
Rana draytonii	California red-legged frog	119809	80 meters	20190504	Threatened	None		SSC
Rana draytonii	California red-legged frog	119794	80 meters	20201009	Threatened	None		SSC
Thamnophis sirtalis tetrataenia	San Francisco gartersnake	27485	1/5 mile	198XXXXX	Endangered	Endangered		FP

APPENDIX C

Critical Habitat Map

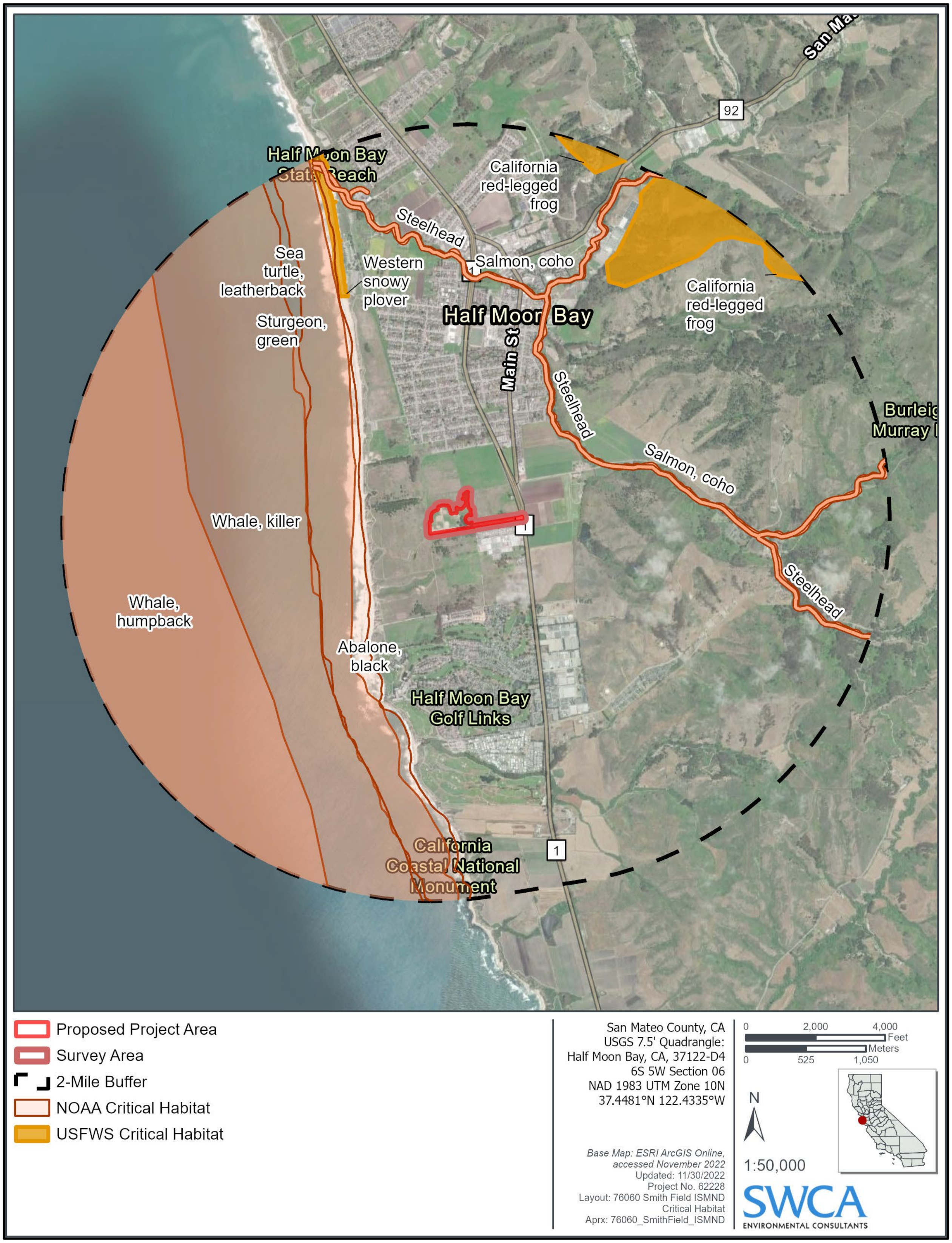


Figure C-1. Critical habitat map.

APPENDIX D

Special-Status Species Considered for Potential Occurrence in the Biological Study Area

Table D-1. Special-Status Species Considered for Potential Occurrence in the Biological Study Area

Species Name	General Habitat Description	Legal Status Federal/State/ CNPS Status	Potential for Occurrence and Rationale
Plants			
Choris' popcorn-flower (*Plagiobothrys chorisianus* var. *chorisianus*)	Annual herb that occurs in wetland and riparian areas in chaparral, coastal prairie, and coastal scrub. Elevation: 15–160 meters. Flower Season: March–June.	--/--/1B.2	**High:** Potentially suitable coastal scrub habitat exists on the western and northeastern portions of the BSA. This species was not observed during the field survey; however, the field survey was not conducted during the appropriate blooming period. Three CNDDB occurrences have been recorded within 0.1 mile of the BSA, one of which overlaps the southwest corner of the BSA and is from 2015.
coastal marsh milkvetch (*Astragalus pycnostachyus* var. *pycnostachyus*)	Perennial herb that occurs in coastal marshes, seeps, and adjacent sand along the northern and central California coast. Elevation: 0–150 meters. Flower season: April–October.	--/--/1B.2	**None:** Suitable habitat is absent in the BSA. No CNDDB occurrences have been recorded within 2 miles of the BSA, but the CNPS database recorded this species within the Half Moon Bay, California, USGS quadrangle.
Kellogg's horkelia (*Horkelia cuneata* var. *sericea*)	Perennial herb that occurs in closed-cone coniferous forest, chaparral, coastal dunes, and coastal scrub. Elevation: 10–200 meters. Flower season: April–September.	--/--/1B.1	**Low:** Although potentially suitable coastal scrub habitat is present on the western and northeastern extent of the BSA, no CNDDB occurrences have been recorded within 2 miles of the BSA. The CNPS database recorded this species within the Half Moon Bay, California, USGS quadrangle. This species was not observed during the field survey, which was not conducted during the appropriate blooming period.
perennial goldfields (*Lasthenia californica* ssp. *macrantha*)	Perennial herb that occurs in coastal bluff scrub, coastal dunes, and coastal scrub. Elevation: 6–750 meters. Flower season: January–November.	--/--/1B.2	**Moderate:** Potentially suitable coastal scrub habitat exists on the western and northeastern portions of the BSA. This species was not observed during the field survey, which was conducted at the very end of the appropriate blooming period. One CNDDB occurrence was recorded (2015) along the coastal trail and near the the Seymour Bridge, approximately 1 mile northwest of the BSA.
rose leptosiphon (*Leptosiphon rosaceus*)	Annual herb that occurs in coastal bluff scrub. Elevation: 0–100 meters. Flower season: April–July.	--/--/1B.1	**Low:** Suitable habitat exists on the western and northeastern extent of the BSA within coyote brush scrub habitat. This species was not observed during the field survey, which was not conducted during the appropriate blooming period. No CNDDB occurrences have been recorded within 2 miles of the BSA, but the CNPS database recorded this species within the Half Moon Bay, California, USGS quadrangle.

Species Name	General Habitat Description	Legal Status Federal/State/ CNPS Status	Potential for Occurrence and Rationale
Animals			
Invertebrates			
western bumble bee (*Bombus occidentalis*)	In California, populations are currently restricted to high elevation sites in Sierra Nevada, though there have been few observations on northern California coast (Xerces Society 2021). Basic habitat requirements include suitable nesting sites for colonies, nectar and pollen from floral resources available throughout duration of colony period (spring, summer and fall), and suitable overwintering sites for queens (U.S. Forest Service 2021).	--/SC	**Low:** The BSA contains marginally suitable foraging habitat and impacts to this species are not expected. One historic CNDDB occurrence has been recorded (1953) in Half Moon Bay, but the exact location is unknown.
monarch butterfly (*Danaus plexippus*)	Occurs along coast from northern Mendocino to Baja California, Mexico. Winter roosts in wind-protected tree groves (eucalyptus, Monterey pine, and cypress), with nectar and water sources nearby.	FC/--	**Low:** The BSA contains marginally suitable overwintering habitat within Monterey Cypress – Monterey pine woodland habitat, and Eucalyptus groves; however, the trees on-site are planted as windbreaks and do not provide dense canopy cover preferred by this species. Although one CNDDB occurrence has been recorded, approximately 0.1 mile northwest of the Project area, the record is from 1998 and therefore potential for overwintering monarchs is low.
Amphibians			
California red-legged frog *(Rana draytonii)*	Inhabits permanent and temporary pools, streams, freshwater seeps, and marshes in lowlands and foothills occurring from sea level to 6,500 feet. Uses adjacent upland habitat for foraging and refuge. Breeds during wet season from December–March. Lays between 300 and 4,000 eggs in large cluster attached to plants near water surface. Eggs hatch after about 4 weeks and undergo metamorphosis in 4–7 months.	FT/SSC	**High:** No suitable aquatic habitat was observed on-site; however, Wavecrest Watercourse may provide suitable dispersal and foraging habitat for this species if the area is inundated for a sufficiently long period of time during the wet season. Suitable upland dispersal habitat is present within coastal scrub habitat along the western and northeastern portions of the BSA. The species was not observed in the BSA during the field survey. Eight CNDDB occurrences have been recorded between 2006 and 2020, with the closest recorded (2004) overlapping the northern extent of the BSA.
Reptiles			
green sea turtle (*Chelonia mydas*)	Occurs in marine environments and often found in shallow waters with marine grass flats, coral reefs, and algae. Typically found in tropical waters.	FT/--/--	**None:** The BSA does not provide suitable habitat for the species. No CNDDB occurrences have been recorded within the BSA.

Species Name	General Habitat Description	Legal Status Federal/State/ CNPS Status	Potential for Occurrence and Rationale
San Francisco garter snake *(Thamnophis sirtalis tetrataenia)*	Uses wide range of habitats; prefers grassland or wetland near ponds, marshes, and sloughs; and may overwinter in upland areas away from water.	FE/SE, FP	**Low:** Potentially suitable upland dispersal habitat is present within the BSA within coastal scrub and perennial rye grass fields along the western and northeastern portions of the BSA. One CNDDB occurrence has been recorded within 2 miles of the BSA from the 1980s, suitable high-quality foraging and aquatic habitat for this species is absent within the BSA. Species was not observed in the BSA during the field survey.
Fish			
delta smelt (*Hypomesus transpacificus*)	Euryhaline species (tolerant of wide salinity range) occurring in estuarine waters up to 14 ppt salinity. Found only from Suisun Bay upstream through delta in Contra Costa, Sacramento, San Joaquin, Solano, and Yolo Counties.	FT/SE/--	**None**: The BSA does not provide suitable habitat for the species. No CNDDB occurrence recorded within BSA.
tidewater goby (*Eucyclogobius newberryi*)	Occurs in brackish shallow lagoons and lower stream reaches where water is fairly still, but not stagnant.	FE/CSC	**None**: The BSA does not provide suitable habitat for the species. No CNDDB occurrence recorded within BSA.
Birds			
California least tern (*Sternula antillarum browni*)	Largely coastal species that feeds on fish and nests on sandy dunes or beaches. Once common in California; currently nesting colonies are isolated to southern California and scattered Bay Area beaches.	FE/SE/--	**None:** The BSA does not provide suitable habitat for the species. No CNDDB occurrence recorded within BSA.
marbled murrelet (*Brachyramphus marmoratus marmoratus*)	Spends most of non-breeding season in offshore or nearshore environments near coniferous forests. Only California alcid species to nest inland. Typically nests in upper branches of redwoods or Douglas fir forests. Builds nests with lichens and mosses.	FT/SE/--	**None:** The BSA does not provide suitable habitat for the species. No CNDDB occurrence recorded within BSA.
saltmarsh common yellowthroat (*Geothlypis trichas sinuosa*)	Frequent low, dense vegetation near water, especially marshes and wetlands. Nest usually placed on or within 8 centimeters (3 inches) of ground. May be over water, in emergent aquatic vegetation, dense shrubs, or other dense growth.	--/SSC	**Low:** The BSA does not contain suitable marsh habitat; or dense vegetation near water to support nesting and foraging behavior. Coastal scrub habitat located at western and northeastern extent of Project site may provide marginal habitat for this species. One CNDDB occurrence has been recorded (1990), approximately 1.7 miles north of the BSA near Frenchmans Creek.

Species Name	General Habitat Description	Legal Status Federal/State/ CNPS Status	Potential for Occurrence and Rationale
western snowy plover (*Charadrius alexandrinus nivosus*)	Found in shores, peninsulas, offshore islands, bays, estuaries, and rivers along Pacific Coast. Breeding sites entail coastal beaches above high-tide line, sand spits, dune-backed beaches, and river bars.	FT, MBTA/SSC	**None:** The BSA does not contain suitable nesting or foraging habitat. One CNDDB occurrence has been recorded (2016) approximately 1.7 miles north of the Project near the mouth of Pilarcitos Creek at Half Moon Bay State Beach.

Sources: Baldwin et al. (2012); CNDDB (2022); USFWS (2022a)

Status Codes:
-- = No status
Federal: FE = Federal Endangered; FT = Federal Threatened; FC = Federal Candidate; MBTA = Protected by Migratory Bird Treaty Act
State: SE = State Endangered; ST = State Threatened; SC = State Candidate; SR = State Rare; SSC = California Species of Special Concern; FP = Fully Protected

California Native Plant Society:
List 1B = Rare, threatened, or endangered in California and elsewhere
List 2 = Rare, threatened, or endangered in California, but more common elsewhere

CNPS Threat Code:
_.1 = Seriously endangered in California (more than 80% of occurrences threatened / high degree and immediacy of threat)
_.2 = Fairly endangered in California (20–80% occurrences threatened)
_.3 = Not very endangered I California (<20% of occurrences threatened or no current threats known)

Potential for Occurrence Ratings:

Present = The species has been observed during Project surveys.
High = The Project area is located within the geographic and elevation ranges of the species; suitable habitat that meets the life history requirements of the species is present in or near the Project area; and observations have been documented recently (i.e., within the past 20 years) within 0.25 mile of the Project.
Moderate = The Project area is located within the geographic and elevation ranges of the species; suitable habitat for the species is present in or near the Project area, but may be of low quality; and observations may have been documented within 1 mile of the Project.
Low = The Project area is not located within the geographic and/or elevation ranges for the species; suitable habitat for the species is present, but may be of marginal quality; barriers to migration/dispersal may be present; the species was not documented within 1 mile of the Project; and/or all observation records within 1 mile are more than 20 years old.
None = Suitable habitat does not exist in the Project area, or the species is restricted to or known to be present only within a specific area outside of the Project area. Nearby occurrence records, if present, are extirpated or are more than 20 years old.
Absent = Surveys for the species have been conducted during the appropriate season and the species was not observed.

APPENDIX E

NWI / NHD Records and Soils Map

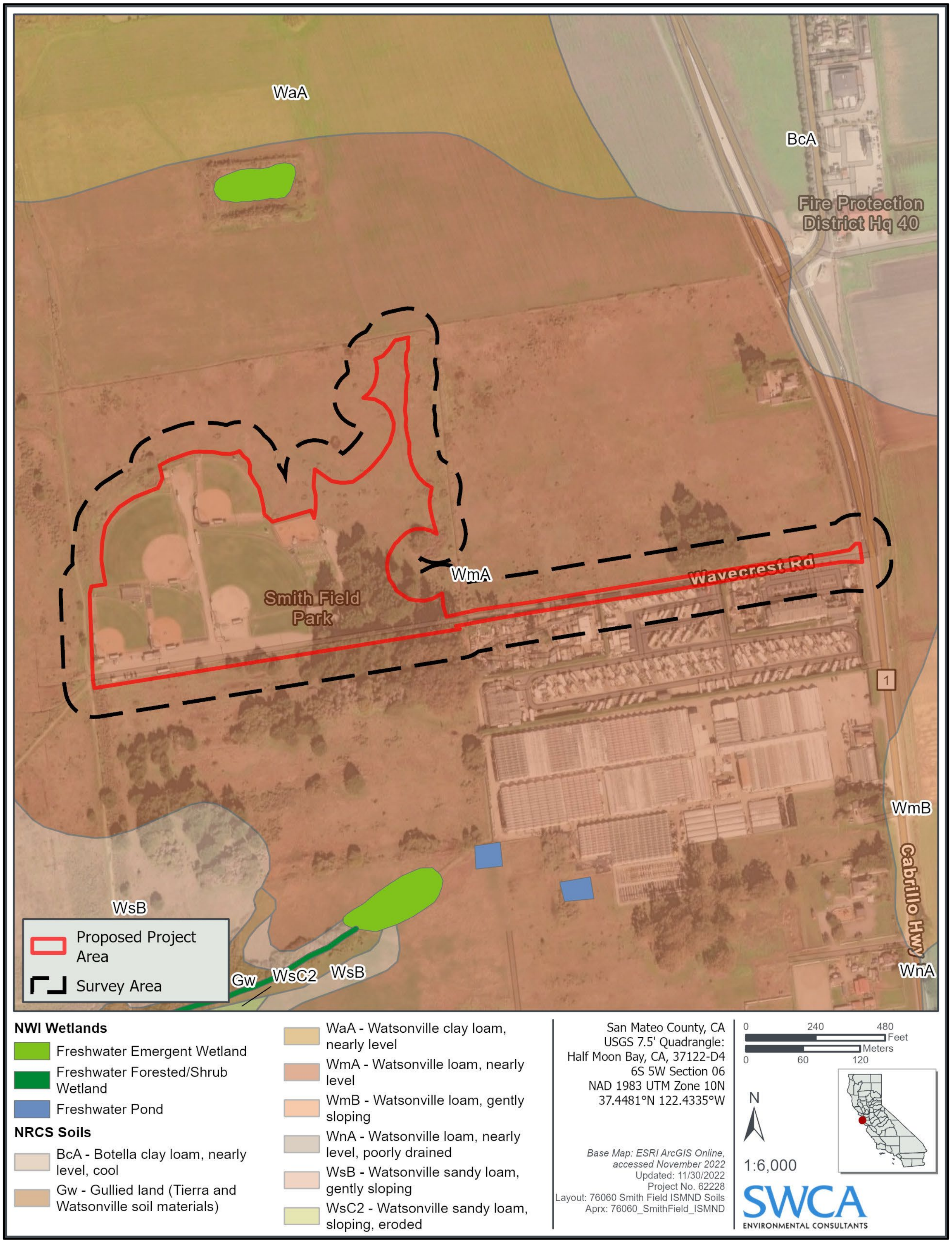


Figure E-1. National Wetland Inventory and National Hydrography Dataset map.

APPENDIX F

Plant and Animal Species Observed During Field Survey

Table F-1. Plant Species Observed During the Field Survey

Scientific Name	Common Name	Origin	Form	Rarity Status	CAL-IPC Status	Wetland Status (AW 2016)
Acacia melanoxylon	Blackwood acacia	non-native (invasive)	tree	-	Limited	-
Amaryllis belladonna	Naked lady	non-native	perennial herb	-	-	-
Atriplex prostrata	Fat-hen	non-native	annual herb	-	-	FACW
Avena barbata	Slim oat	non-native (invasive)	annual, perennial grass	-	Moderate	-
Baccharis glutinosa	Salt Marsh baccharis	native	perennial herb	-	-	FACW
Baccharis pilularis	Coyote brush	native	shrub	-	-	-
Bellis perennis	English lawn daisy	non-native	perennial herb	-	-	-
Brachypodium distachyon	Purple false brome	non-native (invasive)	annual, perennial grass	-	Moderate	-
Brassica rapa	Common mustard	non-native (invasive)	annual herb	-	Limited	FACU
Bromus diandrus	Ripgut brome	non-native (invasive)	annual grass	-	Moderate	-
Carduus pycnocephalus ssp. *pycnocephalus*	Italian thistle	non-native (invasive)	annual herb	-	Moderate	-
Carex densa	Sedge	native	perennial grasslike herb	-	-	OBL
Carex praegracilis	Field sedge	native	perennial grasslike herb	-	-	FACW
Chenopodium album	Lambs quarters	non-native	annual herb	-	-	FACU
Cirsium vulgare	Bullthistle	non-native (invasive)	perennial herb	-	Moderate	FACU
Conium maculatum	Poison hemlock	non-native (invasive)	perennial herb	-	Moderate	FACW
Convolvulus arvensis	Field bindweed	non-native	perennial herb, vine	-	-	-
Cortaderia jubata	Andean pampas grass	non-native (invasive)	perennial grass	-	High	FACU
Cyperus eragrostis	Tall cyperus	native	perennial grasslike herb	-	-	FACW
Delairea odorata	Cape ivy	non-native (invasive)	perennial herb	-	High	FAC
Elymus triticoides	Beardless wild rye	native	perennial grass	-	-	FAC
Epilobium brachycarpum	Willow herb	native	annual herb	-	-	FAC
Epilobium densiflorum	Willow herb	native	annual herb	-	-	FACW
Erigeron canadensis	Canada horseweed	native	annual herb	-	-	FACU
Erodium moschatum	Whitestem filaree	non-native	annual herb	-	-	-
Eucalyptus globulus	Blue gum	non-native (invasive)	tree	-	Limited	-

Scientific Name	Common Name	Origin	Form	Rarity Status	CAL-IPC Status	Wetland Status (AW 2016)
Festuca perennis	Italian rye grass	non-native (invasive)	annual, perennial grass	-	Moderate	FAC
Foeniculum vulgare	Fennel	non-native (invasive)	perennial herb	-	High	-
Frangula californica	California coffeeberry	native	shrub	-	-	-
Fumaria officinalis	Fumitory	non-native	annual herb	-	-	-
Geranium dissectum	Wild geranium	non-native (invasive)	annual herb	-	Limited	-
Geranium molle	Crane's bill geranium	non-native	annual, perennial herb	-	-	-
Helenium puberulum	Sneezeweed	native	perennial herb	-	-	FACW
Helminthotheca echioides	Bristly ox-tongue	non-native (invasive)	annual, perennial herb	-	Limited	FAC
Hesperocyparis macrocarpa	Monterey cypress	native	tree	Rank 1B.2	-	-
Hirschfeldia incana	Short-podded mustard	non-native (invasive)	perennial herb	-	Moderate	-
Holcus lanatus	Common velvetgrass	non-native (invasive)	perennial grass	-	Moderate	FAC
Hordeum marinum ssp. gussoneanum	Barley	non-native (invasive)	annual grass	-	Moderate	FAC
Hordeum murinum	Foxtail barley	non-native (invasive)	annual grass	-	Moderate	FACU
Horkelia californica var. *californica*	California horkelia	native	perennial herb	-	-	-
Juncus occidentalis	Slender juncus	native	perennial grasslike herb	-	-	FACW
Juncus patens	Rush	native	perennial grasslike herb	-	-	FACW
Juncus phaeocephalus	Brown headed rush	native	perennial grasslike herb	-	-	FACW
Lotus corniculatus	Bird's foot trefoil	non-native	perennial herb	-	-	FAC
Lysimachia arvensis	Scarlet pimpernel	non-native	annual herb	-	-	FAC
Lythrum hyssopifolia	Hyssop loosestrife	non-native (invasive)	annual, perennial herb	-	Limited	OBL
Malva parviflora	Cheeseweed	non-native	annual herb	-	-	-
Medicago polymorpha	California burclover	non-native (invasive)	annual herb	-	Limited	FACU
Mentha pulegium	Pennyroyal	non-native (invasive)	perennial herb	-	Moderate	OBL
Oxalis pes-caprae	Bermuda buttercup	non-native (invasive)	perennial herb	-	Moderate	-
Pennisetum clandestinum	Kikuyu grass	non-native (invasive)	perennial grass	-	Limited	FACU
Pentagramma triangularis	Gold back fern	native	fern	-	-	-
Phalaris aquatica	Harding grass	non-native (invasive)	perennial grass	-	Moderate	FACU

Scientific Name	Common Name	Origin	Form	Rarity Status	CAL-IPC Status	Wetland Status (AW 2016)
Pinus radiata	Monterey pine	native	tree	Rank 1B.1	-	-
Plantago coronopus	Cut leaf plantain	non-native	annual herb	-	-	FAC
Poa annua	Annual blue grass	non-native	annual grass	-	-	FAC
Prunus cerasifera	Cherry plum	non-native (invasive)	tree	-	Limited	-
Pseudognaphalium luteoalbum	Jersey cudweed	non-native	annual herb	-	-	FAC
Raphanus sativus	Radish	non-native (invasive)	annual, biennial herb	-	Limited	-
Rubus ursinus	California blackberry	native	vine, shrub	-	-	FAC
Rumex acetosella	Sheep sorrel	non-native (invasive)	perennial herb	-	Moderate	FACU
Rumex crassus	Willow leaved dock	native	perennial herb	-	-	FACW
Rumex crispus	Curly dock	non-native (invasive)	perennial herb	-	Limited	FAC
Rumex pulcher	Fiddleleaf dock	non-native	perennial herb	-	-	FAC
Salix lasiolepis	Arroyo willow	native	tree, shrub	-	-	FACW
Silybum marianum	Milk thistle	non-native (invasive)	annual, perennial herb	-	Limited	-
Solanum sp.	-	-	-	-	-	-
Sonchus asper ssp. *asper*	Sow thistle	non-native	annual herb	-	-	FAC
Sonchus oleraceus	Sow thistle	non-native	annual herb	-	-	UPL
Symphyotrichum chilense	Pacific aster	native	perennial herb	-	-	FAC
Toxicodendron diversilobum	Poison oak	native	vine, shrub	-	-	FACU
Vicia tetrasperma	Four seeded vetch	non-native	annual herb	-	-	-

Table F-2. Animal Species Observed During the Field Survey

Scientific Name	Common Name
Birds	
Corvus brachyrhynchos	American crow
Falco sparverius	American kestrel
Sayornis nigricans	Black phoebe
Euphagus cyanocephalus	Brewer's blackbird
Corvus corax	Common raven
Sturnus vulgaris	European starling
Haemorhous mexicanus	House finch
Troglodytes aedon	House wren
Charadrius vociferus	Killdeer
Buteo lineatus	Red-shouldered hawk
Buteo jamaicensis	Red-tailed hawk
Columba livia	Rock pigeon
Passerculus sandwichensis	Savannah sparrow
Melospiza melodia	Song sparrow
Cathartes aura	Turkey vulture
Mammals	
Sylvilagus bachmani	Brush rabbit
Microtus californicus	California vole
Odocoileus hemionus	Mule deer
Reptiles	
Thamnophis elegans terrestris	Coast garter snake

APPENDIX G

Photo Documentation

Photo G-1. View facing southeast showing typical upland conditions in the central portion of the proposed project area within coyote brush scrub and perennial rye grass vegetation communities. Photo taken November 21, 2022.

Photo G-2. View facing east showing seasonal wetland habitat in the southern portion of the BSA showing perennial rye grass vegetation community. Photo taken November 21, 2022.

Photo G-3. View facing northwest showing upland and seasonal wetland swale habitat in the western portion of the BSA. Photo taken November 21, 2022.

Photo G-4. View facing north showing the portion of the Wavecrest Watercourse that is situated east of the central portion of the proposed project area. Photo taken November 21, 2022.

Photo G-5. View facing southwest showing the portion of the Wavecrest Watercourse that is situated in the northern portion of the BSA. Photo taken November 21, 2022.

Photo G-6. View facing east showing the culvert at the east end of the Wavecrest Watercourse. Photo taken November 21, 2022.

Photo G-7. View facing north showing sports fields within Smith Field. Photo taken November 21, 2022.

Photo G-8. View facing west showing the northern extent of the BSA and the northern edge of the sports fields. Photo taken November 21, 2022.

APPENDIX E

Preliminary Jurisdictional Delineation

Draft Preliminary Jurisdictional Delineation Report for the Smith Field Project, Half Moon Bay, San Mateo County, California

JANUARY 2023

PREPARED FOR

City of Half Moon Bay

PREPARED BY

SWCA Environmental Consultants

DRAFT PRELIMINARY JURISDICTIONAL DELINEATION REPORT FOR THE SMITH FIELD PROJECT, HALF MOON BAY, SAN MATEO, CALIFORNIA

Prepared for

City of Half Moon Bay
501 Main Street
Half Moon Bay, California 94019
Attn: Maziar Bozorginia, City Engineer

Prepared by

Erich Schickenberg, Wetland Specialist/Associate Project Botanist

SWCA Environmental Consultants
60 Stone Pine Road, Suite 100
Half Moon Bay, California 94019
(650) 440-4160
www.swca.com

SWCA Project No. 76060

January 2023

EXECUTIVE SUMMARY

SWCA Environmental Consultants (SWCA) was contracted by the City of Half Moon Bay (City) to conduct a preliminary jurisdictional delineation in support of the Smith Field Park Facilities Master Plan Project (project), which includes upgrades to the existing Smith Field Park in the City of Half Moon Bay, San Mateo County, California.

On November 21 and 22, 2022, SWCA conducted a preliminary jurisdictional delineation of waters at the project area in accordance with the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987), the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)* (U.S. Army Corps of Engineers [USACE] 2008) and *A Field Guide to Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States: A Delineation Manual* (Lichvar and McColley 2008)). The approximately 1,611,720-square-foot (37-acre) survey area consisted of the project footprint, as well as a 100-foot buffer around the work area.

The survey area contains approximately 2.17 acres (94,525 square feet) of single-parameter seasonal wetlands that are potentially jurisdictional under the City's certified Local Coastal Program (LCP)/California Coastal Act (CCA) due to a dominance of hydrophytic vegetation. These seasonal wetlands are likely not under USACE jurisdiction due to the lack of hydric soils or hydrologic indicators. Additionally, the survey area also contains a 0.67-acre (29,185 square feet), 2,161-linear-foot minor intermittent drainage channel, referred to in the LCLUP as the Wavecrest Watercourse. Due to the presence of defined bed and back morphology, an ordinary high-water mark (OHWM), and connectivity to traditional navigable waters, approximately 0.13-acre (5,663 square feet) of this feature would likely be considered Waters of the United States (WOTUS) under the jurisdiction of the USACE and subject to federal Clean Water Act (CWA) regulations, inclusive of Section 401 and state water quality standards. In addition, approximately 0.54 acre (23,522 square feet) of this channel would likely be subject to California Fish and Game Code Division 2, Chapter 6, Sections 1600–1602 as well as LCP/CCA jurisdiction.

Project construction is not expected to impact these USACE and State Water Board/Regional Water Quality Control Board (RWQCB) jurisdictional waters, California Department of Fish and Wildlife (CDFW) jurisdictional waters, or LCP/CCA seasonal wetlands.

The findings in this report should be considered preliminary. Areas of potential jurisdiction are subject to final verification and approval by the regulatory agencies (i.e., USACE, State Water Board/RWQCB, and CDFW) and will be confirmed during the permitting phase of the project. This preliminary jurisdictional delineation report was prepared in accordance with the *Minimum Standards for Acceptance of Aquatic Resources Delineation Reports* (USACE 2016a) to facilitate efforts to avoid or minimize impacts to aquatic resources during the project design process.

CONTENTS

Appendices

Figures

Tables

1 INTRODUCTION

SWCA Environmental Consultants (SWCA) was contracted by the City of Half Moon Bay (City) to conduct a preliminary jurisdictional delineation in support of the Smith Field Park Facilities Master Plan Project (project), located in the City of Half Moon Bay, San Mateo County, California.

In January 2019, the City adopted a Parks Master Plan, which provides guidance on future planned improvements to existing parks and construction of new parks within the City's jurisdiction. As part of this plan, upgrades to the existing Smith Field Park were proposed, which may include installation of a new waterline within the right-of-way at Wavecrest Road, upgrades to the park's parking area to include paved access and paved parking spaces (including accessible spaces), youth baseball fields, an all-weather multi-use field (soccer, baseball, softball), establishment of a picnic/BBQ area and interpretive walking trail, expanded dog park (conceptually separated into large and small dog areas), installation of a children's play area, potentially additional active sport court uses, potential installation of field lighting, and upgrades to park landscaping .

This preliminary jurisdictional delineation report presents the results of an assessment of potentially jurisdictional waters for the project and was prepared in accordance with the *Minimum Standards for Acceptance of Aquatic Resources Delineations* (U.S. Army Corps of Engineers [USACE] 2016a). This delineation was conducted to determine the extent of the water features within the approximately 37-acre (1,611,720-square-foot) survey area that are within the jurisdictions of the following agencies:

- USACE, pursuant to Section 404 of the Clean Water Act (CWA);
- State Water Resources Control Board (State Water Board)/Regional Water Quality Control Board (RWQCB), pursuant to the Porter-Cologne Water Quality Control Act (Porter-Cologne Act; California Water Code, Chapter 2, Section 13050) or Section 401 of the CWA; and/or
- California Department of Fish and Wildlife (CDFW), pursuant to Section 1600 of the California Fish and Game Code (CFGC).
- City Local Coastal Land Use Program (LCLUP), pursuant to the California Coastal Act.

This delineation identified all features within the survey area that meet the definition of Waters of the United States (WOTUS) and/or State or qualify as jurisdictional under the LCLUP. This report will facilitate the City's efforts to avoid or minimize impacts to aquatic resources during the design process for the project. This report details the survey methods utilized, specific data collected, and survey results.

1.1 Contact Information

Project Applicant:
City of Half Moon Bay
Maziar Bozorginia, City Engineer
501 Main Street
Half Moon Bay, CA 94019
(650) 726-8251
MBozorginia@hmbcity.com

Applicant Agent:
Erich Schickenberg, Wetland Specialist/Assistant Project Botanist
SWCA Environmental Consultants
60 Stone Pine Road, Suite 100
Half Moon Bay, CA 94019

(650) 440-4160
erich.schickenberg@swca.com

2 LOCATION

The survey area is located in the vicinity of Smith Field Park, an outdoor recreational facility that contains a parking area, five baseball/recreational fields, a horseshoe game area, snack shack/restroom building, and an enclosed dog park located at the western end of Wavecrest Road in the City of Half Moon Bay, in San Mateo County, California (Figure 1). The latitude and longitude of the survey area are 37.4474386 and -122.4355175, respectively. The project is located in Sections 5 and 32, Townships 5S and 6S, and Range 5W and lies within the extents of the Half Moon Bay, California (7.5-minute), U.S. Geological Survey (USGS) topographic quadrangle. The survey area can be accessed from Wavecrest Road at the intersection of California State Route 1.

3 REGULATORY SETTING

3.1 Clean Water Act Section 404 / U.S. Army Corps of Engineers

Section 404 of the CWA prohibits the discharge of dredged or fill material into WOTUS. Policies relating to the loss of aquatic habitats generally stress the need for no net loss of wetland resources. Under Section 404, actions in WOTUS may be subject to an individual permit, nationwide permit (NWP), or general permit, or may be exempt from regulatory requirements.

The protection of federal jurisdictional WOTUS has been historically contentious and subject to numerous legal decisions. Most recently, on August 31, 2021, the Navigable Waters Protection Rule, which defined WOTUS, was vacated and remanded. In accordance with the current guidance of the U.S. Environmental Protection Agency (USEPA) and USACE, WOTUS should now be interpreted as consistent with the prior regulations published in 1986 (USACE 1986) until further notice. A summary of that definition of WOTUS is as follows:

- All waters currently or previously susceptible to use interstate foreign commerce;
- All interstate waters, including interstate wetlands;
- Waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation, or destruction of which could affect interstate or foreign commerce;
- All impoundments of waters otherwise defined as WOTUS under this definition;
- Tributaries of waters identified in the bullet points above;
- The territorial sea; and
- Wetlands adjacent to waters identified in the preceding bullet points.

Wetlands are defined as those areas "that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (33 Code of Federal Regulations [CFR] 328.3(b)).

Because of the ongoing controversy and legal challenges surrounding WOTUS, there may be additional changes to federal regulations during project planning that would be captured during design and permitting.

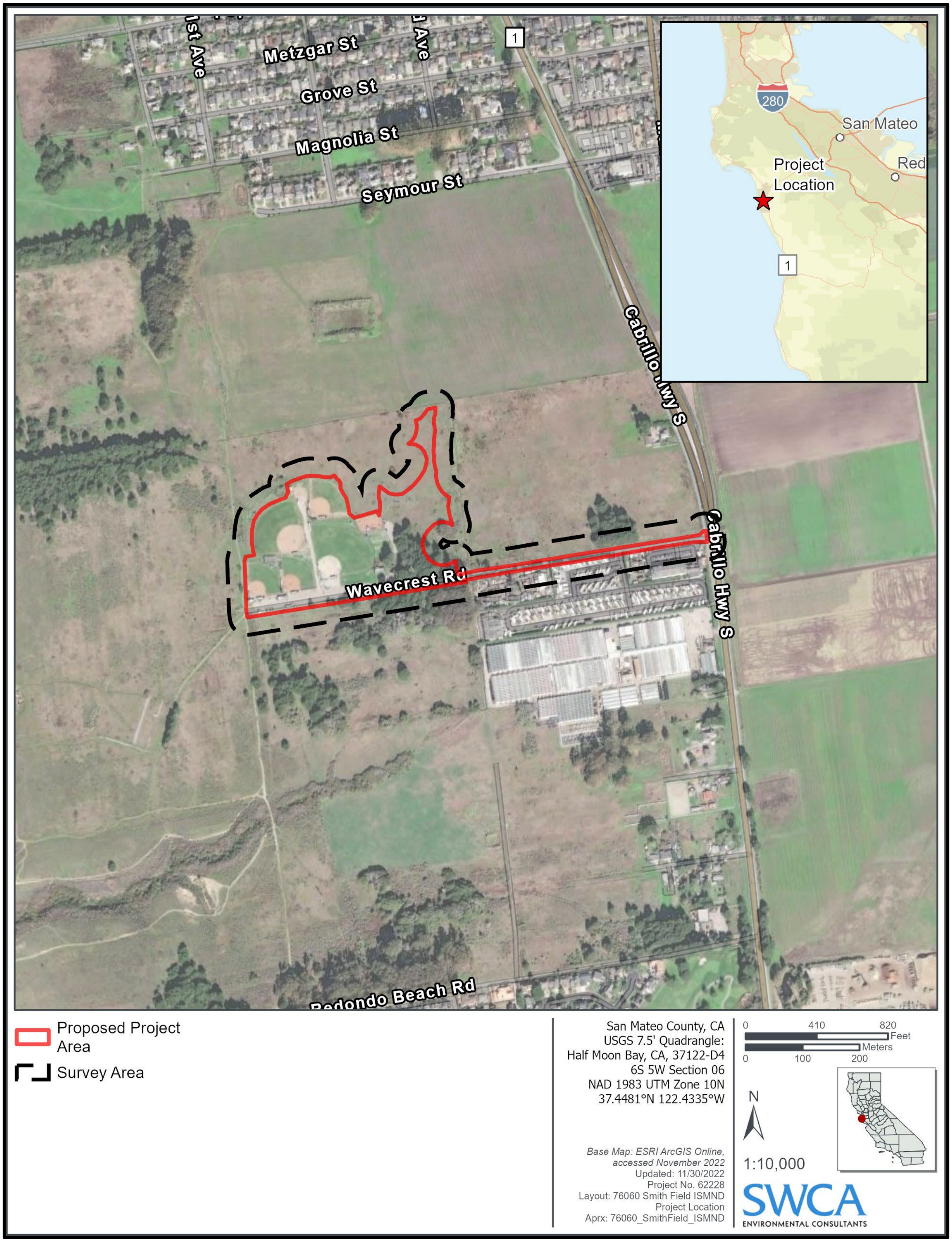


Figure 1. Project location and vicinity map.

3.2 Clean Water Act Section 401 and Porter-Cologne Water Quality Control Act / Regional Water Quality Control Board

Section 401 of the CWA ensures that federally permitted activities comply with the federal CWA and state water quality laws. Section 401 is implemented by California's RWQCB, triggered by the Section 404 permitting process. The RWQCB issues a Water Quality Certification through the Section 401 process that requires a proposed project to comply with water quality standards and other conditions of California law. Evaluating the effects of the proposed project on both water quality and quantity (runoff) falls under the jurisdiction of the RWQCB. This certification typically precedes USACE permit issuance. Any activities that would require a USACE Section 404 permit would also likely require a Section 401 Water Quality Certification from RWQCB. For projects that qualify for an NWP under Section 404 of the CWA, the RWQCB (or, in some cases, the State Water Board) issues certification orders that conditionally certify certain NWPs (i.e., NWPs 1, 3a, 4, 5, 6, 9, 10, 11, 12, 14, 20, 22, 28, 32, 36, 54, 57, and 58). Applicants must submit a Notice of Intent to the State Water Board and appropriate RWQCB and obtain a Notice of Applicability from the State Water Board prior to proceeding with the project if they qualify under the General Order for Corps' Nationwide Permits (Order No. WQ 2021-0048-DWQ).

In addition, the Porter-Cologne Act serves as the primary water quality law in California and addresses two primary functions: water quality control planning and waste discharge regulation. The various RWQCBs are charged with protecting all waters of California, defined as "any surface water or groundwater, including saline waters, within the boundaries of the State." This encompasses all waters of the State, including those not under federal jurisdiction. The Porter-Cologne Act defines "waters of the State" very broadly, with no physical descriptors and no interstate commerce limitation. Therefore, in regulating discharges of dredged or fill material, the RWQCB jurisdiction is more broad than federal jurisdiction. The discharge of dredged or fill material may constitute a discharge of waste that could affect the quality of waters of the State. In 2019, the State Water Board adopted the *State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State* for inclusion in the forthcoming Water Quality Control Plan for Inland Surface Waters and Enclosed Bays and Estuaries and Ocean Waters of California (State Water Board 2019).

The State Water Board defines an area as wetland as follows:

> An area is wetland if, under normal circumstances, (1) the area has continuous or recurrent saturation of the upper substrate caused by groundwater, or shallow surface water, or both; (2) the duration of such saturation is sufficient to cause anaerobic conditions in the upper substrate; and (3) the area's vegetation is dominated by hydrophytes or the area lacks vegetation.

For projects that are not already covered under a Section 404 permit, applicants must file a Waste Discharge Requirement application with the State Water Board for any activity that could result in the discharge of dredged or fill material into waters of the State in accordance with Title 23 California Code of Regulations (CCR) Section 3855. For the purposes of this report, RWQCB jurisdiction is interpreted as being the same as USACE jurisdiction under the CWA.

3.3 California Fish and Game Code Section 1602 / California Department of Fish and Wildlife

Section 1602 of the CFGC requires a proponent proposing a project that may affect a river, stream, or lake to notify the CDFW before beginning the project. If activities will result in the diversion or obstruction of the natural flow of a stream, or substantially alter its bed, channel, or bank, or adversely affect existing fish and wildlife resources, a Lake or Streambed Alteration Agreement is required. A Lake or Streambed Alteration Agreement lists the CDFW conditions of approval relative to the proposed project and serves as an agreement between an applicant and the CDFW for the performance of activities subject to Section 1602. For the purposes of this report, CDFW jurisdiction is interpreted as extending from the streambed/thalweg to the outer edge of adjacent riparian vegetation (for both natural and anthropogenic drainage features).

3.4 California Coastal Act and City of Half Moon Bay Local Coastal Program

The California Coastal Act (CCA) of 1976 governs the decisions made by the California Coastal Commission (CCC) regarding coastal issues, such as shoreline public access and recreation, terrestrial and marine habitat protection, water quality, commercial fisheries, and development within the California coastal zone. Development, as defined in CCA Section 30106, within the coastal zone would require either a Coastal Development Permit (CDP) or CDP Exemption from the CCC or from a local government with a CCC-certified Local Coastal Program (LCP). The City of Half Moon Bay lies entirely within the coastal zone and is, therefore, subject to the CCA.

The LCLUP for the City has been developed and certified in compliance with the CCA on April 15, 2021 (LCP Amendment Number LCP-2-HMB-20-0081-2) and includes the LCLUP (City of Half Moon Bay 2020a) and City Code (City of Half Moon Bay 2020b).

Unlike the federal government, the CCA uses the one-parameter Cowardin et al. (1979) definition of wetlands:

> Wetlands are lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface of the land or is covered by shallow water. For purposes of this classification, wetlands must have one or more of the following three attributes: (1) at least periodically, the land supports predominantly hydrophytes (at least 50 percent of the aerial vegetative cover); (2) the substrate is predominantly undrained hydric soil; and (3) the substrate is nonsoil and is saturated with water or covered by shallow water at some time during the growing season of each year.

4 METHODS

Prior to conducting the field survey, existing information was reviewed, including aerial imagery, soil survey data (Natural Resources Conservation Service [NRCS] 2022b), and National Wetlands Inventory (NWI) maps (U.S. Fish and Wildlife Service [USFWS] 2022). On November 21 and 22, 2022, SWCA wetland biologists Erich Schickenberg and Charlotte Soergel conducted a preliminary jurisdictional delineation of the project footprint, as well as a 100-foot buffer from the proposed project footprint (see Figure 1). A 100-foot buffer was used for this wetland delineation to maintain consistency with the 100-foot setback buffer requirements for wetlands provided in the LCLUP. The project area and associated survey buffers are collectively referred to as the survey area in this report. The jurisdictional boundaries of the aquatic resources were mapped according to the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987), as supplemented in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)* (Regional Supplement; USACE 2008). Delineators also used *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) then the Arid West Region of the Western United States: A Delineation Manual* (Lichvar and McColley 2008). For an area to be defined as a wetland under normal circumstances, the USACE routine field determination methods call for the presence of three parameters: hydrophytic vegetation, hydric soils, and wetland hydrology.

Five representative sampling points were analyzed for this effort. Sample point locations were selected based on a combination of representative vegetation community differences and topography to verify the boundary between upland and wetland vegetation communities. In addition, the number of sample points, and their locations, were limited to areas that were in, or adjacent to, the portions of the survey area where proposed project work would occur. Due to the timing of the preliminary jurisdictional delineation, the phenology of annual herbaceous vegetation in the survey area was often insufficient for identification to species. However, due to extensive local experience, as well as detailed knowledge of plant species and vegetation communities within the survey area, the delineating biologists were able to determine the species of most of the vegetation occurring within the sample plots and throughout the survey area. Additionally, due to prolonged severe drought conditions and below average precipitation since the onset of the rainy season, primary and secondary indicators for wetland hydrology were absent within potentially jurisdictional seasonal wetlands at the time of the site assessment.

All potential waters of the U.S. and State were mapped using a global positioning system (GPS) unit with submeter accuracy. All spatial data were collected in the World Geodetic System 1984 coordinate system. Photographs were also taken at each sample point. Descriptions of each sampling point were recorded using Wetland Determination Data Forms for the Arid West Region. Sampling points were recorded at different vegetation communities within the wetland and at an upland reference location.

4.1 Vegetation

Habitat and plant species descriptions follow *A Manual of California Vegetation* (California Native Plant Society 2022) and *Jepson eFlora* (University of California, Berkeley 2022). Wetland vegetation was identified in the field based on species composition and corresponding wetland indicator status. Vegetation was classified within an approximately 5- or 10-foot radius of the sampling points. Sampling point plot sizes were chosen based on site characteristics so that vegetation from different communities was not incorporated in the analysis. Percent coverage of each species was visually estimated. The “50/20 Rule” was used to select dominant species from each stratum of the community. In accordance with this rule, dominant species are the most abundant species that individually or collectively account for more than 50% of the total coverage of vegetation in the stratum, plus any other species that, by itself, accounts for at least 20% of the total. The indicator status of each species was determined based on the National Wetland Plant List (Lichvar et al. 2020). Wetland indicator status definitions are as follows:

- Obligate Plant (OBL) = occurs in aquatic resources more than 99% of the time
- Facultative Wetland Plant (FACW) = occurs in aquatic resources 67% to 99% of the time
- Facultative Plant (FAC) = occurs in aquatic resources 34% to 66% of the time
- Facultative Upland Plant (FACU) = occurs in aquatic resources 1% to 33% of the time
- Upland Plant (UPL) = occurs in uplands more than 99% of the time
- Not Listed Plant (NL) = not listed in the National Wetland Plant List for this region

For species not on the National Wetland Plant List for the Arid West Region, the indicator status was assumed to be UPL (USACE 2008). Vegetation was considered hydrophytic if more than 50% of the dominant plant species from all strata were OBL, FACW, or FAC or the prevalence index was less than or equal to 3.0. The prevalence index is a weighted-average wetland indicator status of all plant species in the sampling plot, where each indicator status category is given a numeric code (OBL=1, FACW=2, FAC=3, FACU=4). The prevalence index used to determine whether hydrophytic vegetation is present at sites where indicators of hydric soils and wetland hydrology are present but vegetation initially fails the dominance test (USACE 2008).

Due to the time of year in which the preliminary jurisdictional delineation was conducted, the phenology of the vegetation made the identification of plant species and associated determination of species' wetland indicator status, difficult. However, given the existing data, extensive local expertise, and familiarity with the survey area, the delineating biologists were able to identify plants to species and determine if hydrophytic vegetation was present.

4.2 Soils

The soil type in the survey area was identified using the soil survey data from the NRCS (2022a). Hydric soils were identified by comparing the survey area with the Soil Data Access Hydric Soils List (NRCS 2022b). The Munsell Soil Color Charts (Munsell Color 2012) were used to help describe soil colors. Soil was considered hydric if one or more primary field indicators were present (e.g., redox dark surface or depleted dark surface). One soil pit was dug at each sampling point to the depth necessary to establish the presence or absence of hydric soil indicators.

4.3 Hydrology

Wetland hydrology was determined by observing field indicators. Primary field indicators of wetland hydrology are described in the Regional Supplement (USACE 2008) and include surface water, high water table, soil saturation, water marks, sediment deposits, drift deposits, surface soil cracks, biotic crust, oxidized rhizospheres along living roots, presence of reduced iron, and water-stained leaves, among others. Secondary indicators include, but are not limited to, water marks, sediment deposits, drift deposits, and drainage patterns. Due to ongoing extreme drought conditions and lack of significant rainfall in the months leading up to the delineation, wetland hydrological indicators were either absent or not identifiable at the time of the site visit.

5 EXISTING CONDITIONS

5.1 Applicable Region and Subregions

The approximately 37-acre (1,611,720-square-foot) survey area is located in the San Francisco Bay Area, Arid West region, and Mediterranean California subregion (LRR C) (USACE 2008).

5.2 Land Use

The survey area is located at the interface of commercial development and an open space area. Land use in the vicinity of the survey area is generally restricted to recreational, commercial, and agricultural uses. Recreational uses include sports fields, a dog park, horseshoe pits, and hiking/biking trails. Commercial uses adjacent to the survey area include a hotel, outdoor storage, a restaurant, and a recreational vehicle park/campground. Agricultural uses in the vicinity of the survey area include hay fields and floriculture. Historically, the survey area and vicinity were farmed and subject to regular disturbance regimes related to agricultural practices associated with row-crops. The survey area also shows some signs of historical disturbance related to recreational off-road vehicle use in the form of deep ruts and tire tracks.

5.3 Topography and Hydrology

The topography within the survey area is generally flat and gently slopes westward towards the Pacific Ocean. The survey area contains several seasonal wetlands and one minor intermittent stormwater drainage ditch known as the Wavecrest Watercourse. The banks of the Wavecrest Watercourse range from gently sloping to moderately steep and incised. Additionally, the survey area contains several shallow anthropogenic depressions, such as tire ruts, that are likely a result of historic off-road vehicle use or agricultural practices. Elevations within the survey area range from approximately 74 to 96 feet above mean sea level.

The survey area is located within the Purisima Creek – Frontal Pacific Ocean watershed,[1] which drains into the Pacific Ocean, a traditional navigable water (USGS 2022). The survey area receives water discharge and stormwater runoff from the surrounding agricultural fields and developed areas via the Wavecrest Watercourse as well as stormwater sheet flow from the surrounding uplands. The Wavecrest Watercourse also receives water from a series of culverts that drain the developed portions of the survey area. The NWI mapping tool did not identify any potential waters or wetlands within the survey area (USFWS 2022) (Figure 2)

5.4 Vegetation Communities

The survey area consists of an asphalted roadway, commercial and recreational development, and undeveloped land dominated by a mix of native and non-native vegetation. Seven habitat types were mapped in the survey area and were classified using the naming conventions of *A Manual of California Vegetation*, Second Edition (Sawyer et al. 2009) (MCV) when feasible. Vegetation communities present in the survey area include coyote brush scrub (*Baccharis pilularis* Shrubland Alliance), perennial rye grass fields, soft and western rush – sedge marshes (*Juncus* [*effuses, patens*] – *Carex* [*pansa, praegracilis*] Herbaceous Alliance), poison hemlock or fennel patches (*Conium maculatum – Foeniculum vulgare* Herbaceous Semi-Natural Alliance), Monterey cypress – Monterey pine woodland stands (*Hesperocyparis macrocarpa – Pinus radiata* Forest and Woodland Semi-Natural Alliance), eucalyptus – tree of heaven – black locust groves (*Eucalyptus* spp. – *Ailanthus altissima – Robinia pseudoacacia* Woodland Semi-Natural Alliance), and developed/disturbed areas. The developed/disturbed portions of the survey area were not classified using *A Manual of California Vegetation* naming conventions. Plant species were identified using the Jepson eFlora (University of California, Berkeley 2022). All vegetation communities observed in the survey area are described below.

5.4.1 *Coyote Brush Scrub*

Coyote brush scrub is characterized by coyote brush as dominant or co-dominant in the shrub canopy along with coastal sage brush (*Artemisia californica*), blueblossom (*Ceanothus thyrsiflorus*), beaked hazelnut (*Corylus cornuta*), sticky monkeyflower (*Diplacus aurantiacus*), California buckwheat (*Eriogonum fasciculatum*), lizard tail (*Eriophyllum staechadifolium*), California coffeeberry (*Frangula californica*), coast silk tassel (*Garrya elliptica*), salal (*Gaultheria shallon*), oceanspray (*Holodiscus discolor*), deerweed (*Acmispon glaber*), coastal bush lupine (*Lupinus arboreus*), California wax myrtle

[1] USGS Hydrologic Unit Code 12 (USGS 2022).

(*Morella californica*), California blackberry (*Rubus ursinus*), white sage (*Salvia apiana*), purple sage (*Salvia leucophylla*), and poison oak (*Toxicodendron diversilobum*). Emergent trees may be present at low cover, including Bishop pine (*Pinus muricata*), Douglas fir (*Pseudotsuga menziesii*), coast live oak (*Quercus agrifolia*), or California bay (*Umbellularia californica*). This vegetation community occurs on river mouths, stream sides, terraces, stabilized dunes of coastal bars, spits along the coastline, coastal bluffs, open slopes, and ridges with variable soils ranging from sandy to relatively heavy clay (Sawyer et al. 2009).

This habitat occurs throughout the undeveloped portions of the survey area. In the survey area, coyote brush is the dominant species observed within this vegetation community, with California blackberry and California horkelia (*Horkelia californica*) at lower cover.

5.4.1 *Developed/Disturbed*

Developed/disturbed areas are generally characterized by residential or commercial development dominated by a mix of exotic ornamental and native plant species. This habitat type occurs on the south and west sides of the survey area and includes Wavecrest Road, the Smith Field recreational area, and the developed areas south of Wavecrest Road. Vegetation types in these areas include, but are not limited to, manicured lawns and ornamental trees and shrubs.

5.4.2 *Eucalyptus – Tree of Heaven – Black Locust Groves*

Eucalyptus – tree of heaven – black locust groves are typically dominated by eucalyptus species, tree of heaven, or black locust in the tree canopy. The herbaceous and shrub layers may be present at sparse to intermittent cover. This vegetation community is typically planted as trees, groves, and windbreaks, and in California it is naturalized on uplands or bottomlands and adjacent to stream courses, lakes, or levees (Sawyer et al. 2009). This habitat occurs in the southern portion of the survey area and is comprised mostly of mature blue gum eucalyptus (*Eucalyptus globulus*) and blackwood acacia (*Acacia melanoxylon*) trees with a sparse understory dominated by poison oak and California blackberry.

5.4.3 *Monterey Cypress – Monterey Pine Woodland Stands*

Monterey cypress – Monterey pine woodland stands are characterized by a dominance of Monterey cypress, Canary Island pine (*Pinus canariensis*), Aleppo pine (*Pinus halepensis*), Italian stone pine (*Pinus pinea*), and Monterey pine in the tree canopy along with coast wattle (*Acacia cyclops*) and eucalyptus species. This vegetation community is naturalized on the coast and is often planted as trees, groves, and windbreaks (Sawyer et al. 2009). Within the survey area, this vegetation community occurs as ornamental or windrow plantings and is dominated by Monterey cypress with intermittent Monterey pine.

5.4.4 *Perennial Rye Grass Fields*

Perennial rye grass fields are characterized by a dominance or co-dominance of perennial rye grass in the herbaceous layer along with redtop (*Agrostis stolonifera*), wild oats (*Avena fatua*), black mustard (*Brassica nigra*), ripgut brome (B*romus diandrus*), soft chess (*Bromus hordeaceus*), bull thistle (*Cirsium vulgare*), reed fescue (*Festuca arundinacea)*, common velvetgrass (*Holcus lanatus*), seaside barley (*Hordeum marinum*), hawkbit (*Leontodon saxatilis*), bird's foot trefoil (*Lotus corniculatus*), Harding grass (*Phalaris aquatica*), Kentucky blue grass (*Poa pratensis*), curly dock (*Rumex crispus*), and various clover species (*Trifolium* spp.). This vegetation community occurs primarily in the northeast portion of the survey area and is dominated by perennial rye grass, Harding grass, four seeded vetch (*Vicia tetrasperma*), and soft chess. Elements of this vegetation community can also be found within the Wavecrest Watercourse.

5.4.5 *Poison Hemlock or Fennel Patches*

Poison hemlock or fennel patches are characterized by a dominance or co-dominance of poison hemlock, fennel, or another non-native invasive plant of the carrot family (Apiaceae) with other non-native plants in the herbaceous layer. Small numbers of emergent trees or shrubs may also be present. This vegetation community can be found in all topographic settings, including both wetlands and uplands (Sawyer et al. 2009). This vegetation community typically occurs throughout the undeveloped portions of the survey area in locations that have been subjected to historical disturbances such as within and adjacent to stormwater ditches, including the Wavecrest Watercourse, or on raised remnant soil stockpiles. Although poison hemlock has a wetland indicator status of FACW, this species grows ubiquitously in both upland and lowland areas on the immediate coast due to the generally mesic conditions that result from the marine influence. As defined by the USACE, FACW plants occur in aquatic resources 67% to 99% of the time. Inversely, that means that a FACW plant could occur in uplands as much as 33% of the time. As a result, in coastal areas poison hemlock is often found growing in disturbed upland areas and may not always be functioning as a hydrophyte.

Certain upland portions of the survey area, specifically the raised remnant soil stockpiles northwest of the baseball fields, support an overstory dominated by poison hemlock despite having convex topography that would not support the regular prolonged ponding of water. These portions of the survey area also support an understory co-dominated by upland plant species including wild radish (*Raphanus sativus*)(NL), sweet fennel (*Foeniculum vulgare*)(NL), and Burmuda buttercup (*Oxalis pes-caprae*)(NL), which further supports the conclusion that poison hemlock is not functioning as a hydrophyte in these areas. Within the survey area, poison hemlock growing on these elevated and highly disturbed upland soils is likely not functioning as a hydrophyte due to the inability of these raised mounds to support wetland hydrology as well as a co-dominance with upland plant species in the understory.

5.4.6 *Soft and Western Rush – Sedge Marshes*

Soft and western rush – sedge marshes are characterized by a dominance or co-dominance of ample leaved sedge (*Carex amplifolia*), sedge (*Carex densa*), Olney's hairy sedge (*Carex gynodynama*), sand dune sedge (*Carex pansa*), field sedge (*Carex praegracilis*), bifid sedge (*Carex serratodens*), small bract sedge (*Carex subbracteata*), split awn sedge (*Carex tumulicola*), Coville's rush (*Juncus covillei*), common bog rush (*Juncus effusus*), coast rush (*Juncus hesperius*), slender rush (*Juncus occidentalis*), common rush (*Juncus patens*), and/or brown headed rush (*Juncus phaeocephalus*) in the herbaceous layer with mountain dandelion (*Agoseris heterophylla*), Pacific potentilla (*Potentilla anserina*), bull thistle, common velvetgrass, hairy cats ear (*Hypochaeris radicata*), Mexican rush (*Juncus mexicanus*), common toad rush (*Juncus bufonius*), beardless wild rye (*Elymus triticoides*), perennial rye grass, pennyroyal (*Mentha pulegium*), ribwort (*Plantago lanceolata*), and California coffeeberry. Emergent shrubs may be present at low cover, including coyote brush or California blackberry. Soft and western rush – sedge marshes within the survey area were mapped as single-parameter seasonal wetlands and occur as a mosaic of clonal, often monotypic patches of either field sedge or brown headed rush with common rush present at low to moderate cover.

5.5 Soils

The survey area contains one soil type: Watsonville Clay Loam, Nearly Level (NRCS 2022a) (Figure 2). Watsonville Loam, Nearly Level is a deep, somewhat poorly drained soil that formed in sedimentary alluvium with a hydric criterion of 3.[2] Watsonville soils are found on coastal valleys and old marine

[2] Map unit components that are frequently ponded for long duration or very long duration during the growing season that:

terraces at elevations of 20 to 1,200 feet with slopes of 0 to 50 percent. This soil consists of clay loam from 0 down to 63 inches and is more than 80 inches from the water table. In general, this soil type is not subject to flooding or ponding. The NRCS California Hydric Soils List includes Watsonville Clay Loam, Nearly Level as a hydric soil. Soil observed during the field survey within the survey area was consistent with that mapped on the NRCS Web Soil Survey.

5.6 Climate and Precipitation

The temperature and precipitation data described in this section are based on the closest National Weather Service Field Office Climate Data for the Half Moon Bay, California WETS station, for the period between 1999 and 2022 (NRCS 2022c). San Mateo County has a Mediterranean climate, which includes warm to hot, dry summers and mild to cool, wet winters. Average minimum temperatures range from 42.0 to 54.2 degrees Fahrenheit (°F). Average maximum temperatures range from 59.6 to 66.7°F. Average annual precipitation at the Half Moon Bay Station is 22.92 inches, with most rainfall occurring between October and April.

The survey area had below average precipitation levels during the month leading up to the jurisdictional delineation, receiving approximately 2.05 inches of rain between the start of the rainy season (October 2022) to the day of the field investigation (November 21, 2022). Additionally, the National Drought Mitigation Center (2022) shows San Mateo County as being in a severe drought (Category D2) in the time leading up to and during the field investigation.

---

a) Based on the range of characteristics for the soil series, will at least in part meet one or more Field Indicators of Hydric Soils in the United States, or
b) Show evidence that the soil meets the definition of a hydric soil.

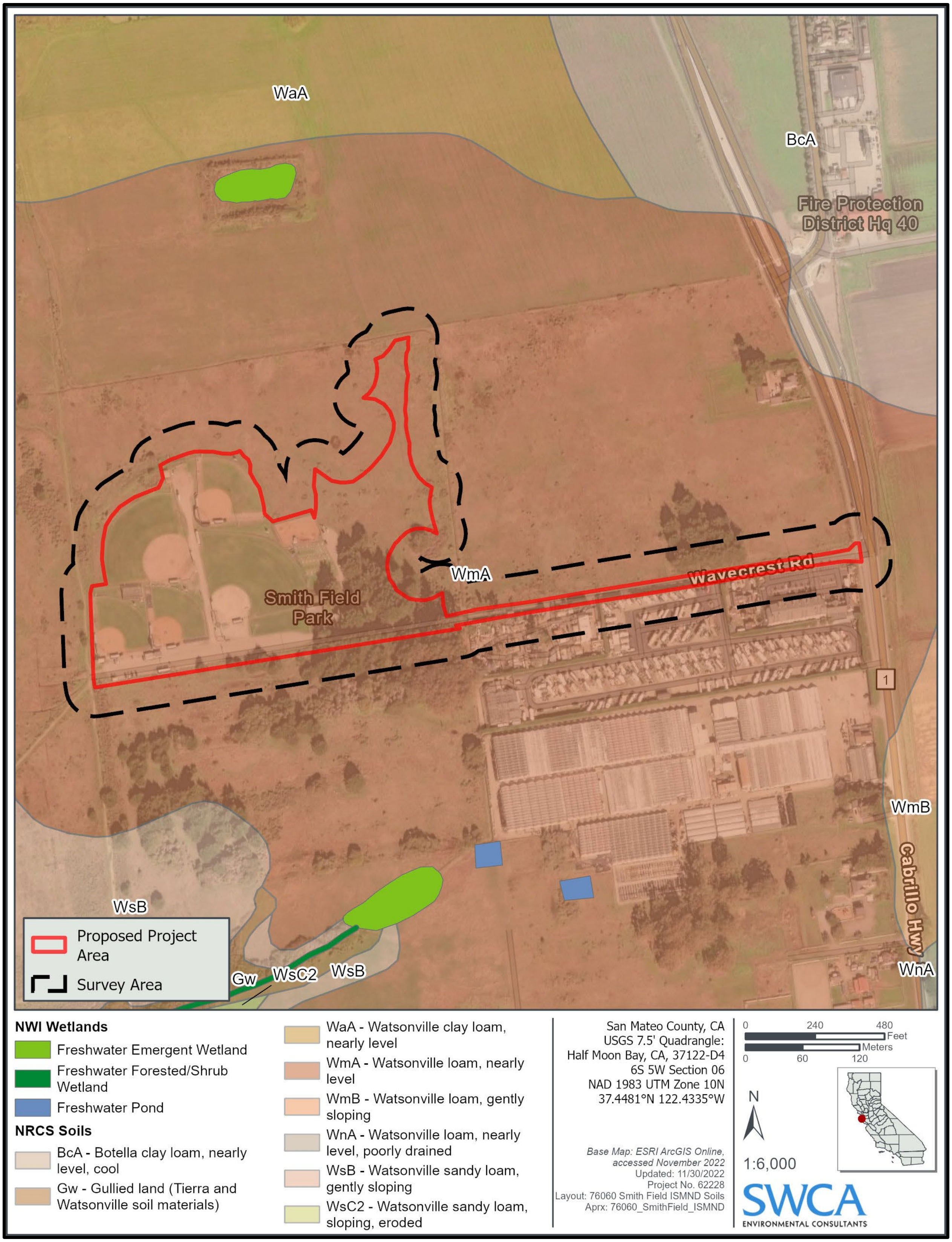


Figure 2. NWI and soils map.

6 RESULTS

Approximately 2.84 acres (123,710 square feet) of potentially jurisdictional wetlands and other waters were mapped in the survey area, as depicted in Figures 3, 4, and 5 and shown in Table 1. These features included a seasonal wetland complex and an intermittent stormwater drainage channel.

None of the seasonal wetlands mapped in the survey area are likely to be considered jurisdictional under USACE. Given a dominance of hydrophytic vegetation, all seasonal wetlands within the survey area are likely only jurisdictional under the LCP/CCA. One intermittent drainage channel, known as the Wavecrest Watercourse, was mapped in the survey area. Due to the presence of defined bed and bank morphology, as well as hydrologic connectivity to WOTUS, this feature is likely considered jurisdictional under USACE, RWQCB, CDFW, and LCP/CCA. Lastly, no upland sample points were taken in the developed portions of the survey area due to an obvious lack of hydrological indicators. Vegetation, soil, and hydrologic conditions at each of the sampling points are described in the following subsections. Photographs of the survey area and sampling points are included in Appendix A. The wetland determination data forms used in the delineations are provided in Appendix B.

6.1 Sampling Point UPL-1

Sampling point UPL-1 represented upland conditions in the northernmost portion of the proposed project area (see Figure 3). This sampling point is situated in a portion of the survey area dominated by perennial rye grass fields. Vegetation at sampling point UPL-1 was dominated almost entirely by soft brome (FACU) and had 0% bare ground (Appendix A, Photograph A-9). The vegetation at this sample point did not pass the dominance test. Soils in the top 14 inches of the soil pit contained little organic matter and were very dark in color (10YR 2/1) with no observable redox. The soil texture at this sample point was sandy clay loam. No hydric soil or wetland hydrologic indicators were present at this sampling point. As this sampling point meets none of the three wetland parameters, it is not considered a wetland.

6.2 Sampling Point UPL-2

Sampling point UPL-2 represented upland conditions in the central portion of the proposed project area (see Figures 3 and 4). This sampling point is situated in a portion of the survey area dominated by perennial rye grass fields. Vegetation at sampling point UPL-2 was dominated almost entirely by Harding grass (FACU) and had 0% bare ground (Appendix A, Photograph A-10). The vegetation at this sample point did not pass the dominance test. Soils in the top 5 inches of the soil pit were rich in organic matter and brown in color (10YR 4/4), with no observable redox. These soils are likely a result of non-native fill material used during the construction of Smith Field. Soils at a depth of 5 to 14 inches at this sample point were low in organic matter and very dark in color (10YR 2/1) with 2% observable redox. Redox at this sample point was reddish in color (2.5YR 2.5/3). The soil at UPL-2 had a sandy clay texture and no hydric soil indicators. Additionally, no wetland hydrologic indicators were present at this sampling point. As this sampling point meets none of the three wetland parameters, it is not considered a wetland.

6.3 Sampling Point LCLUP/CCA WET-1

Sampling point WET-1 represented single-parameter LCP/CCA wetland conditions in the survey area. This sampling point is situated west of the proposed project area (see Figures 3 and 4). Vegetation at sampling point WET-1 was dominated by brown-headed rush (FACW) and had 0% bare ground (Appendix A, Photograph A-11). The vegetation at this sample point passed the dominance test and the prevalence index. Soils in the top 14 inches of the soil pit contained little organic matter and were very dark in color (10YR 2/1) with 1% observable redox. Redox at this sample point was brown in color (10YR 4/6). The soil at WET-1 had silty clay loam texture and no hydric soil indicators. As this sampling point meets only one of the three wetland parameters, it is not considered a wetland under USACE. However, given that this sampling point supported a dominance of hydrophytic vegetation, this feature is likely to be considered as a one-parameter seasonal wetland under the LCP/CCA.

6.4 Sampling Point LCLUP/CCA WET-2

Sampling point WET-2 represented single-parameter LCP/CCA wetland conditions in the survey area. This sampling point is situated between the proposed project area boundary and the survey area boundary, in the area immediately adjacent to the previously developed portion of the Smith Field recreational facilities (see Figures 3 and 4). Vegetation at sampling point WET-2 was dominated by annual rabbits-foot grass (*Polypogon monspeliensis*) (FACW) and had 0% bare ground (Appendix A, Photograph A-12). The vegetation at this sample point passed the dominance test and the prevalence index. Soils in the top 14 inches of the soil pit contained little organic matter and were very dark in color (10YR 2/1) with 2% observable redox. Redox at this sample point was brown in color (2.5YR 2.5/3). The soil at WET-2 had silty clay loam texture. One wetland hydrology indicator, oxidized rhizospheres (C3), was present at this sampling point. As this sampling point meets only two of the three wetland parameters, it is not considered a wetland under USACE. However, given that this sampling point supported a dominance of hydrophytic vegetation, this feature is likely to be considered as a one-parameter seasonal wetland under the LCLUP/CCA.

6.5 Sampling Point LCLUP/CCA WET-3

Sampling point WET-3 represented single-parameter LCP/CCA wetland conditions in the survey area. This sampling point is situated northern portion of the central part of survey area (see Figures 3). Vegetation at sampling point WET-3 was dominated by field sedge (FACW) and soft brome (FACU). This sample point had 0% bare ground (Appendix A, Photograph A-13). Although the vegetation at this sample point did not pass the dominance test, it did pass the prevalence index for hydrophytic vegetation. The prevalence index can be used to determine the presence of hydrophytic vegetation only for sites where indicators of hydric soils and wetland hydrology are present but the vegetation initially fails the dominance test. As per the Regional Supplement, given that indicators for wetland hydrology and soils were not observed at this sample point, the prevalence index cannot be used to determine a dominance of hydrophytic vegetation. However, this sample point still likely meets the requirement for consideration as a single-parameter LCLUP/CCA seasonal wetland based on the prevalence of hydrophytic plant species. Soils in the top 7 inches of the soil pit contained little organic matter and were very dark in color (10YR 2/1) with 0% observable redox. Soils at a depth of 7 to 16 inches at this sample point were low in organic matter and dark in color (10YR 3/1) with 7% observable redox. Redox at this sample point was light brown in color (7.5YR 4/6). The soil at WET-3 had silty clay loam texture and no hydric soil indicators. As this sampling point meets only one of the three wetland parameters, it is not considered a wetland under USACE. However, given that this sampling point supported a dominance of hydrophytic vegetation, this feature is likely to be considered as a one-parameter seasonal wetland under the LCLUP/CCA.

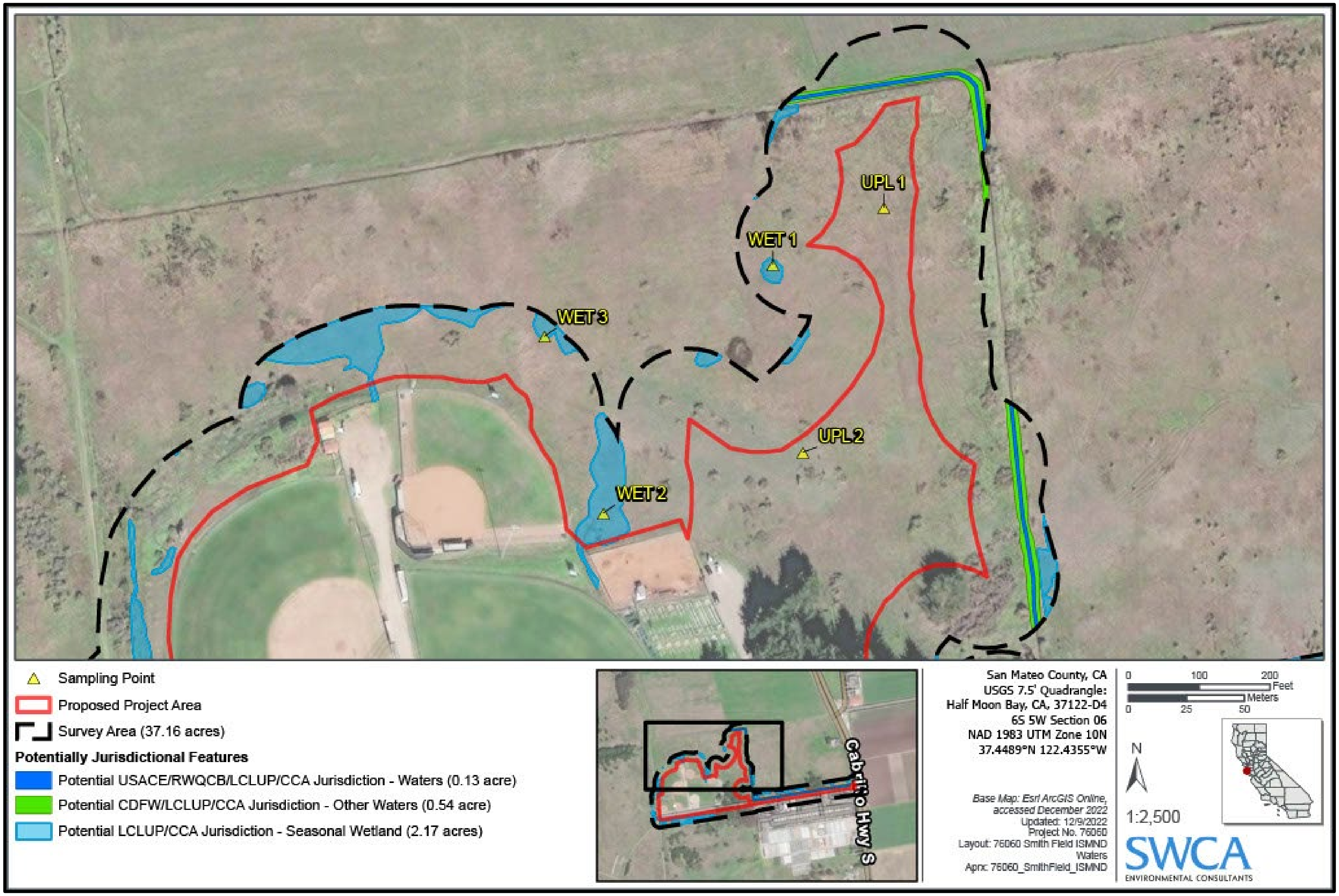


Figure 3. Delineation results map.

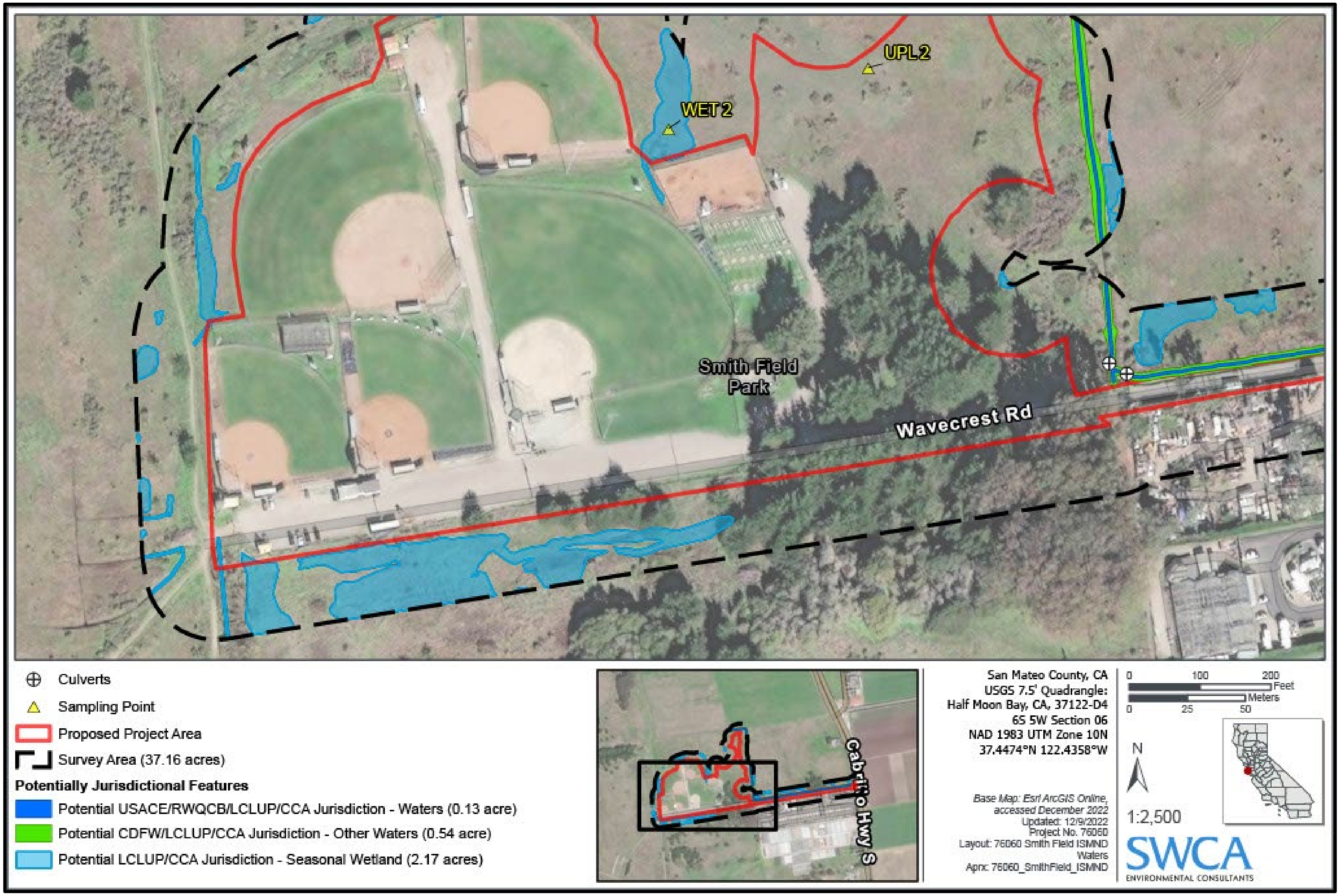


Figure 4. Delineation results map.

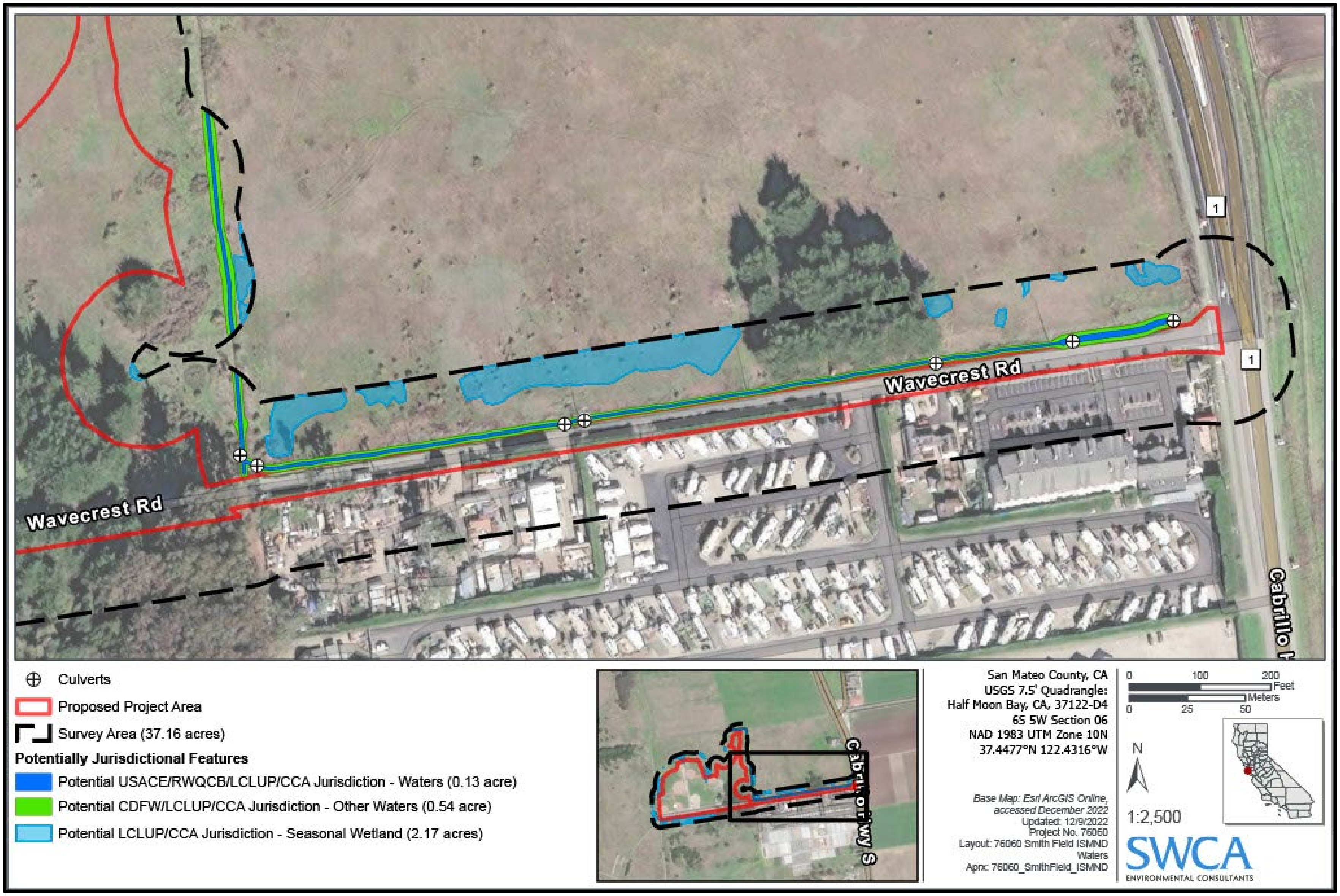


Figure 5. Delineation results map.

7 SUMMARY AND DISCUSSION

The survey area contains approximately 2.17 acres (94,525 square feet) of single-parameter seasonal wetlands that are potentially jurisdictional under the LCP/CCA due to a dominance of hydrophytic vegetation. These seasonal wetlands are likely not under USACE and/or RWQCB jurisdiction due to the lack of hydric soils or hydrologic indicators. Additionally, the survey area also contains a 0.67-acre (29,185 square feet), 2,161-linear-foot minor intermittent drainage channel, referred to in the LCLUP as the Wavecrest Watercourse. Due to the presence of defined bed and back morphology, an OHWM, and connectivity to traditional navigable waters, approximately 0.13 acre (5,663 square feet) of this feature would likely be considered WOTUS under the jurisdiction of the USACE and subject to federal CWA regulations, inclusive of Section 401 and state water quality standards. In addition, approximately 0.54 acre (23,522 square feet) of this channel would likely be subject to CFGC Division 2, Chapter 6, Sections 1600–1602.

Construction of the project is not expected to impact USACE- and State Water Board/RWQCB–jurisdictional waters, CDFW-jurisdictional waters, or LCP/CCA-jurisdictional seasonal wetlands. It is not anticipated that the proposed project will need to obtain federal CWA permits from the USACE and State Water Board/RWQCB and a Lake or Streambed Alteration Agreement from the CDFW prior to implementing the project. Table 1 quantifies the potential jurisdictional waters (in acres, square feet, and linear feet) for the delineated resources within the survey area and impact area. Potential jurisdictional waters at each of the sites identified in this report are also quantified in the Delineation Results Map (see Figure 3).

Table 1. Preliminary Jurisdictional Waters Totals in the Survey Area and Impact Area

Potential Jurisdictional Waters[1]	Totals within the Survey Area			Totals within the Impact Area		
	Acres	Square Feet	Linear Feet	Acres	Square Feet	Linear Feet
U.S. Army Corps of Engineers (USACE)						
WOTUS Other Waters - Intermittent Drainage Channel (Wavecrest Watercourse)	0.13	5,663	2,161	0	0	0
Total Potential USACE Jurisdiction	**0.13**	**5,663**	**2,161**	**0**	**0**	**0**
State Water Resources Control Board (State Water Board)/ Regional Water Quality Control Board (RWQCB)						
Waters of the State - Intermittent Drainage Channel (Wavecrest Watercourse)	0.13	5,663	2,161	0	0	0
Total Potential State Water Board/ RWQCB Jurisdiction	**0.13**	**5,663**	**2,161**	**0**	**0**	**0**
California Department of Fish and Wildlife (CDFW)						
Streambed (Wavecrest Watercourse)	0.54	23,522	2,161	0	0	0
Total Potential CDFW Jurisdiction	**0.54**	**23,522**	**2,161**	**0**	**0**	**0**
LCLUP/CCA						
LCLUP/CCA Seasonal Wetlands	2.17	94,525	N/A	0	0	0
LCLUP/CCA - Intermittent Drainage Channel (Wavecrest Watercourse)	0.54	23,522	2,161	0	0	0
Total Potential LCP/CCA Jurisdiction	**2.71**	**118,047**	**2,161**	**0**	**0**	**0**

[1] Areas of potential jurisdiction are subject to final verification and approval by the regulatory agencies (i.e., USACE, State Water Board/RWQCB, and CDFW).

The findings in this report should be considered preliminary. Areas of potential jurisdiction are subject to final verification and approval by the regulatory agencies (i.e., USACE, RWQCB, CDFW, CCC) and will be confirmed during the permitting phase of the project.

8 LITERATURE CITED

California Native Plant Society (CNPS). 2022. A Manual of California Vegetation Online. Available at: https://vegetation.cnps.org/. Accessed November 2022.

City of Half Moon Bay. 2020a. *Half Moon Bay Municipal Code, Title 18: Zoning*. Available at: https://www.codepublishing.com/CA/HalfMoonBay/#!/HalfMoonBay18/HalfMoonBay1838.html#18.38.020. Accessed November 20, 2022.

———. 2020b. *City of Half Moon Bay Local Coastal Land Use Plan, Chapter 6: Natural Resources*. Available at: https://www.half-moon-bay.ca.us/DocumentCenter/View/3784/Full-Combined-2020-HMB-LCLUP. Accessed November 20, 2022.

Cowardin, L. M., V. Carter, F. C. Golet, E. T. LaRoe. 1979. *Classification of Wetlands and Deepwater Habitats of the United States*. U.S. Department of the Interior, Fish and Wildlife Service, Washington, D.C. 131 pp.

Environmental Laboratory. 1987. *Corps of Engineers Wetlands Delineation Manual*. Technical Report Y-87-1. Vicksburg, Mississippi: U.S. Army Engineer Waterways Experiment Station.

Lichvar, Robert M., and Shawn M. McColley. 2008. *A Field Guide to Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States: A Delineation Manual*. Technical Report ERDC/CRREL TR-080-12. Hanover, New Hampshire: U.S. Army Engineer Research and Development Center.

Lichvar, R.W., D.L. Banks, W.N. Kirchner, and N.C. Melvin. 2020. The National Wetland Plant List: 2020 wetland ratings. Available at: https://cwbi-app.sec.usace.army.mil/nwpl_static/data/DOC/lists_2020/National/National_2020v1.pdf. Accessed November 2022.

Munsell Color. 2012. Munsell Soil Color Charts. 2009 Revised Edition. Grand Rapids, Michigan: X-rite.

National Drought Mitigation Center. 2022. U.S. Drought Monitor - California. Available at: https://droughtmonitor.unl.edu/CurrentMap/StateDroughtMonitor.aspx?CA. Accessed November 2022.

Natural Resources Conservation Service (NRCS). 2022a. Web Soil Survey. Available at: https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx. Accessed November 2022.

———. 2022b. Soil Data Access Hydric Soils List. California – Contra Costa County, California. Available at: https://efotg.sc.egov.usda.gov/references/Public/IL/State_List_NRCS_Hydric_Soils_Report_Dynamic_Data.html. Accessed November 2022.

———. 2022c. Agricultural Applied Climate Information System (AgACIS). Available at: http://agacis.rcc-acis.org/?fips=06013. Accessed November 2022.

Sawyer, J.O., T. Keeler-Wolf, and J.M. Evens. 2009. *A Manual of California Vegetation, Second Edition*. Sacramento, California: California Native Plant Society. 1,300 pp.

State Water Resources Control Board (State Water Board). 2019. *State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State [For Inclusion in the Water Quality Control plans for Inland Surface Waters and Enclosed Bays and Estuaries and Ocean Waters of California].* Adopted April 2.

University of California, Berkeley. 2022. Jepson eFlora. Available at: https://ucjeps.berkeley.edu/eflora/. Accessed November 2022.

U.S. Army Corps of Engineers (USACE). 1986. Regulatory Programs of the Corps of Engineers; Final Rule. *Federal Register* 51(219):41206–41260.

———. 2008. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)*. Technical Report ERDC/EL TR-080-28. Vicksburg, Mississippi: U.S. Army Engineer Research and Development Center.

———. 2016a. *Minimum Standards for Acceptance of Aquatic Resources Delineation Reports*. USACE Sacramento District. January. Available at: https://www.spk.usace.army.mil/Portals/12/documents/regulatory/jd/minimum-standards/Minimum_Standards_for_Delineation_with_Template-final.pdf. Accessed November 2022.

———. 2016b. *Updated Map and Drawing Standards for the South Pacific Division Regulatory Program*. USACE South Pacific Division. February 10. Available at: https://www.spd.usace.army.mil/DesktopModules/ArticleCS/Print.aspx?PortalId=13&ModuleId=26247&Article=651327. Accessed November 2022.

U.S. Fish and Wildlife Service (USFWS). 2022. National Wetlands Inventory. Available at: http://www.fws.gov/wetlands/. Accessed November 2022.

U.S. Geological Survey (USGS). 2022. National Hydrography Dataset GIS Data. Available at: http://nhd.usgs.gov/. Accessed November 2022.

APPENDIX A

Site Photographs

Photograph A-1. View facing southeast showing typical upland conditions in the central portion of the proposed project area. Photograph taken November 21, 2022.

Photograph A-2. View facing east showing seasonal wetland habitat in the southern portion of the survey area. Photograph taken November 21, 2022.

Photograph A-3. View facing northwest showing upland and seasonal wetland swale habitat in the western portion of the survey area. Photograph taken November 21, 2022.

Photograph A-4. View facing north showing the portion of the Wavecrest Watercourse that is situated east of the central portion of the proposed project area. Photograph taken November 21, 2022.

Photograph A-5. View facing southwest showing the portion of the Wavecrest Watercourse that is situated in the north portion of the survey area. Photograph taken November 21, 2022.

Photograph A-6. View facing east showing the culvert at the east end of the Wavecrest Watercourse. Photograph taken November 21, 2022.

Photograph A-7. View facing southwest showing the east portion of the Wavecrest Watercourse and survey area. Photograph taken November 22, 2022.

Photograph A-8. View facing southwest showing typical conditions in the east portion of the survey area. Photograph taken November 22, 2022.

Photograph A-9. View facing southeast showing upland sample point UPL-1. Photograph taken November 22, 2022.

Photograph A-10. View facing northeast showing upland sample point UPL-2. Photograph taken November 22, 2022.

Photograph A-11. View facing south showing wetland sample point WET-1. Photograph taken November 22, 2022.

Photograph A-12. View facing south showing wetland sample point WET-2. Photograph taken November 22, 2022.

Photograph A-13. View facing east showing wetland sample point WET-3. Photograph taken November 22, 2022.

APPENDIX B

Wetland Determination Data Forms

WETLAND DETERMINATION DATA FORM — Arid West Region

Project/Site: Smith Field City/County: Half Moon Bay Sampling Date: 11/22/2022

Applicant/Owner: City Of Half Moon Bay State: CA Sampling Point: UPL-1

Investigator(s): Erich Schickenberg, Charlotte Soergel Section, Township, Range: Sec. N/A T5S R5W

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): <5%

Subregion (LRR): LRR C Lat: 37.4494 Long: -122.434 Datum: WGS 84

Soil Map Unit Name: WmA - Watsonville loam, nearly level NWI classification: No

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS — Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?		X
Hydric Soil Present?		X
Wetland Hydrology Present?		X

Is the Sampled Area within a Wetland? Yes ___ No X

Remarks: Late season vegetation

VEGETATION — Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum: (Plot size:)			
1.			
2.			
3.			
4.			
	0	=Total Cover	
Sapling/Shrub Stratum: (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	0	=Total Cover	
Herb Stratum: (Plot size: 5 feet)			
1. *Bromus hordeaceus*	85	Y	FACU
2. *Vicia tetrasperma*	12	N	UPL
3. *Convolvulus arvensis*	3	N	UPL
4.			
5.			
6.			
7.			
8.			
	100	=Total Cover	
Woody Vine Stratum: (Plot size:)			
1.			
2.			
	0	=Total Cover	

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Domant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	85	x 4 =	340
UPL species	15	x 5 =	75
Column Totals:	100 (A)		415 (B)

Prevalence Index = B/A= 4.15

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Profice supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ___ No X

Remarks:

SOIL

Sampling Point: UPL-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type [1]	Loc [2]	Texture	Remarks
14	10YR 2/1	100		0	NA	NA	Sandy Clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR C**)
___ 1 cm Muck (A9) (**LRR D**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) (**LRR C**)
___ 2 cm Muck (A10) (**LRR B**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):
Type: none
Depth (inches): 0

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary indicators (minimum of one required: check all that apply):

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1) (**Nonriverine**)
___ Sediment Deposits (B2) (**Nonriverine**)
___ Drift Deposits (B3) (**Nonriverine**)
___ Surface Soil Cracks (B6)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Biotic Crust (B12)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres along Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary indicators (2 or more required):

___ Water Marks (B1) (**Riverine**)
___ Sediment Deposits (B2) (**Riverine**)
___ Drift Deposits (B3) (**Riverine**)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___
Water Table Present? Yes ___ No X Depth (inches): ___
Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ___

Wetland Hydrology Present? **Yes** ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No hydro, nearby monitoring wells

WETLAND DETERMINATION DATA FORM — Arid West Region

Project/Site: Smith Field City/County: Half Moon Bay Sampling Date: 11/22/2022

Applicant/Owner: City Of Half Moon Bay State: Calif Sampling Point: UPL-2

Investigator(s): Erich Schickenberg, Charlotte Soergel Section, Township, Range: Sec. N/A T5S R5W

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): ______ Slope (%): <5%

Subregion (LRR): LRR C Lat: 37.4484 Long: -122.435 Datum: WGS 84

Soil Map Unit Name: WmA - Watsonville loam, nearly level NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ______ (If no, explain in Remarks.)

Are Vegetation ______, Soil ______, or Hydrology ______ significantly disturbed? Are "Normal Circumstances" present? Yes X No ______

Are Vegetation ______, Soil ______, or Hydrology ______ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS — Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes:		No:	X	**Is the Sampled Area within a Wetland?** Yes ______ No X
Hydric Soil Present?	Yes:		No:	X	
Wetland Hydrology Present?	Yes:		No:	X	

Remarks:

VEGETATION — Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum: (Plot size:)			
1.			
2.			
3.			
4.			
	0	=Total Cover	
Sapling/Shrub Stratum: (Plot size: BAPI 10 ft adjacent, 15 ft)			
1.			
2.			
3.			
4.			
5.			
	0	=Total Cover	
Herb Stratum: (Plot size: 5 ft)			
1. *Phalaris aquatica*	95	Y	FACU
2. *Vicia tetrasperma*	5	N	UPL
3.			
4.			
5.			
6.			
7.			
8.			
	100	=Total Cover	
Woody Vine Stratum: (Plot size:)			
1.			
2.			
	0	=Total Cover	

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Domant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	95	x 4 =	380
UPL species	5	x 5 =	25
Column Totals:	100 (A)		405 (B)
Prevalence Index = B/A=			4.05

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Profice supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

Remarks:

SOIL

Sampling Point: UPL-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type [1]	Loc [2]	Texture	Remarks
5	10YR 4/4	100		0	NA	NA	Sandy Clay	Imported fill
9	10YR 2/1	98	2.5YR 2.5/3	2	C	M	Silty Clay Loam	Mixed with fill chunks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR C**)
___ 1 cm Muck (A9) (**LRR D**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) (**LRR C**)
___ 2 cm Muck (A10) (**LRR B**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):
Type: NA
Depth (inches): 0

Hydric Soil Present? Yes ___ No X

Remarks: Top 5 in imported fill. Disturbed soils.

HYDROLOGY

Wetland Hydrology Indicators:

Primary indicators (minimum of one required: check all that apply):

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1) (**Nonriverine**)
___ Sediment Deposits (B2) (**Nonriverine**)
___ Drift Deposits (B3) (**Nonriverine**)
___ Surface Soil Cracks (B6)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Biotic Crust (B12)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres along Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary indicators (2 or more required):

___ Water Marks (B1) (**Riverine**)
___ Sediment Deposits (B2) (**Riverine**)
___ Drift Deposits (B3) (**Riverine**)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No X Depth (inches): ____
Water Table Present? Yes ____ No X Depth (inches): ____
Saturation Present? (includes capillary fringe) Yes ____ No X Depth (inches): ____

Wetland Hydrology Present? Yes ____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: NA

Remarks: No hydro

WETLAND DETERMINATION DATA FORM — Arid West Region

Project/Site: Smith Field City/County: Half Moon Bay Sampling Date: 11/22/2022

Applicant/Owner: City Of Half Moon Bay State: CA Sampling Point: LCLUP/CCA WET-1

Investigator(s): Erich Schickenberg, Charlotte Soergel Section, Township, Range: Sec. N/A T5S R5W

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): Concave Slope (%): <5%

Subregion (LRR): LRR C Lat: 37.4491 Long: -122.435 Datum: WGS 84

Soil Map Unit Name: WmA - Watsonville loam, nearly level NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS — Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes: X	No:			
Hydric Soil Present?	Yes:	No: X	**Is the Sampled Area within a Wetland?**	**Yes**	**No X**
Wetland Hydrology Present?	Yes:	No: X			

Remarks:

VEGETATION — Use scientific names of plants.

Tree Stratum: (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	=Total Cover	
Sapling/Shrub Stratum: (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	0	=Total Cover	
Herb Stratum: (Plot size: 5 ft)			
1. *Juncus phaeocephalus*	95	Y	FACW
2. *Bromus hordeaceus*	3	N	FACU
3. *Convolvulus arvensis*	2	N	UPL
4.			
5.			
6.			
7.			
8.			
	100	=Total Cover	
Woody Vine Stratum: (Plot size:)			
1.			
2.			
	0	=Total Cover	

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Domant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	95	x 2 =	190
FAC species	0	x 3 =	0
FACU species	3	x 4 =	12
UPL species	2	x 5 =	10
Column Totals:	100 (A)		212 (B)
Prevalence Index = B/A=			2.12

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

____ Morphological Adaptations[1] (Profice supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** ____

Remarks:

SOIL

Sampling Point: LCLUP/CCA WET-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type [1]	Loc [2]	Texture	Remarks
14	10YR 2/1	99	10YR 4/6	1	C	M	Silty Clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR C**)
___ 1 cm Muck (A9) (**LRR D**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) (**LRR C**)
___ 2 cm Muck (A10) (**LRR B**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: none
Depth (inches): 0

Hydric Soil Present? Yes ___ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary indicators (minimum of one required: check all that apply):

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1) (**Nonriverine**)
___ Sediment Deposits (B2) (**Nonriverine**)
___ Drift Deposits (B3) (**Nonriverine**)
___ Surface Soil Cracks (B6)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Biotic Crust (B12)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres along Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary indicators (2 or more required):

___ Water Marks (B1) (**Riverine**)
___ Sediment Deposits (B2) (**Riverine**)
___ Drift Deposits (B3) (**Riverine**)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___
Water Table Present? Yes ___ No X Depth (inches): ___
Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ___

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No hydro

WETLAND DETERMINATION DATA FORM — Arid West Region

Project/Site: Smith Field City/County: Half Moon Bay Sampling Date: 11/22/2022

Applicant/Owner: City Of Half Moon Bay State: Calif Sampling Point: LCLUP/CCA WET-2

Investigator(s): Erich Schickenberg, Charlotte Soergel Section, Township, Range: Sec. N/A T5S R5W

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): <5%

Subregion (LRR): LRR C Lat: 37.4481 Long: -122.436 Datum: WGS 84

Soil Map Unit Name: WmA - Watsonville loam, nearly level NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS — Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes: X	No:	Is the Sampled Area within a Wetland?	Yes ___	No X
Hydric Soil Present?	Yes:	No: X			
Wetland Hydrology Present?	Yes: X	No:			

Remarks:

VEGETATION — Use scientific names of plants.

Tree Stratum: (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	=Total Cover	
Sapling/Shrub Stratum: (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	0	=Total Cover	
Herb Stratum: (Plot size: 5 feet)			
1. *Polypogon monspeliensis*	65	Y	FACW
2. *Juncus patens*	10	N	FACW
3. *Carex praegracilis*	10	N	FACW
4. *Helminthotheca echioides*	5	N	FAC
5. *Mentha pulegium*	2	N	OBL
6. *Rumex crispus*	2	N	FAC
7. *Lolium perenne*	1	N	FAC
8.			
	95	=Total Cover	
Woody Vine Stratum: (Plot size:)			
1.			
2.			
	0	=Total Cover	

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Domant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	2	x 1 =	2
FACW species	85	x 2 =	170
FAC species	8	x 3 =	24
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	95 (A)		196 (B)
Prevalence Index = B/A=			2.06

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Profice supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ___

Remarks:

SOIL

Sampling Point: LCLUP/CCA WET-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type [1]	Loc [2]	Texture	Remarks
14	10YR 2/1	98	2.5YR 2.5/3	2	C	M	Silty Clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR C**)
___ 1 cm Muck (A9) (**LRR D**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) (**LRR C**)
___ 2 cm Muck (A10) (**LRR B**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):
Type: ______
Depth (inches): ______

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary indicators (minimum of one required: check all that apply):

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1) (**Nonriverine**)
___ Sediment Deposits (B2) (**Nonriverine**)
___ Drift Deposits (B3) (**Nonriverine**)
___ Surface Soil Cracks (B6)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Biotic Crust (B12)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
X Oxidized Rhizospheres along Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary indicators (2 or more required):

___ Water Marks (B1) (**Riverine**)
___ Sediment Deposits (B2) (**Riverine**)
___ Drift Deposits (B3) (**Riverine**)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:
Surface Water Present? Yes ___ No X Depth (inches): ______
Water Table Present? Yes ___ No X Depth (inches): ______
Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ______

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM — Arid West Region

Project/Site: Smith Field City/County: Half Moon Bay Sampling Date: 11/22/2022

Applicant/Owner: City Of Half Moon Bay State: Calif Sampling Point: LCLUP/CCA WET-3

Investigator(s): Erich Schickenberg, Charlotte Soergel Section, Township, Range: Sec. N/A T5S R5W

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): <5%

Subregion (LRR): LRR C Lat: 37.4488 Long: -122.436 Datum: WGS 84

Soil Map Unit Name: WmA - Watsonville loam, nearly level NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS — Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes: X	No:	**Is the Sampled Area within a Wetland?**	**Yes** ____ **No** X
Hydric Soil Present?	Yes:	No: X		
Wetland Hydrology Present?	Yes:	No: X		

Remarks:

VEGETATION — Use scientific names of plants.

Tree Stratum: (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	=Total Cover	
Sapling/Shrub Stratum: (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	0	=Total Cover	
Herb Stratum: (Plot size: 5 ft)			
1. *Carex praegracilis*	60	Y	FACW
2. *Bromus hordeaceus*	22	Y	FACU
3. *Phalaris aquatica*	10	N	FACU
4. *Vicia tetrasperma*	3	N	UPL
5. *Juncus occidentalis*	3	N	FACW
6. *Convolvulus arvensis*	2	N	UPL
7.			
8.			
	100	=Total Cover	
Woody Vine Stratum: (Plot size:)			
1.			
2.			
	0	=Total Cover	

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of Domant Species That Are OBL, FACW, or FAC:	50	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	63	x 2 =	126	
FAC species	0	x 3 =	0	
FACU species	32	x 4 =	128	
UPL species	5	x 5 =	25	
Column Totals:	100	(A)	279	(B)
Prevalence Index = B/A=			2.79	

Hydrophytic Vegetation Indicators:

____ Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

____ Morphological Adaptations[1] (Profice supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** ____

Remarks:

SOIL

Sampling Point: LCLUP/CCA WET-3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type [1]	Loc [2]	Texture	Remarks
7	10YR 2/1	100		0	NA	NA	None Observed	
16	10YR 3/1	93	7.5YR 4/6	7	C	M	Silty Clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR C**)
___ 1 cm Muck (A9) (**LRR D**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) (**LRR C**)
___ 2 cm Muck (A10) (**LRR B**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):
Type: na
Depth (inches): 0

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary indicators (minimum of one required: check all that apply):

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1) (**Nonriverine**)
___ Sediment Deposits (B2) (**Nonriverine**)
___ Drift Deposits (B3) (**Nonriverine**)
___ Surface Soil Cracks (B6)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Biotic Crust (B12)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres along Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary indicators (2 or more required):

___ Water Marks (B1) (**Riverine**)
___ Sediment Deposits (B2) (**Riverine**)
___ Drift Deposits (B3) (**Riverine**)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___
Water Table Present? Yes ___ No X Depth (inches): ___
Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ___

Wetland Hydrology Present? **Yes** ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No hydro

APPENDIX F

Stormwater Calculations and C.3 and C.6 Development Review Checklist

LEGEND

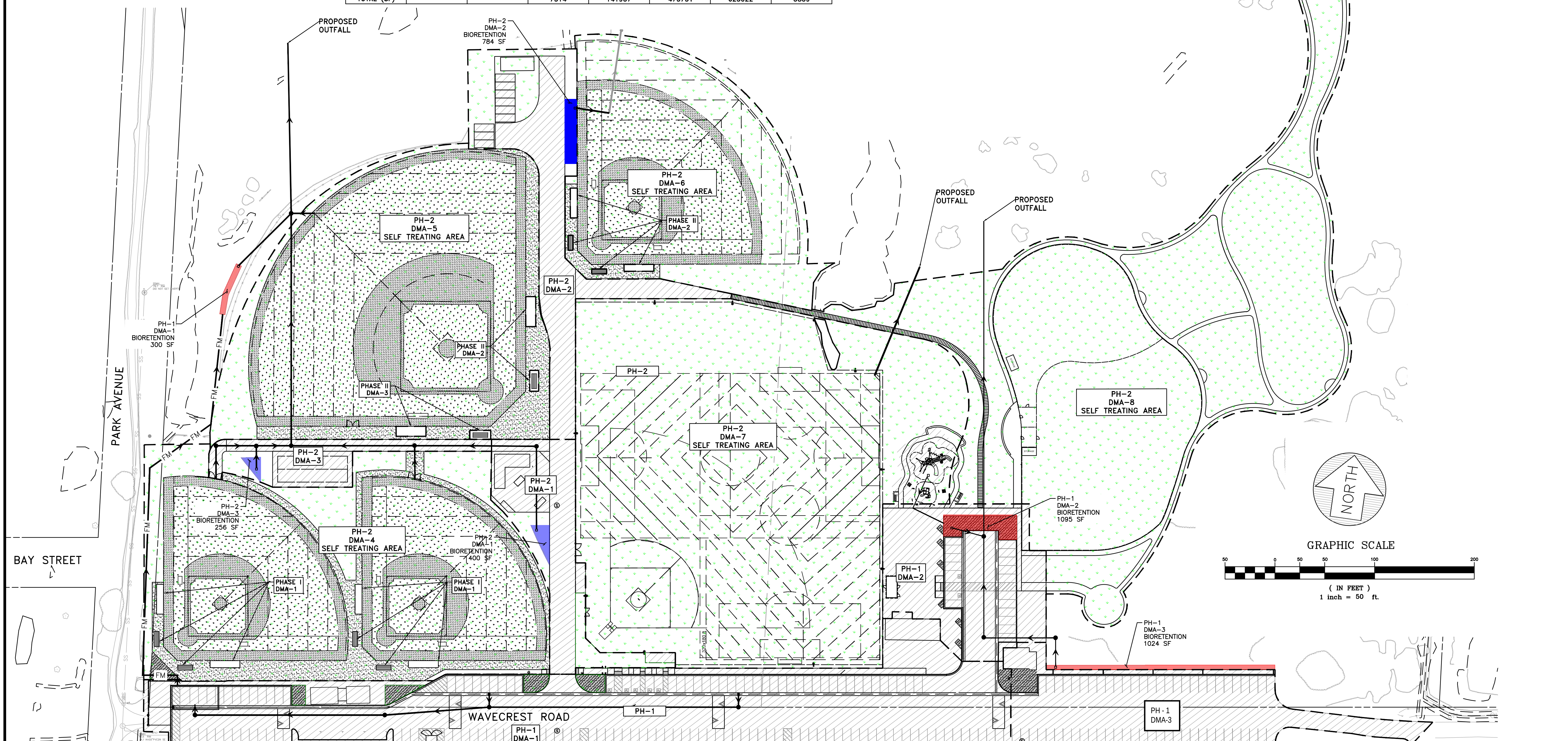
(red)	PHASE I – BIORETENTION AREA REQUIRED
(blue)	PHASE II – BIORETENTION AREA REQUIRED
	PROPOSED PERVIOUS AREA
	PROPOSED IMPERVIOUS AREA
	PROPOSED STORM DRAIN LINE
	WETLAND AREA
	PROPOSED STORM DRAIN LINE
FM	PROPOSED FORCE MAIN

AREA SUMMARY TABLE

BOUNDARY		BMP ID	CONVENTIONAL SURFACES			TOTAL (SF)	REQUIRED LID/BMPs (SF)
			IMPERVIOUS		PERVIOUS		
			ROOF (SF)	PAVEMENT (SF)	LANDSCAPE (SF)		
PHASE 1	DMA–1	BB	1809	66754	1350	69913	300
	DMA–2	BP	1163	19471	0	20634	1095
	DMA–3	BP	681	24109	0	24790	1024
PHASE 2	DMA–1	BB	925	10009	3049	13983	400
	DMA–2	BB	2526	14767	4879	22172	784
	DMA–3	BP	210	6847	1089	8146	256
	DMA–4	SELF TREATING	0	0	82418	82418	–
	DMA–5	SELF TREATING	0	0	79291	79291	–
	DMA–6	SELF TREATING	0	0	51073	51073	–
	DMA–7	SELF TREATING	0	0	123765	123765	–
	DMA–8	SELF TREATING	0	0	126837	126837	–
TOTAL (SF)	–	–	7314	141957	473751	623022	3859

CALCULATION SUMMARY:

1. ALL CALCULATIONS AND METHODOLOGIES TO SIZE THE BMPS WERE BASED ON THE SAN MATEO COUNTYWIDE WATER POLLUTION PREVENTION PROGRAM C.3 REGULATED PROJECTS GUIDE (VERSION 2.0).



CITY OF HALF MOON BAY SMITH FIELD STORMWATER MANAGEMENT PLAN		FIGURE 4
JOB NO.: 276005	DATE: [illegible]	

SAN MATEO COUNTYWIDE
Water Pollution Prevention Program
Clean Water. Healthy Community.

COUNTY OF SAN MATEO
Planning & Building Department
455 County Center, 2nd Floor
Redwood City, CA 94063
BLD: 650-599-7311/PLN: 650-363-1825
http://planning.smcgov.org

C.3 and C.6 Development Review Checklist

Municipal Regional Stormwater Permit (MRP 3.0)
Stormwater Controls for Development Projects
Effective Date: July 1, 2023

Project Information (Enter information only into blue-highlighted cells - other cells are locked.)

I.A Enter Project Data (For "C.3 Regulated Projects," data will be reported in the municipality's stormwater Annual Report.)

Project Name: Smith Field Parking Lot
Case Number:
Project Address: 400 Wavecrest Road, City of Half Moon Bay
Cross Street: Cabrillo Highway
Project APN: 065011050, 065011040
Project Watershed: None
Applicant Name: Cecilia Galeano
Project Phase No. 1
Applicant Phone: 415 534 7070 x104
Applicant Email Address: galeano@freyerlaureta.com

Development Type: (check all that apply)

- ☐ Small Single-Family Home Project (<10,000 sq. ft. of created and/or replaced impervious surface[1])
- ☐ Large Single-Family Home Project (≥10,000 sq. ft. of created and/or replaced impervious surface[1])
- ☐ Subdivision - Residential: Two or more lot development[2] — # of units:
- ☐ Multi-Family Residential — # of units:
- ☐ Commercial
- ☐ Industrial, Manufacturing
- ☐ Mixed-Use — # of units:
- ☐ New, widened or reconstructed roads related to parcel-based projects[3]
- ☐ Stand-alone pavement maintenance or construction work, or similar work related to parcel-based projects[3]
- ☑ Other redevelopment project as defined by MRP: creating, adding and/or replacing exterior existing impervious surface on a site where past development has occurred.
- ☐ Institutional: schools, libraries, jails, etc.
- ☐ Parks and trails, camp grounds, other recreational
- ☐ Kennels, Ranches
- ☐ Other, Please specify

Project Description (Don't include past or future phases)[4]: Developing a previously unpaved dirt lot into a paved parking lot in addition to renovations within Smith Field Park itself.

I.A.1 Total Project Area: 630,183 square feet (on and off-site)
I.A.2 Total Area on-site: 630,183 square feet (on the private property)
I.A.3 Total Area off-site: 0 square feet (frontage or area in Public Right of Way being improved)
I.A.4 Total Area of land disturbed during construction: 630,183 square feet
(Include all project on-site and off-site areas of clearing, grading, excavating and stockpiling)
I.A.5 Site slope: 2 %

I.A.6 Certification:

I certify that the information provided on this form is correct and acknowledge that, should the project exceed the amount of new and/or replaced impervious surface provided in this form, the as-built project may be subject to additional improvements.

☑ Preliminary Calculations Attached ☐ Final Calculations Attached ☐ Stormwater Control Plan Attached

Name of person completing the form: Cecilia Galeano
Title: Staff Engineer
Signature:
Date: 6/17/2024
Phone Number: 415 534 7070 x104
E-mail: galeano@freyerlaureta.com

---

[1] Small and Large Detached Single-Family Homes that are not part of a common plan of development[2].

[2] Common Plans of Development (subdivisions or contiguous, commonly owned lots, for the construction of two or more homes developed within 1 year of each other), and/or constructed with shared utilities, are not considered single family home projects by the MRP.

[3] Stand-alone roadway or pavement projects, or pavement work that is part of a project, creating or replacing 5,000 sq. ft. or more of impervious surface may be subject to C.3 requirements - both in public and private areas. See the Roads Factsheet at: www.flowstobay.org/newdevelopment

[4] Project description examples: 5-story office building, industrial warehouse, residential with five 4-story buildings for 200 condominiums, etc.

I.B Is the project a "C.3 Regulated Project" per MRP Provision C.3.b? (Use table below to make determination.)

I.B.1 Enter the amount of Impervious surface Retained, Replaced or Created[5] by the project (use DMA Table in Worksheet D):

Table I.B.1 Impervious[6] and Pervious[6] Surfaces (Match DMA Summary Table in Worksheet D, if applicable)

	Pre-Project	Post-Project			
	I.B.1.a	**I.B.1.b**	**I.B.1.c**	**I.B.1.d**	**I.B.1.e**
Impervious Surfaces (IS) (e.g., sidewalks, driveways, parking areas, patios, roads, rooftops, pools, pathways, etc.)	Existing (Pre-Project) Impervious Surface (sq.ft.)	Existing Impervious Surface to be Retained[5] (sq.ft.)	Existing Impervious Surface to be Replaced[5] (sq.ft.)	New Impervious Surface to be Created[5] (sq.ft.)	Post-Project Impervious Surface (sq.ft.) (=b+c+d)
On-site area (within the parcel/private site boundaries)	79717	0	79717	69554	149271 -
Off-site area (e.g., frontage/other area in Public Right of Way)	0	0	0	0	0 -
Subtotal:	79717 -	0 -	79717 -	69554 -	149271 -
Total Impervious Surface Replaced and Created: ***(sum of totals for columns I.B.1.c and I.B.1.d):***		**I.B.1.f**	149271 **- sq. ft.**		
Pervious Surfaces (PS) (e.g., landscaping, pervious pavement, bioretention areas, parking strips, street trees, etc. - both on-site and off-site)	Existing (Pre-Project) Pervious Surface (sq.ft.)				Post-project Pervious Surface (sq.ft.)
All pervious off-site area (e.g., frontage/Public Right of Way)[6]	0				0
Landscaping area on-site	550466				473751
Pervious Pavement area on-site	0			**I.B.1.g**	0
Green Roof area on-site	0				0
Subtotal:	550466 -	**50% Rule Calculation**			473751 -
Total Project Area (should be equal to **I.A.1**)	630183 -	**I.B.1.h**	- %		623022 -

I.B.2 Please review and attach additional worksheets as required below using the Total Impervious Surface (IS) Replaced or Created in cell **I.B.1.f** from Table **I.B.1** above and other factors:

	Review Steps	Check One: Yes	No	Attach Worksheet
I.B.2.a	Does this project involve any earthwork and/or stockpiling of soil, aggregates etc? If YES, then Check Yes, and Complete Worksheet A. If NO, then Check No, and go to I.B.2.b	☑	☐	A
I.B.2.b	Is **I.B.1.f** greater than or equal to 2,500 sq.ft? If YES, then the Project is subject to Provision C.3.i. - complete Worksheets B, C and go to I.B.2.c. If NO, go to I.B.2.i - or ask municipal staff for Small Project Checklist.	☑	☐	B, C
I.B.2.c	Does the 50% rule apply to the project? Is **I.B.1.h** 50% or more? If YES, site design, source control and treatment requirements apply to the entire on-site area. Continue to I.B.2.d If NO, these requirements apply only to the impervious surface created and/or replaced. Continue to I.B.2.d	☑	☐	
I.B.2.d	Is this project a Roadway Project and is **I.B.1.f** greater than or equal to 5,000 sq.ft? If YES, project may be C.3 Regulated Project. See the Roadways Fact Sheet at: www.flowstobay.org/newdevelopment If NO, go to I.B.2.e	☐	☑	
I.B.2.e	Is **I.B.1.f** greater than or equal to 5,000 sq.ft? (Or 10,000 sq.ft. for a Large Single-Family Home?) If YES, project is a C.3 Regulated Project - complete Worksheet D. Then continue to I.B.2.f. If NO, then skip to I.B.2.g. - or ask municipal staff for Small Project Checklist.	☑	☐	D
I.B.2.f	Is **I.B.1.f** greater than or equal to 43,560 sq.ft, (i.e., one acre)? If YES, project may be subject to Hydromodification Management requirements - complete Worksheet E then go to I.B.2.g. If NO, then go to I.B.2.g.	☑	☐	E
I.B.2.g	Is **I.A.4** greater than or equal to 43,560 sq.ft., (i.e., one acre)? [**SWRS Site**: Subject to monthly inspections from Oct 1 to April 30; weekly inspections if located in ASBS Watershed] For more information see: www.swrcb.ca.gov/water_issues/programs/stormwater/construction.shtml If YES, check box, obtain coverage under CA Construction General Permit & submit Notice of Intent to municipality- go to I.B.2.h. If NO, then go to I.B.2.h.	☑	☐	
I.B.2.h	Is this a Special Project or does it have the potential to be a Special Project? If YES, complete Worksheet F - then continue to I.B.2.i. If NO, go to I.B.2.i.	☐	☑	F
I.B.2.i	Is this project a **Hillside Site**? Or a **High Priority Site**? Hillside Sites include those with ≥ 20% slope (see **I.A.5**) disturbing greater than or equal to 5,000 square feet. High Priority Sites include: 1) All sites where the scope of development or land alteration requires grading in excess of 250 c.y. or requiring a Grading or Land Clearing Permit; 2) Project with land disturbance of: a.) 1 sq. ft. or greater within the Fitzgerald Marine Reserve ASBS Watershed, b.) 1,000 sq. ft. or greater for areas within 100 feet of a creek, wetland, or coastline; 3) Any public project involving work within a waterway or any private project involving work within a waterway that requires a permit issued by the Planning and Building Department. [**SWRS Site:** Subject to monthly inspections from Oct 1 to April 30; weekly inspections if located in ASBS Watershed] If YES, complete section G-2 on Worksheet G - then continue to I.B.2.j. and complete the Certification in Section **I.A.6** If NO, then go to I.B.2.j and complete the Certification in Section **I.A.6**	☐	☑	G
I.B.2.j	**For Municipal Staff Use Only**: Are you using Alternative Certification for the project review? If YES, then fill out section G-1 on Worksheet G. Fill out other sections of Worksheet G as appropriate. See cell **I.B.1.g** above - Is the project installing 3,000 square feet or more of pervious pavement? If YES, then fill out section G-3 on Worksheet G. Add to Municipal Inspection Lists (C.3 and C.3.h)	☐ ☐	☐ ☐	G

[5] "Retained" means to leave existing impervious surfaces in place; "Replaced" means to install new impervious surface where existing impervious surface is removed anywhere on the same site; and "Created" means the amount of new impervious surface being proposed which exceeds the total amount of existing impervious surface at the site.

[6] Per the MRP, pavement that meets the following definition of pervious pavement is NOT an impervious surface: pavement that stores and infiltrates rainfall at a rate equal to immediately surrounding unpaved, landscaped areas, or that stores and infiltrates the rainfall runoff volume described in Provision C.3. Gravel pavement is not pervious unless it is constructed using pervious pavement system designs or runoff flows to adjacent landscaping. Pervious off-site areas include landscaped areas such as parking strips and street trees; off-site pervious pavement includes pervious concrete gutters and interlocking permeable concrete paver sidewalks, etc. 7/1/23

Worksheet A

C.6 – Construction Stormwater BMPs

Identify Plan sheet showing the appropriate construction Best Management Practices (BMPs) used on this project:
(Applies to all projects with earthwork)

Yes	Plan Sheet	Best Management Practice (BMP)
☑		Control and prevent the discharge of all potential pollutants, including pavement cutting wastes, paints, concrete, petroleum products, chemicals, wash water or sediments, rinse water from architectural copper, and non-stormwater discharges to storm drains and watercourses.
☑		Store, handle, and dispose of construction materials/wastes properly to prevent contact with stormwater.
☑		Do not clean, fuel, or maintain vehicles on-site, except in a designated area where wash water is contained and treated.
☑		Train and provide instruction to all employees/subcontractors re: construction BMPs.
☑		Protect all storm drain inlets in vicinity of site using sediment controls such as berms, fiber rolls, or filters.
☑		Limit construction access routes and stabilize designated access points.
☑		Attach the San Mateo Countywide Water Pollution Prevention Program's construction BMP plan sheet to project plans and require contractor to implement the applicable BMPs on the plan sheet.
☑		Use temporary erosion controls to stabilize all denuded areas until permanent erosion controls are established.
☑		Delineate with field markers clearing limits, easements, setbacks, sensitive or critical areas, buffer zones, trees, and drainage courses.
☑		Provide notes, specifications, or attachments describing the following: ■ Construction, operation and maintenance of erosion and sediment controls, include inspection frequency; ■ Methods and schedule for grading, excavation, filling, clearing of vegetation, and storage and disposal of excavated or cleared material; ■ Specifications for vegetative cover & mulch, include methods and schedules for planting and fertilization; ■ Provisions for temporary and/or permanent irrigation.
☑		Perform clearing and earth moving activities only during dry weather.
☑		Use sediment controls or filtration to remove sediment when dewatering and obtain all necessary permits.
☑		Trap sediment on-site, using BMPs such as sediment basins or traps, earthen dikes or berms, silt fences, check dams, soil blankets or mats, covers for soil stock piles, etc.
☑		Divert on-site runoff around exposed areas; divert off-site runoff around the site (e.g., swales and dikes).
☑		Protect adjacent properties and undisturbed areas from construction impacts using vegetative buffer strips, sediment barriers or filters, dikes, mulching, or other measures as appropriate.

Worksheet B

C.3 – Source Controls

Select appropriate source controls and identify the detail/plan sheet where these elements are shown.

Yes	Detail/Plan Sheet No.	Features that require source control	Source Control Measures (Refer to Local Source Control List for detailed requirements)
☑		Storm Drain	Mark on-site inlets with the words “No Dumping! Flows to Bay” or equivalent.
☑		Floor Drains	Plumb interior floor drains to sanitary sewer [or prohibit].
☐		Parking garage	Plumb interior parking garage floor drains to sanitary sewer.[8]
☑		Landscaping	■ Retain existing vegetation as practicable. ■ Follow ReScape (www.rescapeca.org) principles. Select diverse species appropriate to the site. Include plants that are pest- and/or disease-resistant, drought-tolerant, and/or attract beneficial insects. ■ Minimize use of pesticides and quick-release fertilizers. ■ Use efficient irrigation system; design to minimize runoff.
☐		Pool/Spa/Fountain	Provide connection to the sanitary sewer to facilitate draining.[8]
☐		Food Service Equipment (non-residential)	Provide sink or other area for equipment cleaning, which is: ■ Connected to a grease interceptor prior to sanitary sewer discharge.[8] ■ Large enough for the largest mat or piece of equipment to be cleaned. ■ Indoors or in an outdoor roofed area designed to prevent stormwater run-on and run-off, and signed to require equipment washing in this area.
☑		Refuse Areas	■ Provide a roofed and enclosed area for dumpsters, recycling containers, etc., designed to prevent stormwater run-on and runoff. ■ Connect any drains in or beneath dumpsters, compactors, and tallow bin areas serving food service facilities to the sanitary sewer.[8] ■ For more information, see the New Development Projects Litter Reduction Fact Sheet at: https://www.flowstobay.org/wp-content/uploads/2021/06/New-Dev-Litter-Reduction-Fact-Sheet-
☐		Outdoor Process Activities[9]	Perform process activities either indoors or in roofed outdoor area, designed to prevent stormwater run-on and runoff, and to drain to the sanitary sewer.[8]
☑		Outdoor Equipment/ Materials Storage	■ Cover the area or design to avoid pollutant contact with stormwater runoff. ■ Locate area only on paved and contained areas. ■ Roof storage areas that will contain non-hazardous liquids, drain to sanitary sewer[8], and contain by berms or similar.
☐		Vehicle/ Equipment Cleaning	■ Roofed, pave and berm wash area to prevent stormwater run-on and runoff, plumb to the sanitary sewer[8], and sign as a designated wash area. ■ Commercial car wash facilities shall discharge to the sanitary sewer.[8]
☐		Vehicle/ Equipment Repair and Maintenance	■ Designate repair/maintenance area indoors, or an outdoors area designed to prevent stormwater run-on and runoff and provide secondary containment. Do not install drains in the secondary containment areas. ■ No floor drains unless pretreated prior to discharge to the sanitary sewer.[8] ■ Connect containers or sinks used for parts cleaning to the sanitary sewer.[8]
☐		Fuel Dispensing Areas	■ Fueling areas shall have impermeable surface that is a) minimally graded to prevent ponding and b) separated from the rest of the site by a grade break. ■ Canopy shall extend at least 10 ft. in each direction from each pump and drain away from fueling area.
☐		Loading Docks	■ Cover and/or grade to minimize run-on to and runoff from the loading area. ■ Position downspouts to direct stormwater away from the loading area. ■ Drain water from loading dock areas to the sanitary sewer.[8] ■ Install door skirts between the trailers and the building.
☑		Fire Sprinklers	Design for discharge of fire sprinkler test water to landscape or sanitary sewer.[8]
☑		Miscellaneous Drain or Wash Water	■ Drain condensate of air conditioning units to landscaping. Large air conditioning units may connect to the sanitary sewer.[8] ■ Roof drains from equipment drain to landscaped area where practicable. ■ Drain boiler drain lines, roof top equipment, all wash water to sanitary sewer.[8]
☐		Architectural Copper Rinse Water	■ Drain rinse water to landscaping, discharge to sanitary sewer[8], or collect and dispose properly offsite. See flyer “Requirements for Architectural Copper.”[10]

8 Any connection to the sanitary sewer system is subject to sanitary district approval.
9 Businesses that may have outdoor process activities/equipment include machine shops, auto repair, industries with pretreatment facilities.
10 See the Flowstobay website: https://flowstobay.org/wp-content/uploads/2020/04/ArchitecturalcopperBMPs.pdf

Worksheet C

Low Impact Development – Site Design Measures

Select Appropriate Site Design Measures *(Required for C.3 Regulated Projects; all other projects are encouraged to implement site design measures, which may be required at municipality discretion.) Projects that create and/or replace between 2,500 and 5,000 sq.ft. of impervious surface, and detached single family homes that create/replace between 2,500 and 10,000 sq.ft. of impervious surface, must include* ***one of Site Design Measures a through f*** *(Provision C.3.i requirements).*[10] *Larger (>=5,000 sq.ft) projects must also include applicable Site Design Measures g through i. Consult with municipal staff about requirements for your project.*

Select appropriate site design measures and Identify the Plan Sheet where these elements are shown.

Yes	Plan Sheet No.	Site Design Measures
☐		a. Direct roof runoff into cisterns or rain barrels and use rainwater for irrigation or other non-potable use.
☑		b. Direct roof runoff onto vegetated areas.
☐		c. Direct runoff from sidewalks, walkways, and/or patios onto vegetated areas.
☐		d. Direct runoff from driveways and/or uncovered parking lots onto vegetated areas.
☐		e. Construct sidewalks, walkways, and/or patios with pervious or permeable surfaces. Use the specifications in the C.3 Regulated Projects Guide downloadable at www.flowstobay.org/newdevelopment
☐		f. Construct bike lanes, driveways, and/or uncovered parking lots with pervious surfaces. Use the specifications in the C.3 Regulated Projects Guide downloadable at www.flowstobay.org/newdevelopment
☑		g. Limit disturbance of natural water bodies and drainage systems; minimize compaction of highly permeable soils; protect slopes and channels; and minimize impacts from stormwater and urban runoff on the biological integrity of natural drainage systems and water bodies;
☑		h. Conserve natural areas, including existing trees, other vegetation and soils.
☑		i. Minimize impervious surfaces.

Regulated Projects can also consider the following site design measures to reduce treatment system sizing:

Yes	Plan Sheet No.	Site Design Measures
☑		j. Self-treating area (see Section 4.2 of the C.3 Regulated Projects Guide)
☐		k. Self-retaining area (see Section 4.3 of the C.3 Regulated Projects Guide)

[10] See MRP Provision C.3.a.i.(6) for non-C.3 Regulated Projects, C.3.c.i.(2)(a) for Regulated Projects, C.3.i for projects that create/replace between 2,500 and 5,000 sq.ft. of impervious surface and detached single family homes that create/replace between 2,500 and 10,000 sq.ft. of impervious surface.

Worksheet D

C.3 Regulated Projects and Non-Regulated GI Projects

Stormwater Treatment Measures and Site Design Measures by Drainage Management Area (DMA)

Check all applicable boxes, answer questions and fill in cells related to the site design and treatment measure(s) included in the project.

Drainage Management Area Summary Table

Complete the information below at the Entitlement, Building Permit and Certificate of Occupancy stages for Regulated C.3 Projects and Non-Regulated Green Infrastructure Projects. (The first four cells are automatically filled in from the Project Info sheet.)

Project Name:	0 Smith Field Park	
Project Address:	0 400 Wavecrest Road, City of Half Moon Bay	
Cross Streets:	0 Cabrillo Highway	
APN:	0 065011050, 065011040	
Special Project[11]?		**of C.3.d amount of runoff treated by Non-LID Systems on the Special Project site.**
C.3 Regulated?		
Public or Private Project?		Public projects are those on public property or ROW; private projects are on privately-owned property but can include improvements in the public ROW required as part of the project.

DMA Identification Number	**Impervious Area[12] (ft^2)**	**Pervious Area[13] (ft^2)**	**Type of Site Design Measure or Treatment Measure[14]**	**Sizing Criteria Used[15]**	**Size Required[16]**	**Size Provided**
Example DMA 1	5,000	2,000	Bioretention unlined with underdrain	2c: Flow	208 ft2	220 ft2
Example DMA 2	1,000	1,000	Self-retaining area	Other	< 2:1 ratio	1:1 ratio
Example DMA 3	1,000	-	Infiltration trench	1b: Volume	1,000 ft3	1,100 ft3
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
add rows, if needed						
TOTALS	149,271 -	473,751 -	N/A	N/A	N/A	N/A
Totals from Project Info Sheet Cells	-	-				

Is the project harvesting and using rainwater? Yes ☐

Rainwater Harvesting/Use Measures:

☐ Rainwater Harvesting for indoor non-potable water use

☐ Rainwater Harvesting for landscape irrigation use

A long term Operations and Maintenance (O&M) Agreement and Plan for this project will be required. Please contact the municipality for an agreement template and/or consult the C.3 Regulated Projects Guide and table of contents at www.flowstobay.org/newdevelopment for maintenance plan templates for specific facility types.

11 Special Projects are smart growth, high density, transit-oriented or affordable housing developments with the criteria defined in Provision C.3.e.ii.(2), (3) or (4) (see Worksheet F).
12 The sq.ft. of impervious area within the Drainage Management Area
13 The sq.ft. of pervious area within the Drainage Management Area
14 "Lined" refers to an impermeable liner placed on the bottom of a bioretention area, such that no infiltration into native soil occurs.
15 Select from the menu which of the following Provision C.3.d.i hydraulic sizing methods was used, if any. Volume based approaches: 1(a) Urban Runoff Quality Management approach, or 1(b) 80% capture approach (recommended volume-based approach). Flow-based approaches: 2(a) 10% of 50-year peak flow approach, 2(b) 2 times the 85th percentile rainfall intensity approach, 2(c) 0.2-Inch-per-hour intensity approach (recommended flow-based approach - also known as the 4% rule for bioretention), or 3 Combination flow and volume-based approach. "Other" is used for Site Design Measures such as Self-Retaining or Self-Treating Areas.
16 Each DMA should drain to one treatment area (unless it is self-treating or self-retaining). If multiple DMAs are draining to one treatment area, they should be combined into one DMA. If one DMA drains to multiple treatment areas, that DMA should be split up so there is one DMA per treatment area (which allows the treatment area to be properly sized).

Public
[illegible] & Cistern (6,356 CF)

Worksheet E
Hydromodification Management

E-1 Is the project a Hydromodification[17] Management (HM) Project?

E-1.1 Is the total impervious area increased over the pre-project condition?

- ☑ Yes. Continue to E-1.2
- ☐ No. Go to Item E-1.3 and check "No."

E-1.2 Is the site located in an HM Control Area per the HM Control Areas map (Appendix H of the C.3 Regulated Projects Guide)?

- ☑ Yes. Go to E-1.3 and Check "Yes".
- ☐ No. Attach map, indicating project location. Go to Item E-1.3 and check "No."

E-1.3 Is the project a Hydromodification Management Project?

- ☑ Yes. The project is subject to HM requirements in Provision C.3.g of the Municipal Regional Stormwater Permit.
- ☐ No. The project is EXEMPT from HM requirements.

► If the project is subject to the HM requirements, incorporate in the project flow duration control measures designed such that post-project discharge rates and durations match pre-project discharge rates and durations.

► The Bay Area Hydrology Model (BAHM) has been developed to help size flow duration controls. See www.clearcreeksolutions.info/downloads. Guidance is provided in Chapter 7 of the C.3 Regulated Projects Guide.

E-2 Incorporate HM Controls (if required)

Are the applicable items provided with the Plans?

Yes	No	NA	
☑	☐	☐	Site plans with pre- and post-project impervious surface areas, surface flow directions of entire site, locations of flow duration controls and site design measures per HM site design requirement
☑	☐	☐	Soils report or other site-specific document showing soil type(s) on site
☑	☐	☐	If project uses the Bay Area Hydrology Model (BAHM), a list of model inputs and outputs.
☐	☐	☑	If project uses custom modeling, a summary of the modeling calculations with corresponding graph showing curve matching (existing, post-project, and post-project with HM controls curves), goodness of fit, and (allowable) low flow rate.
☐	☐	☑	If project uses the Impracticability Provision, a listing of all applicable costs and a brief description of the alternative HM project (name, location, date of start up, entity responsible for maintenance).
☐	☐	☑	If the project uses alternatives to the default BAHM approach or settings, a written description and rationale.

17 Hydromodification is the change in a site's runoff hydrograph, including increases in flows and durations that results when land is developed (made more impervious). The effects of hydromodification include, but are not limited to, increased bed and bank erosion of receiving streams, loss of habitat, increased sediment transport and/or deposition, and increased flooding. Hydromodification control measures are designed to reduce these effects.

Worksheet F
Special Projects

Complete this worksheet for projects that appear to meet the definition of "Special Project", per Provision C.3.e.ii of the Municipal Regional Stormwater Permit (MRP). The form assists in determining whether a project meets Special Project criteria, and the percentage of low impact development (LID) treatment reduction credit. Special Projects that implement less than 100% LID treatment must provide a narrative discussion of the feasibility or infeasibility of 100% LID treatment. See Appendix J of the C.3 Regulated Projects Guide (download at www.flowstobay.org/newdevelopment) for more information.

F-1 "Special Project" Determination (Check the boxes to determine if the project meets any of the following categories.)

Special Project Category "A"

Does the project have ALL of the following characteristics?

- ☐ Located in a municipality's designated central business district, downtown core area or downtown core zoning district, neighborhood business district or comparable pedestrian-oriented commercial district, or historic preservation site and/or district;
- ☐ Creates and/or replaces 0.5 acres or less of impervious surface - enter answer in F-2 table;
- ☐ Includes no surface parking, except for incidental parking for emergency vehicle access, ADA access, and passenger or freight loading zones;
- ☐ Has at least 85% coverage of the entire site by permanent structures. The remaining 15% portion of the site may be used for safety access, parking structure entrances, trash and recycling service, utility access, pedestrian connections, public uses, landscaping and stormwater treatment - enter answer in F-2 Table

☑ No (continue)

☐ Yes – Complete Section F-2 below

Special Project Category "B"

Does the project have ALL of the following characteristics?

- ☐ Located in a municipality's designated central business district, downtown core area or downtown core zoning district, neighborhood business district or comparable pedestrian-oriented commercial district, or historic preservation site and/or district[15];
- ☐ Creates and/or replaces more than 0.5 acres of impervious area and less than 2.0 acres - enter answer in F-2 Table;
- ☐ Includes no surface parking, except for incidental parking for emergency access, ADA access, and passenger or freight loading zones;
- ☐ Has at least 85% coverage of the entire site by permanent structures. The remaining 15% portion of the site may be used for safety access, parking structure entrances, trash and recycling service, utility access, pedestrian connections, public uses, landscaping and stormwater treatment - enter answer in F-2 Table;
- ☐ Minimum gross density of either 50 dwelling units per acre (for residential projects) or a Floor Area Ratio (FAR) of 2:1 (for commercial projects) - mixed use projects may use either criterion[16] - enter answer in F-2 Table;

☑ No (continue)

☐ Yes – Complete Section F-2 below

Special Project Category "C"

Complete the Special Project Category C - Affordable Housing Credit Calculator (AHCC) Worksheet.

Does the project meet ALL of the required characteristics for Category C?

☑ No

☐ Yes – Complete Section F-2 below

[15] And built as part of a municipality's stated objective to preserve/enhance a pedestrian-oriented type of urban design.

[16] The MRP establishes definitions for "Gross Density"(GD) & FAR. GD is defined as, "the total number of residential units divided by the acreage of the entire site area, including land occupied by public right-of-ways, recreational, civic, commercial and other non-residential uses." FAR is defined as," the Ratio of the total floor area on all floors of all buildings at a project site (except structures, floors, or floor areas dedicated to parking) to the total project site area.

F-2 LID Treatment Reduction Credit Calculation

If more than one category applies, choose only one of the applicable categories and fill out the table for that category.
Fill in all cells with blue highlighting that pertain to the chosen Special Project Category.

Category	Impervious Area Created/Replaced (sq. ft.)	Site Coverage (%)	Project Density[16] or FAR[16]	Density/Criteria	Allowable Credit (%)	Applied Credit (%)
A			N.A.	See above in F-1	100%	
B				Res ≥ 50 DU/ac or FAR ≥ 2:1	50%	
				Res ≥ 75 DU/ac or FAR ≥ 3:1	75%	
				Res ≥ 100 DU/ac or FAR ≥ 4:1	100%	
C	Affordable Housing Credit - from AHCC Worksheet):					
					TOTAL CREDIT =	0%

F-3 Narrative Discussion of the Feasibility/Infeasibility of 100% LID Treatment:

If project will implement less than 100% LID, prepare a discussion of the feasibility or infeasibility of 100% LID treatment, as described in Appendix J of the C.3 Regulated Projects Guide.

F-4 Select Certified Non-LID Treatment Measures:

If the project will include non-LID treatment measures, select a treatment measure certified for “Basic” General Use Level Designation (GULD) by the Washington State Department of Ecology’s Technical Assessment Protocol – Ecology (TAPE[17]). See guidance in Appendix J of the C.3 Regulated Projects Guide (www.flowstobay.org/newdevelopment).

[17] TAPE certification is used in order to satisfy Special Project’s reporting requirements in the MRP.

Worksheet G
(For municipal staff use only)

G-1 **Alternative Certification:** Were the treatment and/or HM control sizing and design reviewed by a qualified third-party professional that is not a member of the project team or agency staff?

☐ Yes ☐ No Name of Reviewer: ______________________________

G-2 **Is project a Construction Stormwater Regulated Site (SWRS Site)?** SWRS Sites include:
1)Site that disturbs 1 acre or more of land (see I.B.2.f);
2)Hillside Site (see I.B.2.i); and
3)High Priority Site (see I.B.2.i).
These sites are subject to monthly inspections from Oct 1 to April 30. See MRP Provision C.6.e.ii.(2)(b) and C.6.e.ii.(2)(c). These sites in the Fitzgerald Marine Reserve ASBS Watershed are subject to weekly inspections per the State Ocean Plan.

☐ Yes ☐ No If yes, then add site to Staff's Monthly/Weekly Rainy Season Construction Site Inspection List

G-3 **Inspections of Sites with Pervious Pavement**: Regulated projects that are installing 3,000 sq.ft. or more of pervious pavement (see cell **I.B.1.g**) (excluding private-use patios in single family homes, townhomes, or condominiums) must have the pavement system inspected by the jurisdiction upon completion of the installation and the site must be added to the jurisdiction's list of sites needing inspections at least once every five years – see provision C.3.h. Pervious pavement systems include pervious concrete, pervious asphalt, pervious pavers and grid pavers etc. and are described in the C3 Regulated Projects Guide downloadable at: www.flowstobay.org/newdevelopment.

☐ Yes ☐ No If yes, then add site to Staff's Lists for Construction and O&M inspections (C.3 and C.3.h)

Operations and Maintenance (O&M) Submittals

G-4 Stormwater Treatment Measure and/HM Control Owner or Operator's Information:

Name: ______________________________

Address: ______________________________

Phone: ____________________ Email: ______________________________

► Applicant must call for inspection and receive inspection at completion of installation of treatment measures and/or hydromodification management controls including any pervious pavement areas of 3,000 sq.ft. or more.

The following questions apply to C.3 Regulated Projects and Hydromodification Management Projects.

		Yes	No	N/A
G-4.1	Was maintenance plan submitted?	☐	☐	☐
G-4.2	Was maintenance plan approved?	☐	☐	☐
G-4.3	Was maintenance agreement submitted? (Date executed: ____________________)	☐	☐	☐

► *Attach the executed maintenance agreement as an appendix to this checklist.*

G-5 **Annual Operations and Maintenance (O&M) Submittals (for municipal staff use only):**

For C.3 Regulated Projects and Hydromodification Management Projects, indicate the dates on which the Applicant submitted annual reports for project O&M:

____

G-6 **Comments (for municipal staff use only):**

G-7 NOTES (for municipal staff use only):

Project Info Notes: ______________________

Worksheet A Notes: ______________________

Worksheet B Notes: ______________________

Worksheet C Notes: ______________________

Worksheet D Notes: ______________________

Worksheet E Notes: ______________________

Worksheet F Notes: ______________________

G-8 Project Close-Out (for municipal staff use only):

		Yes	No	N/A
8.1	Were final Conditions of Approval met?	☐	☐	
8.2	Was initial inspection of the completed treatment/HM measure(s) conducted? (Date of inspection: ______________)	☐	☐	☐
8.3	Was maintenance plan submitted? (Date executed: ______________)	☐	☐	☐
8.4	Was project information provided to staff responsible for O&M verification inspections? (Date provided to inspection staff: ______________)	☐	☐	☐

G-9 Project Close-Out (Continued -- for municipal staff use only):

Name of staff confirming project is closed out: ______________________

Signature: ______________________ Date: ______________

Name of O&M staff receiving information: ______________________

Signature: ______________________ Date: ______________

Hydraulic Sizing Calculations for Stormwater Treatment Measures			
Boundary	Impervious Area	Suggested Treatment Area (4% of Impervious Area)	Provided Treatment Area (per BAHM Hydromodification Calculations)
DMA-1 (Cistern)	68,563	2,743	300
DMA-2	22,858	914	1,400
DMA-3	24,790	992	1,024
Phase 2			
DMA-1	10,934	437	400
DMA-2	17,293	692	784
DMA-3	7,084	283	256
DMA-4	0	N/A	SELF-TREATING
DMA-5	0	N/A	SELF-TREATING
DMA-6	0	N/A	SELF-TREATING
DMA-7	0	N/A	SELF-TREATING
DMA-8	0	N/A	SELF-TREATING

HYDRAULIC SIZING CALCULATIONS

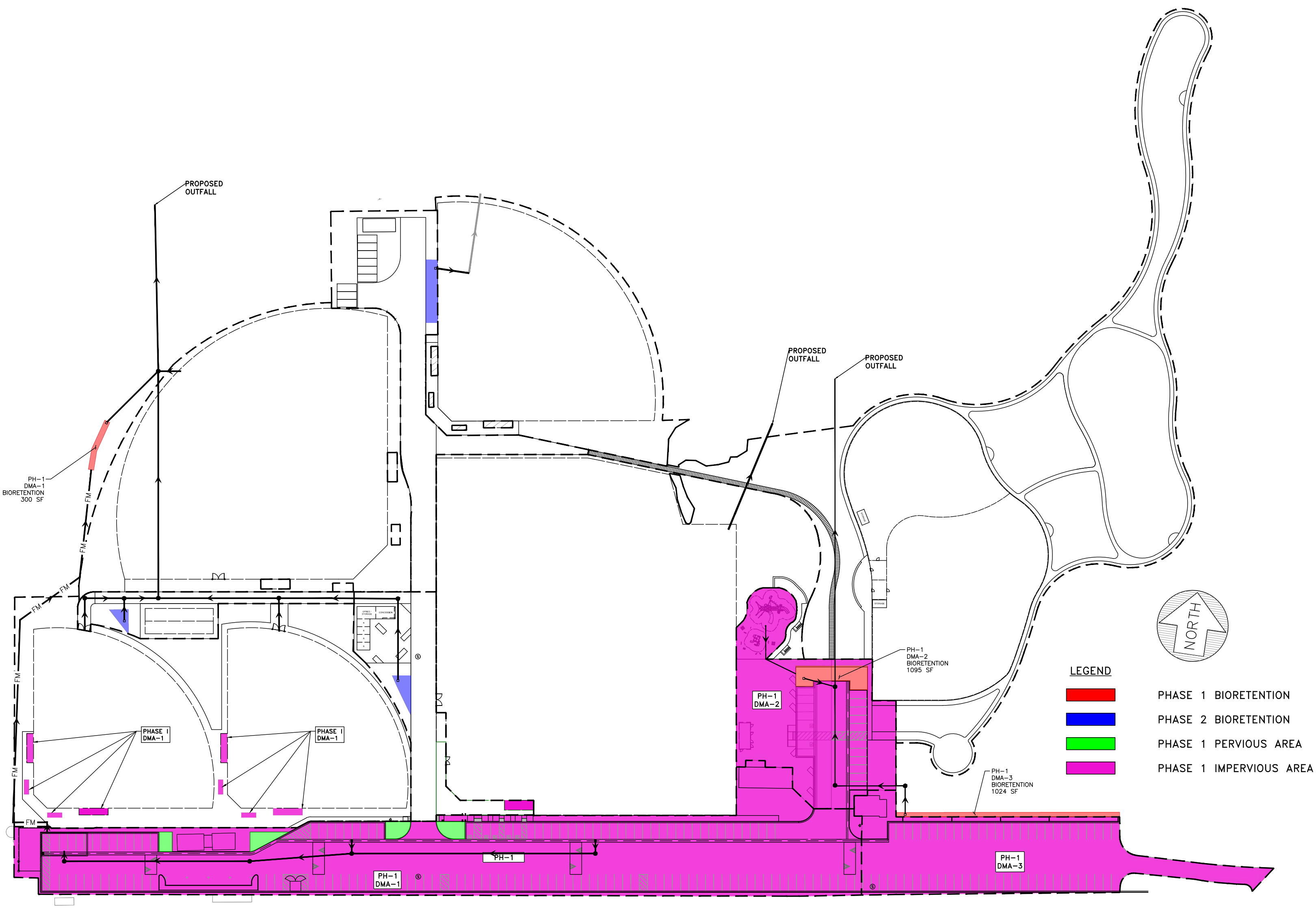
JOB NO.: 276005 DATE: 07/12/2024

FIGURE 15

Smith Field Park

BAHM Reports

Phase 1



BAHM2013

PROJECT REPORT

General Model Information

Project Name:	P1 DMA1 Stormcapture Vaults
Site Name:	
Site Address:	
City:	
Report Date:	6/11/2024
Gage:	San Francisco
Data Start:	1959/10/01
Data End:	1997/09/30
Timestep:	Hourly
Precip Scale:	2.000
Version Date:	2021/05/25

POC Thresholds

Low Flow Threshold for POC1:	10 Percent of the 2 Year
High Flow Threshold for POC1:	10 Year

Landuse Basin Data
Predeveloped Land Use

Basin 1

Bypass:	No
GroundWater:	No
Pervious Land Use	acre
C D,Grass,Flat(0-5%)	0.596
Pervious Total	0.596
Impervious Land Use	acre
Parking,Flat(0-5%)	1.099
Impervious Total	1.099
Basin Total	1.695

Element Flows To:

Surface	Interflow	Groundwater

Mitigated Land Use

Basin 1

Bypass:	No
GroundWater:	No
Pervious Land Use	acre
C D,Grass,Flat(0-5%)	0.031
Pervious Total	0.031
Impervious Land Use	acre
Parking,Flat(0-5%)	1.574
Impervious Total	1.574
Basin Total	1.605

Element Flows To:

Surface	Interflow	Groundwater
Storm Capture 2	Storm Capture 2	

Routing Elements
Predeveloped Routing

Mitigated Routing

Bioretention 1

Bottom Length:	15.00 ft.
Bottom Width:	20.00 ft.
Material thickness of first layer:	1.5
Material type for first layer:	BAHM 5
Material thickness of second layer:	1
Material type for second layer:	ASTM 9
Material thickness of third layer:	0
Material type for third layer:	GRAVEL
Underdrain used	
Underdrain Diameter (feet):	8
Orifice Diameter (in.):	4
Offset (in.):	0
Flow Through Underdrain (ac-ft.):	94.923
Total Outflow (ac-ft.):	117.083
Percent Through Underdrain:	81.07

Discharge Structure

Riser Height:	1 ft.
Riser Diameter:	12 in.

Element Flows To:

Outlet 1	Outlet 2

Bioretention Hydraulic Table

Stage(feet)	**Area(ac.)**	**Volume(ac-ft.)**	**Discharge(cfs)**	**Infilt(cfs)**
0.0000	0.0069	0.0000	0.0000	0.0000
0.0440	0.0069	0.0001	0.0000	0.0000
0.0879	0.0069	0.0002	0.0000	0.0000
0.1319	0.0069	0.0003	0.0000	0.0000
0.1758	0.0069	0.0005	0.0000	0.0000
0.2198	0.0069	0.0006	0.0000	0.0000
0.2637	0.0069	0.0007	0.0000	0.0000
0.3077	0.0069	0.0008	0.0000	0.0000
0.3516	0.0069	0.0009	0.0000	0.0000
0.3956	0.0069	0.0010	0.0000	0.0000
0.4396	0.0069	0.0012	0.0000	0.0000
0.4835	0.0069	0.0013	0.0000	0.0000
0.5275	0.0069	0.0014	0.0014	0.0000
0.5714	0.0069	0.0015	0.0016	0.0000
0.6154	0.0069	0.0016	0.0019	0.0000
0.6593	0.0069	0.0017	0.0021	0.0000
0.7033	0.0069	0.0018	0.0023	0.0000
0.7473	0.0069	0.0020	0.0027	0.0000
0.7912	0.0069	0.0021	0.0030	0.0000
0.8352	0.0069	0.0022	0.0032	0.0000
0.8791	0.0069	0.0023	0.0038	0.0000
0.9231	0.0069	0.0024	0.0041	0.0000
0.9670	0.0069	0.0025	0.0044	0.0000
1.0110	0.0069	0.0026	0.0051	0.0000
1.0549	0.0069	0.0028	0.0055	0.0000
1.0989	0.0069	0.0029	0.0059	0.0000
1.1429	0.0069	0.0030	0.0067	0.0000
1.1868	0.0069	0.0031	0.0071	0.0000
1.2308	0.0069	0.0032	0.0076	0.0000

1.2747	0.0069	0.0033	0.0087	0.0000
1.3187	0.0069	0.0035	0.0090	0.0000
1.3626	0.0069	0.0036	0.0097	0.0000
1.4066	0.0069	0.0037	0.0109	0.0000
1.4505	0.0069	0.0038	0.0112	0.0000
1.4945	0.0069	0.0039	0.0122	0.0000
1.5385	0.0069	0.0040	0.0135	0.0000
1.5824	0.0069	0.0042	0.0137	0.0000
1.6264	0.0069	0.0043	0.0149	0.0000
1.6703	0.0069	0.0044	0.0165	0.0000
1.7143	0.0069	0.0046	0.0165	0.0000
1.7582	0.0069	0.0047	0.0181	0.0000
1.8022	0.0069	0.0048	0.0197	0.0000
1.8462	0.0069	0.0049	0.0198	0.0000
1.8901	0.0069	0.0051	0.0216	0.0000
1.9341	0.0069	0.0052	0.0232	0.0000
1.9780	0.0069	0.0053	0.0235	0.0000
2.0220	0.0069	0.0055	0.0255	0.0000
2.0659	0.0069	0.0056	0.0271	0.0000
2.1099	0.0069	0.0057	0.0276	0.0000
2.1538	0.0069	0.0058	0.0298	0.0000
2.1978	0.0069	0.0060	0.0313	0.0000
2.2418	0.0069	0.0061	0.0321	0.0000
2.2857	0.0069	0.0062	0.0345	0.0000
2.3297	0.0069	0.0064	0.0579	0.0000
2.3736	0.0069	0.0065	0.0579	0.0000
2.4176	0.0069	0.0066	0.0579	0.0000
2.4615	0.0069	0.0067	0.0579	0.0000
2.5000	0.0069	0.0069	0.0579	0.0000

Bioretention Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	To Amended(cfs)	Infilt(cfs)
2.5000	0.0069	0.0069	0.0000	0.0347	0.0000
2.5440	0.0069	0.0072	0.0000	0.0347	0.0000
2.5879	0.0069	0.0075	0.0000	0.0368	0.0000
2.6319	0.0069	0.0078	0.0000	0.0378	0.0000
2.6758	0.0069	0.0081	0.0000	0.0388	0.0000
2.7198	0.0069	0.0084	0.0000	0.0398	0.0000
2.7637	0.0069	0.0087	0.0000	0.0408	0.0000
2.8077	0.0069	0.0090	0.0000	0.0418	0.0000
2.8516	0.0069	0.0093	0.0000	0.0429	0.0000
2.8956	0.0069	0.0096	0.0000	0.0439	0.0000
2.9396	0.0069	0.0099	0.0000	0.0449	0.0000
2.9835	0.0069	0.0102	0.0000	0.0459	0.0000
3.0275	0.0069	0.0105	0.0000	0.0469	0.0000
3.0714	0.0069	0.0108	0.0000	0.0479	0.0000
3.1154	0.0069	0.0111	0.0000	0.0490	0.0000
3.1593	0.0069	0.0114	0.0000	0.0500	0.0000
3.2033	0.0069	0.0117	0.0000	0.0510	0.0000
3.2473	0.0069	0.0120	0.0000	0.0520	0.0000
3.2912	0.0069	0.0123	0.0000	0.0530	0.0000
3.3352	0.0069	0.0126	0.0000	0.0541	0.0000
3.3791	0.0069	0.0129	0.0000	0.0551	0.0000
3.4231	0.0069	0.0132	0.0000	0.0561	0.0000
3.4670	0.0069	0.0135	0.0000	0.0571	0.0000
3.5110	0.0069	0.0138	0.0122	0.0579	0.0000
3.5549	0.0069	0.0141	0.1365	0.0579	0.0000
3.5989	0.0069	0.0144	0.3281	0.0579	0.0000

3.6429	0.0069	0.0147	0.5635	0.0579	0.0000
3.6868	0.0069	0.0150	0.8261	0.0579	0.0000
3.7308	0.0069	0.0153	1.0991	0.0579	0.0000
3.7747	0.0069	0.0156	1.3657	0.0579	0.0000
3.8187	0.0069	0.0159	1.6096	0.0579	0.0000
3.8626	0.0069	0.0162	1.8176	0.0579	0.0000
3.9066	0.0069	0.0165	1.9818	0.0579	0.0000
3.9505	0.0069	0.0168	2.1028	0.0579	0.0000
3.9945	0.0069	0.0171	2.1930	0.0579	0.0000
4.0000	0.0069	0.0172	2.3112	0.0579	0.0000

Surface retention 1

Element Flows To:

Outlet 1	Outlet 2
	Bioretention 1

Storm Capture 2

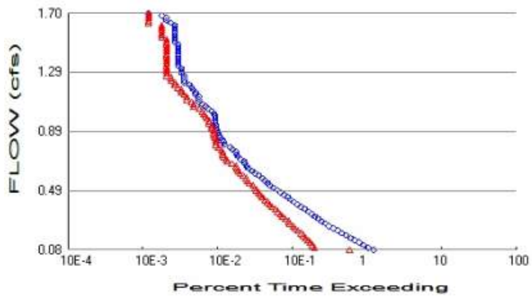
Dimensions
Depth: 6 ft.
Length: 150 ft.
Width: 7 ft.
Discharge Structure
Riser Height: 5 ft.
Riser Diameter: 18 in.
Orifice 1 Diameter: 1.25 in. Elevation:0 ft.
Element Flows To:
Outlet 1 Outlet 2
Surface retention 1

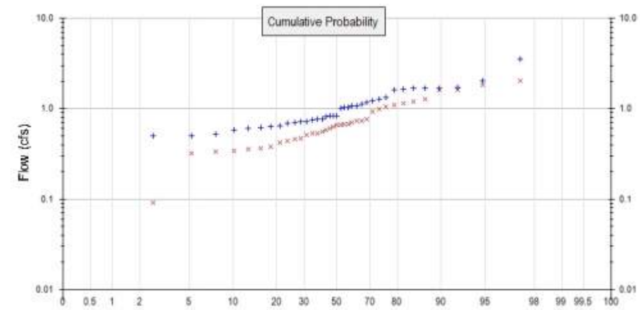
SCapture Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.024	0.000	0.000	0.000
0.0667	0.024	0.001	0.010	0.000
0.1333	0.024	0.003	0.015	0.000
0.2000	0.024	0.004	0.019	0.000
0.2667	0.024	0.006	0.021	0.000
0.3333	0.024	0.008	0.024	0.000
0.4000	0.024	0.009	0.026	0.000
0.4667	0.024	0.011	0.029	0.000
0.5333	0.024	0.012	0.031	0.000
0.6000	0.024	0.014	0.032	0.000
0.6667	0.024	0.016	0.034	0.000
0.7333	0.024	0.017	0.036	0.000
0.8000	0.024	0.019	0.037	0.000
0.8667	0.024	0.020	0.039	0.000
0.9333	0.024	0.022	0.041	0.000
1.0000	0.024	0.024	0.042	0.000
1.0667	0.024	0.025	0.043	0.000
1.1333	0.024	0.027	0.045	0.000
1.2000	0.024	0.028	0.046	0.000
1.2667	0.024	0.030	0.047	0.000
1.3333	0.024	0.032	0.049	0.000
1.4000	0.024	0.033	0.050	0.000
1.4667	0.024	0.035	0.051	0.000
1.5333	0.024	0.037	0.052	0.000
1.6000	0.024	0.038	0.053	0.000
1.6667	0.024	0.040	0.054	0.000
1.7333	0.024	0.041	0.055	0.000
1.8000	0.024	0.043	0.056	0.000
1.8667	0.024	0.045	0.057	0.000
1.9333	0.024	0.046	0.059	0.000
2.0000	0.024	0.048	0.060	0.000
2.0667	0.024	0.049	0.061	0.000
2.1333	0.024	0.051	0.061	0.000
2.2000	0.024	0.053	0.062	0.000
2.2667	0.024	0.054	0.063	0.000
2.3333	0.024	0.056	0.064	0.000
2.4000	0.024	0.057	0.065	0.000
2.4667	0.024	0.059	0.066	0.000
2.5333	0.024	0.061	0.067	0.000
2.6000	0.024	0.062	0.068	0.000
2.6667	0.024	0.064	0.069	0.000

2.7333	0.024	0.065	0.070	0.000
2.8000	0.024	0.067	0.071	0.000
2.8667	0.024	0.069	0.071	0.000
2.9333	0.024	0.070	0.072	0.000
3.0000	0.024	0.072	0.073	0.000
3.0667	0.024	0.073	0.074	0.000
3.1333	0.024	0.075	0.075	0.000
3.2000	0.024	0.077	0.075	0.000
3.2667	0.024	0.078	0.076	0.000
3.3333	0.024	0.080	0.077	0.000
3.4000	0.024	0.082	0.078	0.000
3.4667	0.024	0.083	0.078	0.000
3.5333	0.024	0.085	0.079	0.000
3.6000	0.024	0.086	0.080	0.000
3.6667	0.024	0.088	0.081	0.000
3.7333	0.024	0.090	0.081	0.000
3.8000	0.024	0.091	0.082	0.000
3.8667	0.024	0.093	0.083	0.000
3.9333	0.024	0.094	0.084	0.000
4.0000	0.024	0.096	0.084	0.000
4.0667	0.024	0.098	0.085	0.000
4.1333	0.024	0.099	0.086	0.000
4.2000	0.024	0.101	0.086	0.000
4.2667	0.024	0.102	0.087	0.000
4.3333	0.024	0.104	0.088	0.000
4.4000	0.024	0.106	0.088	0.000
4.4667	0.024	0.107	0.089	0.000
4.5333	0.024	0.109	0.090	0.000
4.6000	0.024	0.110	0.090	0.000
4.6667	0.024	0.112	0.091	0.000
4.7333	0.024	0.114	0.092	0.000
4.8000	0.024	0.115	0.092	0.000
4.8667	0.024	0.117	0.093	0.000
4.9333	0.024	0.118	0.094	0.000
5.0000	0.024	0.120	0.094	0.000
5.0667	0.024	0.122	0.369	0.000
5.1333	0.024	0.123	0.867	0.000
5.2000	0.024	0.125	1.501	0.000
5.2667	0.024	0.127	2.221	0.000
5.3333	0.024	0.128	2.980	0.000
5.4000	0.024	0.130	3.730	0.000
5.4667	0.024	0.131	4.425	0.000
5.5333	0.024	0.133	5.023	0.000
5.6000	0.024	0.135	5.501	0.000
5.6667	0.024	0.136	5.855	0.000
5.7333	0.024	0.138	6.115	0.000
5.8000	0.024	0.139	6.440	0.000
5.8667	0.024	0.141	6.700	0.000
5.9333	0.024	0.143	6.949	0.000
6.0000	0.024	0.144	7.190	0.000

Analysis Results
POC 1





+ Predeveloped x Mitigated

Predeveloped Landuse Totals for POC #1
Total Pervious Area: 0.596
Total Impervious Area: 1.099

Mitigated Landuse Totals for POC #1
Total Pervious Area: 0.031
Total Impervious Area: 1.574

Flow Frequency Method: Weibull

Flow Frequency Return Periods for Predeveloped. POC #1

Return Period	Flow(cfs)
2 year	0.834053
5 year	1.629629
10 year	1.696718
25 year	2.445448

Flow Frequency Return Periods for Mitigated. POC #1

Return Period	Flow(cfs)
2 year	0.61857
5 year	1.099566
10 year	1.624942
25 year	1.895307

Annual Peaks

Annual Peaks for Predeveloped and Mitigated. POC #1

Year	Predeveloped	Mitigated
1960	0.634	0.320
1961	0.608	0.472
1962	1.025	0.657
1963	1.024	0.771
1964	0.707	0.608
1965	0.808	0.439
1966	0.578	0.528
1967	0.838	0.680
1968	1.162	0.534
1969	1.324	0.681
1970	1.633	1.625
1971	1.284	0.559
1972	0.519	0.091
1973	1.075	1.196

1974	0.640	0.731
1975	0.719	0.422
1976	0.348	0.090
1977	0.768	0.456
1978	0.617	0.358
1979	0.755	0.709
1980	0.691	0.377
1981	2.022	1.844
1982	1.214	1.138
1983	3.522	2.026
1984	0.840	0.732
1985	1.085	1.269
1986	1.695	0.935
1987	0.758	0.663
1988	1.685	0.630
1989	0.830	0.510
1990	0.725	0.579
1991	0.496	0.332
1992	1.712	1.049
1993	1.130	1.091
1994	1.004	0.339
1995	1.629	1.626
1996	0.497	0.362
1997	1.672	0.998

Ranked Annual Peaks

Ranked Annual Peaks for Predeveloped and Mitigated. POC #1

Rank	**Predeveloped**	**Mitigated**
1	3.5222	2.0258
2	2.0225	1.8441
3	1.7122	1.6264
4	1.6954	1.6248
5	1.6852	1.2690
6	1.6722	1.1959
7	1.6334	1.1380
8	1.6288	1.0912
9	1.3239	1.0494
10	1.2837	0.9985
11	1.2138	0.9353
12	1.1625	0.7713
13	1.1301	0.7323
14	1.0847	0.7315
15	1.0746	0.7090
16	1.0248	0.6810
17	1.0239	0.6799
18	1.0044	0.6635
19	0.8402	0.6566
20	0.8381	0.6299
21	0.8302	0.6078
22	0.8085	0.5790
23	0.7682	0.5589
24	0.7584	0.5341
25	0.7548	0.5277
26	0.7253	0.5102
27	0.7187	0.4725
28	0.7071	0.4564
29	0.6912	0.4390
30	0.6400	0.4215

31	0.6339	0.3775
32	0.6167	0.3621
33	0.6080	0.3577
34	0.5777	0.3391
35	0.5192	0.3324
36	0.4966	0.3205
37	0.4957	0.0910
38	0.3479	0.0904

Duration Flows
The Facility PASSED

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
0.0834	4081	1971	48	Pass
0.0997	3501	664	18	Pass
0.1160	3054	629	20	Pass
0.1323	2629	580	22	Pass
0.1486	2307	545	23	Pass
0.1649	2040	505	24	Pass
0.1812	1773	473	26	Pass
0.1975	1548	438	28	Pass
0.2138	1358	395	29	Pass
0.2301	1177	364	30	Pass
0.2464	1044	346	33	Pass
0.2627	934	316	33	Pass
0.2790	831	302	36	Pass
0.2953	745	270	36	Pass
0.3116	673	247	36	Pass
0.3278	621	234	37	Pass
0.3441	558	215	38	Pass
0.3604	492	198	40	Pass
0.3767	441	178	40	Pass
0.3930	395	167	42	Pass
0.4093	351	155	44	Pass
0.4256	317	143	45	Pass
0.4419	292	133	45	Pass
0.4582	258	125	48	Pass
0.4745	234	118	50	Pass
0.4908	212	111	52	Pass
0.5071	192	105	54	Pass
0.5234	167	100	59	Pass
0.5397	157	89	56	Pass
0.5560	145	85	58	Pass
0.5723	132	82	62	Pass
0.5886	119	74	62	Pass
0.6049	106	67	63	Pass
0.6212	97	63	64	Pass
0.6375	86	61	70	Pass
0.6538	83	60	72	Pass
0.6701	78	52	66	Pass
0.6864	76	45	59	Pass
0.7027	67	44	65	Pass
0.7190	63	41	65	Pass
0.7352	60	39	65	Pass
0.7515	59	39	66	Pass
0.7678	53	38	71	Pass
0.7841	49	34	69	Pass
0.8004	42	32	76	Pass
0.8167	40	32	80	Pass
0.8330	39	32	82	Pass
0.8493	36	31	86	Pass
0.8656	35	30	85	Pass
0.8819	34	30	88	Pass
0.8982	33	30	90	Pass
0.9145	32	28	87	Pass
0.9308	32	28	87	Pass

0.9471	31	26	83	Pass
0.9634	31	26	83	Pass
0.9797	31	24	77	Pass
0.9960	31	23	74	Pass
1.0123	30	22	73	Pass
1.0286	28	21	75	Pass
1.0449	25	19	76	Pass
1.0612	23	16	69	Pass
1.0775	21	16	76	Pass
1.0938	19	15	78	Pass
1.1101	19	13	68	Pass
1.1264	19	13	68	Pass
1.1427	17	12	70	Pass
1.1589	17	11	64	Pass
1.1752	16	11	68	Pass
1.1915	15	10	66	Pass
1.2078	14	9	64	Pass
1.2241	12	9	75	Pass
1.2404	12	8	66	Pass
1.2567	12	8	66	Pass
1.2730	12	7	58	Pass
1.2893	11	7	63	Pass
1.3056	11	7	63	Pass
1.3219	11	7	63	Pass
1.3382	10	7	70	Pass
1.3545	10	7	70	Pass
1.3708	10	7	70	Pass
1.3871	10	7	70	Pass
1.4034	10	7	70	Pass
1.4197	10	7	70	Pass
1.4360	10	7	70	Pass
1.4523	10	7	70	Pass
1.4686	10	7	70	Pass
1.4849	10	7	70	Pass
1.5012	9	7	77	Pass
1.5175	9	7	77	Pass
1.5338	9	6	66	Pass
1.5501	9	6	66	Pass
1.5663	9	6	66	Pass
1.5826	9	6	66	Pass
1.5989	9	6	66	Pass
1.6152	9	6	66	Pass
1.6315	8	4	50	Pass
1.6478	7	4	57	Pass
1.6641	7	4	57	Pass
1.6804	6	4	66	Pass
1.6967	4	4	100	Pass

Water Quality

Model Default Modifications

Total of 0 changes have been made.

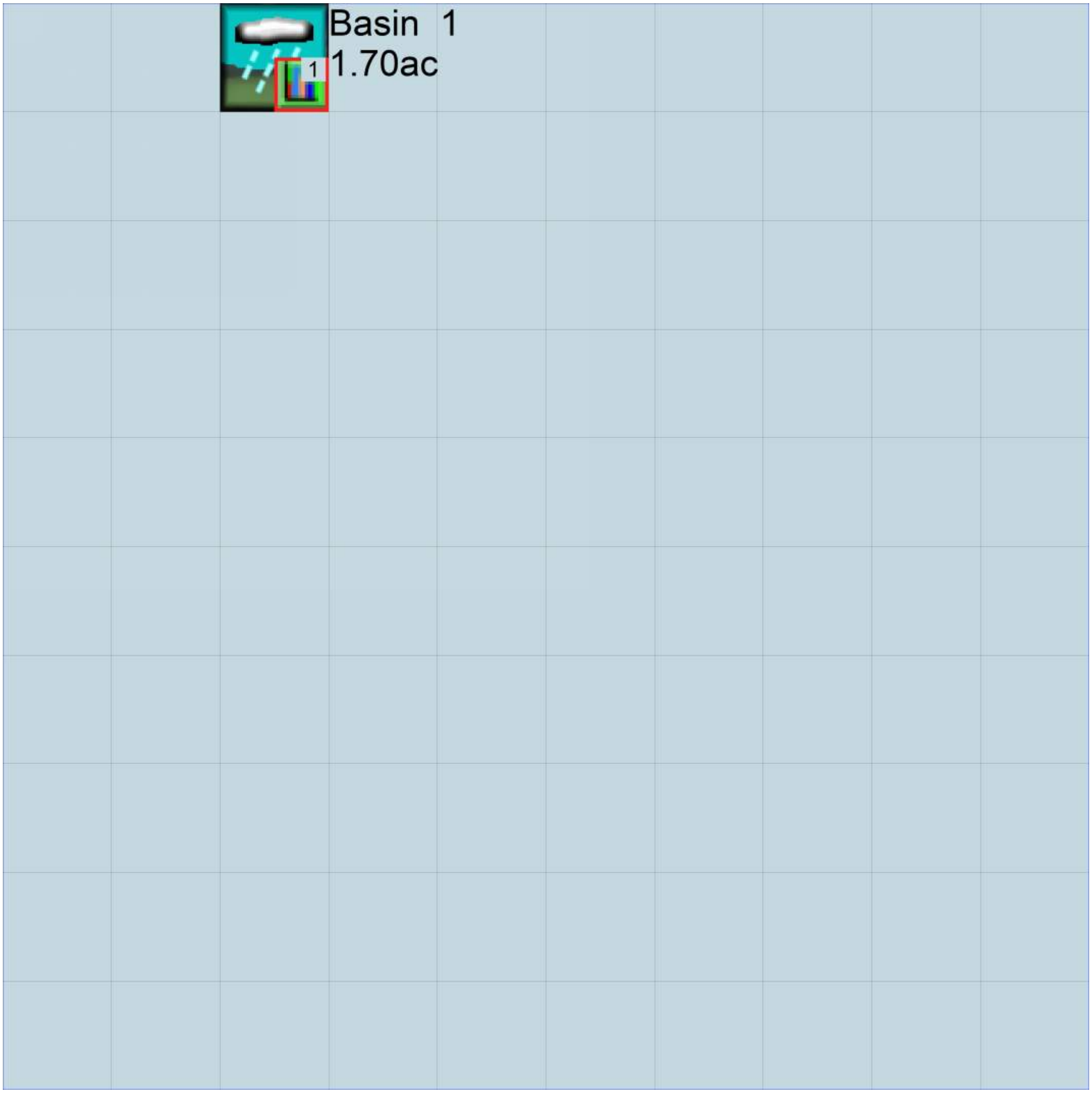
PERLND Changes

No PERLND changes have been made.

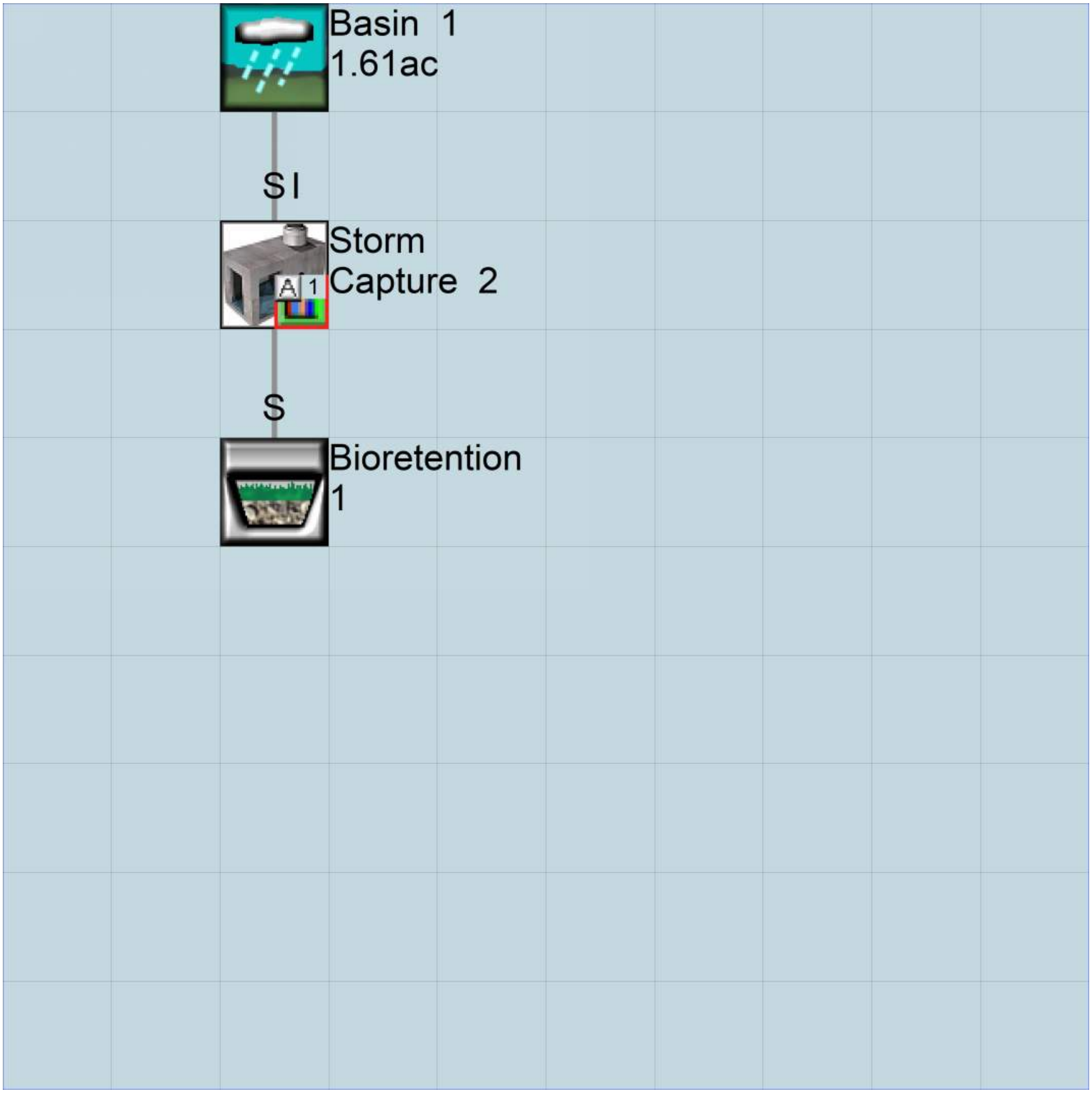
IMPLND Changes

No IMPLND changes have been made.

Appendix
Predeveloped Schematic



Mitigated Schematic



Predeveloped UCI File

Mitigated UCI File

Predeveloped HSPF Message File

Mitigated HSPF Message File

Disclaimer

Legal Notice

Clear Creek Solutions, Inc.
6200 Capitol Blvd. Ste F
Olympia, WA. 98501
Toll Free 1(866)943-0304
Local (360)943-0304

www.clearcreeksolutions.com

BAHM2023

PROJECT REPORT

General Model Information

BAHM2023 Project Name: P1 DMA2

Site Name:	Smith Field Park
Site Address:	400 Wavecrest Rd
City:	Half Moon Bay
Report Date:	7/12/2024
Gage:	San Francisco
Data Start:	1959/10/01
Data End:	2022/09/30
Timestep:	Hourly
Precip Scale:	2.000
Version Date:	2023/12/22

POC Thresholds

Low Flow Threshold for POC1:	10 Percent of the 2 Year
High Flow Threshold for POC1:	10 Year

Landuse Basin Data

Pre-Project Land Use

Basin 1

Bypass:	No
GroundWater:	No
Pervious Land Use	acre
C D,Grass,Flat(0-5%)	0.522
Pervious Total	0.522
Impervious Land Use	acre
Parking,Flat(0-5%)	0.041
Impervious Total	0.041
Basin Total	0.563

Element Flow Componants:

Surface	Interflow	Groundwater

Componant Flows To:

POC 1	POC 1

Mitigated Land Use

Basin 1

Bypass:	No
GroundWater:	No
Pervious Land Use	acre
Pervious Total	0
Impervious Land Use	acre
Parking,Flat(0-5%)	0.525
Impervious Total	0.525
Basin Total	0.525

Element Flow Componants:

Surface	Interflow	Groundwater
Componant Flows To:		
Surface retention 1	Surface retention 1	

Mitigated Routing

Bioretention 1

Bottom Length:		35.00 ft.
Bottom Width:		40.00 ft.
Material thickness of first layer:		1.5
Material type for first layer:		BAHM 5
Material thickness of second layer:		1
Material type for second layer:		ASTM 9
Material thickness of third layer:		0.75
Material type for third layer:		GRAVEL
Underdrain used		
Underdrain Diameter (feet):		0.333333333333333
Orifice Diameter (in.):		1.25
Offset (in.):		0
Flow Through Underdrain (ac-ft.):		88.685
Total Outflow (ac-ft.):		108.812
Percent Through Underdrain:		81.5
Discharge Structure		
Riser Height:	0.75 ft.	
Riser Diameter:	12 in.	
Element Outlets:		
Outlet 1	Outlet 2	
Outlet Flows To:		

Bioretention Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.0321	0.0000	0.0000	0.0000
0.0495	0.0321	0.0006	0.0000	0.0000
0.0989	0.0321	0.0012	0.0000	0.0000
0.1484	0.0321	0.0018	0.0000	0.0000
0.1978	0.0321	0.0024	0.0000	0.0000
0.2473	0.0321	0.0030	0.0000	0.0000
0.2967	0.0321	0.0036	0.0000	0.0000
0.3462	0.0321	0.0042	0.0000	0.0000
0.3956	0.0321	0.0048	0.0000	0.0000
0.4451	0.0321	0.0054	0.0000	0.0000
0.4945	0.0321	0.0060	0.0000	0.0000
0.5440	0.0321	0.0066	0.0000	0.0000
0.5934	0.0321	0.0072	0.0000	0.0000
0.6429	0.0321	0.0079	0.0000	0.0000
0.6923	0.0321	0.0085	0.0000	0.0000
0.7418	0.0321	0.0091	0.0000	0.0000
0.7912	0.0321	0.0097	0.0000	0.0000
0.8407	0.0321	0.0103	0.0000	0.0000
0.8901	0.0321	0.0109	0.0000	0.0000
0.9396	0.0321	0.0115	0.0000	0.0000
0.9890	0.0321	0.0121	0.0000	0.0000
1.0385	0.0321	0.0127	0.0000	0.0000
1.0879	0.0321	0.0133	0.0000	0.0000
1.1374	0.0321	0.0139	0.0000	0.0000
1.1868	0.0321	0.0145	0.0000	0.0000
1.2363	0.0321	0.0151	0.0000	0.0000
1.2857	0.0321	0.0157	0.0000	0.0000
1.3352	0.0321	0.0163	0.0000	0.0000

1.3846	0.0321	0.0169	0.0000	0.0000
1.4341	0.0321	0.0175	0.0000	0.0000
1.4835	0.0321	0.0181	0.0000	0.0000
1.5330	0.0321	0.0188	0.0000	0.0000
1.5824	0.0321	0.0195	0.0000	0.0000
1.6319	0.0321	0.0201	0.0000	0.0000
1.6813	0.0321	0.0208	0.0000	0.0000
1.7308	0.0321	0.0215	0.0000	0.0000
1.7802	0.0321	0.0222	0.0000	0.0000
1.8297	0.0321	0.0228	0.0000	0.0000
1.8791	0.0321	0.0235	0.0000	0.0000
1.9286	0.0321	0.0242	0.0000	0.0000
1.9780	0.0321	0.0249	0.0000	0.0000
2.0275	0.0321	0.0255	0.0000	0.0000
2.0769	0.0321	0.0262	0.0000	0.0000
2.1264	0.0321	0.0269	0.0000	0.0000
2.1758	0.0321	0.0276	0.0000	0.0000
2.2253	0.0321	0.0282	0.0000	0.0000
2.2747	0.0321	0.0289	0.0000	0.0000
2.3242	0.0321	0.0296	0.0000	0.0000
2.3736	0.0321	0.0303	0.0000	0.0000
2.4231	0.0321	0.0309	0.0000	0.0000
2.4725	0.0321	0.0316	0.0000	0.0000
2.5220	0.0321	0.0323	0.0000	0.0000
2.5714	0.0321	0.0329	0.0000	0.0000
2.6209	0.0321	0.0336	0.0000	0.0000
2.6703	0.0321	0.0343	0.0000	0.0000
2.7198	0.0321	0.0349	0.0000	0.0000
2.7692	0.0321	0.0356	0.0000	0.0000
2.8187	0.0321	0.0362	0.0000	0.0000
2.8681	0.0321	0.0369	0.0000	0.0000
2.9176	0.0321	0.0376	0.0000	0.0000
2.9670	0.0321	0.0382	0.0000	0.0000
3.0165	0.0321	0.0389	0.0000	0.0000
3.0659	0.0321	0.0395	0.0000	0.0000
3.1154	0.0321	0.0402	0.0000	0.0000
3.1648	0.0321	0.0409	0.0000	0.0000
3.2143	0.0321	0.0415	0.0000	0.0000
3.2500	0.0321	0.0420	0.0000	0.0000

Bioretention Surface Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	To Amended(cfs)	Infilt(cfs)
3.2500	0.0321	0.0420	0.0000	0.0762	0.0000
3.2995	0.0321	0.0436	0.0000	0.0762	0.0000
3.3489	0.0321	0.0452	0.0000	0.0762	0.0000
3.3984	0.0321	0.0468	0.0000	0.0762	0.0000
3.4478	0.0321	0.0484	0.0000	0.0762	0.0000
3.4973	0.0321	0.0499	0.0000	0.0762	0.0000
3.5467	0.0321	0.0515	0.0000	0.0762	0.0000
3.5962	0.0321	0.0531	0.0000	0.0762	0.0000
3.6456	0.0321	0.0547	0.0000	0.0762	0.0000
3.6951	0.0321	0.0563	0.0000	0.0762	0.0000
3.7445	0.0321	0.0579	0.0000	0.0762	0.0000
3.7940	0.0321	0.0595	0.0015	0.0762	0.0000
3.8434	0.0321	0.0611	0.0023	0.0762	0.0000
3.8929	0.0321	0.0627	0.0050	0.0762	0.0000
3.9423	0.0321	0.0642	0.0063	0.0762	0.0000
3.9918	0.0321	0.0658	0.0089	0.0762	0.0000

4.0412	0.0321	0.0674	0.0096	0.0762	0.0000
4.0907	0.0321	0.0690	0.0099	0.0762	0.0000
4.1401	0.0321	0.0706	0.0111	0.0762	0.0000
4.1896	0.0321	0.0722	0.0117	0.0762	0.0000
4.2390	0.0321	0.0738	0.0129	0.0762	0.0000
4.2885	0.0321	0.0754	0.0135	0.0762	0.0000
4.3379	0.0321	0.0770	0.0145	0.0762	0.0000
4.3874	0.0321	0.0785	0.0151	0.0762	0.0000
4.4368	0.0321	0.0801	0.0160	0.0762	0.0000
4.4863	0.0321	0.0817	0.0165	0.0762	0.0000
4.5000	0.0321	0.0822	0.0174	0.0762	0.0000

Discharge Structure
Riser Height: 0.75 ft.
Riser Diameter: 12 in.
Element Flow Outlets:
Outlet 1 Outlet 2
Outlets Flow To:

Bioretention Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.0321	0.0000	0.0000	0.0000
0.0495	0.0321	0.0006	0.0000	0.0000
0.0989	0.0321	0.0012	0.0000	0.0000
0.1484	0.0321	0.0018	0.0000	0.0000
0.1978	0.0321	0.0024	0.0000	0.0000
0.2473	0.0321	0.0030	0.0000	0.0000
0.2967	0.0321	0.0036	0.0000	0.0000
0.3462	0.0321	0.0042	0.0000	0.0000
0.3956	0.0321	0.0048	0.0000	0.0000
0.4451	0.0321	0.0054	0.0000	0.0000
0.4945	0.0321	0.0060	0.0000	0.0000
0.5440	0.0321	0.0066	0.0000	0.0000
0.5934	0.0321	0.0072	0.0000	0.0000
0.6429	0.0321	0.0079	0.0000	0.0000
0.6923	0.0321	0.0085	0.0000	0.0000
0.7418	0.0321	0.0091	0.0000	0.0000
0.7912	0.0321	0.0097	0.0000	0.0000
0.8407	0.0321	0.0103	0.0000	0.0000
0.8901	0.0321	0.0109	0.0000	0.0000
0.9396	0.0321	0.0115	0.0000	0.0000
0.9890	0.0321	0.0121	0.0000	0.0000
1.0385	0.0321	0.0127	0.0000	0.0000
1.0879	0.0321	0.0133	0.0000	0.0000
1.1374	0.0321	0.0139	0.0000	0.0000
1.1868	0.0321	0.0145	0.0000	0.0000
1.2363	0.0321	0.0151	0.0000	0.0000
1.2857	0.0321	0.0157	0.0000	0.0000
1.3352	0.0321	0.0163	0.0000	0.0000
1.3846	0.0321	0.0169	0.0000	0.0000
1.4341	0.0321	0.0175	0.0000	0.0000
1.4835	0.0321	0.0181	0.0000	0.0000
1.5330	0.0321	0.0188	0.0000	0.0000
1.5824	0.0321	0.0195	0.0000	0.0000
1.6319	0.0321	0.0201	0.0000	0.0000
1.6813	0.0321	0.0208	0.0000	0.0000

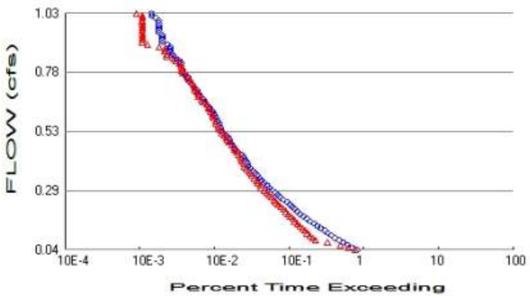
1.7308	0.0321	0.0215	0.0000	0.0000
1.7802	0.0321	0.0222	0.0000	0.0000
1.8297	0.0321	0.0228	0.0000	0.0000
1.8791	0.0321	0.0235	0.0000	0.0000
1.9286	0.0321	0.0242	0.0000	0.0000
1.9780	0.0321	0.0249	0.0000	0.0000
2.0275	0.0321	0.0255	0.0000	0.0000
2.0769	0.0321	0.0262	0.0000	0.0000
2.1264	0.0321	0.0269	0.0000	0.0000
2.1758	0.0321	0.0276	0.0000	0.0000
2.2253	0.0321	0.0282	0.0000	0.0000
2.2747	0.0321	0.0289	0.0000	0.0000
2.3242	0.0321	0.0296	0.0000	0.0000
2.3736	0.0321	0.0303	0.0000	0.0000
2.4231	0.0321	0.0309	0.0000	0.0000
2.4725	0.0321	0.0316	0.0000	0.0000
2.5220	0.0321	0.0323	0.0000	0.0000
2.5714	0.0321	0.0329	0.0000	0.0000
2.6209	0.0321	0.0336	0.0000	0.0000
2.6703	0.0321	0.0343	0.0000	0.0000
2.7198	0.0321	0.0349	0.0000	0.0000
2.7692	0.0321	0.0356	0.0000	0.0000
2.8187	0.0321	0.0362	0.0000	0.0000
2.8681	0.0321	0.0369	0.0000	0.0000
2.9176	0.0321	0.0376	0.0000	0.0000
2.9670	0.0321	0.0382	0.0000	0.0000
3.0165	0.0321	0.0389	0.0000	0.0000
3.0659	0.0321	0.0395	0.0000	0.0000
3.1154	0.0321	0.0402	0.0000	0.0000
3.1648	0.0321	0.0409	0.0000	0.0000
3.2143	0.0321	0.0415	0.0000	0.0000
3.2500	0.0321	0.0420	0.0000	0.0000

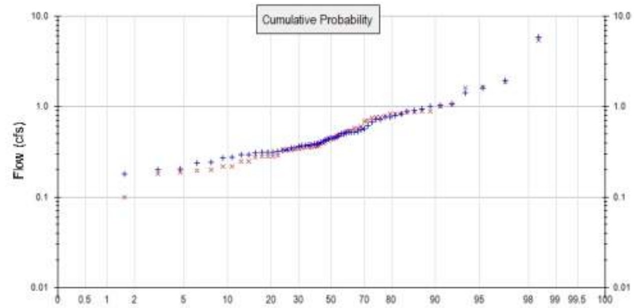
Bioretention Surface Hydraulic Table

Stage(feet)	**Area(ac.)**	**Volume(ac-ft.)**	**Discharge(cfs)**	**To Amended(cfs)**	**Infilt(cfs)**
3.2500	0.0321	0.0420	0.0000	0.0762	0.0000
3.2995	0.0321	0.0436	0.0000	0.0762	0.0000
3.3489	0.0321	0.0452	0.0000	0.0762	0.0000
3.3984	0.0321	0.0468	0.0000	0.0762	0.0000
3.4478	0.0321	0.0484	0.0000	0.0762	0.0000
3.4973	0.0321	0.0499	0.0000	0.0762	0.0000
3.5467	0.0321	0.0515	0.0000	0.0762	0.0000
3.5962	0.0321	0.0531	0.0000	0.0762	0.0000
3.6456	0.0321	0.0547	0.0000	0.0762	0.0000
3.6951	0.0321	0.0563	0.0000	0.0762	0.0000
3.7445	0.0321	0.0579	0.0000	0.0762	0.0000
3.7940	0.0321	0.0595	0.0015	0.0762	0.0000
3.8434	0.0321	0.0611	0.0023	0.0762	0.0000
3.8929	0.0321	0.0627	0.0050	0.0762	0.0000
3.9423	0.0321	0.0642	0.0063	0.0762	0.0000
3.9918	0.0321	0.0658	0.0089	0.0762	0.0000
4.0412	0.0321	0.0674	0.0096	0.0762	0.0000
4.0907	0.0321	0.0690	0.0099	0.0762	0.0000
4.1401	0.0321	0.0706	0.0111	0.0762	0.0000
4.1896	0.0321	0.0722	0.0117	0.0762	0.0000
4.2390	0.0321	0.0738	0.0129	0.0762	0.0000
4.2885	0.0321	0.0754	0.0135	0.0762	0.0000
4.3379	0.0321	0.0770	0.0145	0.0762	0.0000

4.3874	0.0321	0.0785	0.0151	0.0762	0.0000
4.4368	0.0321	0.0801	0.0160	0.0762	0.0000
4.4863	0.0321	0.0817	0.0165	0.0762	0.0000
4.5000	0.0321	0.0822	0.0174	0.0762	0.0000

Analysis Results
POC 1





+ Pre-Project x Mitigated

Pre-Project Landuse Totals for POC #1
Total Pervious Area: 0.522
Total Impervious Area: 0.041

Mitigated Landuse Totals for POC #1
Total Pervious Area: 0
Total Impervious Area: 0.525

Flow Frequency Method: Weibull

Flow Frequency Return Periods for Pre-Project. POC #1

Return Period	**Flow(cfs)**
2 year	0.446609
5 year	0.775095
10 year	1.025011
25 year	1.730127

Flow Frequency Return Periods for Mitigated. POC #1

Return Period	**Flow(cfs)**
2 year	0.444591
5 year	0.834111
10 year	0.961737
25 year	1.719909

Annual Peaks

Annual Peaks for Pre-Project and Mitigated. POC #1

Year	**Pre-Project**	**Mitigated**
1960	0.237	0.219
1961	0.507	0.491
1962	0.396	0.282
1963	0.448	0.610
1964	0.835	0.842
1965	0.376	0.411
1966	0.517	0.516
1967	0.482	0.531
1968	0.441	0.424
1969	0.390	0.336
1970	0.206	0.100
1971	0.295	0.196
1972	0.116	0.037
1973	0.312	0.362

1974	0.372	0.335
1975	0.526	0.484
1976	0.180	0.274
1977	0.447	0.371
1978	0.527	0.341
1979	0.384	0.349
1980	0.614	0.548
1981	0.200	0.188
1982	0.765	0.772
1983	0.459	0.445
1984	0.351	0.290
1985	0.291	0.285
1986	0.501	0.446
1987	0.315	0.342
1988	0.360	0.201
1989	0.305	0.249
1990	0.406	0.487
1991	0.274	0.281
1992	0.413	0.357
1993	0.450	0.456
1994	0.270	0.248
1995	0.321	0.394
1996	0.313	0.334
1997	0.368	0.365
1998	0.557	0.582
1999	0.244	0.179
2000	0.432	0.354
2001	0.896	0.747
2002	0.504	0.585
2003	1.008	1.016
2004	5.845	5.419
2005	0.569	0.700
2006	0.717	0.759
2007	0.938	0.833
2008	1.432	1.650
2009	0.350	0.387
2010	1.078	1.044
2011	0.719	0.892
2012	0.771	0.839
2013	0.528	0.536
2014	0.336	0.216
2015	1.603	1.602
2016	0.898	0.892
2017	1.972	1.853
2018	0.329	0.354
2019	1.038	0.878
2020	0.383	0.862
2021	0.668	0.689
2022	0.794	0.786

Ranked Annual Peaks

Ranked Annual Peaks for Pre-Project and Mitigated. POC #1

Rank	Pre-Project	Mitigated
1	5.8452	5.4190
2	1.9725	1.8530
3	1.6032	1.6502
4	1.4315	1.6016
5	1.0784	1.0440

6	1.0383	1.0156
7	1.0079	0.8925
8	0.9381	0.8922
9	0.8982	0.8776
10	0.8957	0.8621
11	0.8354	0.8415
12	0.7944	0.8386
13	0.7707	0.8331
14	0.7654	0.7863
15	0.7185	0.7720
16	0.7167	0.7594
17	0.6685	0.7468
18	0.6143	0.6999
19	0.5694	0.6886
20	0.5565	0.6097
21	0.5281	0.5846
22	0.5274	0.5824
23	0.5255	0.5485
24	0.5171	0.5362
25	0.5074	0.5314
26	0.5045	0.5156
27	0.5006	0.4913
28	0.4819	0.4869
29	0.4589	0.4837
30	0.4498	0.4556
31	0.4479	0.4459
32	0.4466	0.4446
33	0.4408	0.4245
34	0.4320	0.4110
35	0.4130	0.3944
36	0.4056	0.3867
37	0.3963	0.3713
38	0.3901	0.3648
39	0.3839	0.3622
40	0.3829	0.3569
41	0.3758	0.3544
42	0.3722	0.3536
43	0.3681	0.3491
44	0.3604	0.3416
45	0.3515	0.3411
46	0.3504	0.3360
47	0.3358	0.3351
48	0.3292	0.3341
49	0.3213	0.2899
50	0.3146	0.2846
51	0.3132	0.2822
52	0.3119	0.2805
53	0.3049	0.2740
54	0.2947	0.2493
55	0.2915	0.2482
56	0.2738	0.2189
57	0.2701	0.2161
58	0.2443	0.2006
59	0.2371	0.1964
60	0.2059	0.1882
61	0.1998	0.1792
62	0.1804	0.0997
63	0.1157	0.0368

Duration Flows
The Facility PASSED

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
0.0447	4558	4255	93	Pass
0.0546	3877	3450	88	Pass
0.0645	3358	2706	80	Pass
0.0744	2939	1801	61	Pass
0.0843	2597	1248	48	Pass
0.0942	2287	1140	49	Pass
0.1041	2034	1053	51	Pass
0.1140	1836	975	53	Pass
0.1239	1659	899	54	Pass
0.1338	1470	837	56	Pass
0.1437	1318	773	58	Pass
0.1536	1194	716	59	Pass
0.1635	1067	661	61	Pass
0.1734	959	625	65	Pass
0.1833	861	576	66	Pass
0.1932	783	534	68	Pass
0.2031	712	497	69	Pass
0.2130	658	465	70	Pass
0.2229	610	430	70	Pass
0.2328	567	394	69	Pass
0.2427	521	370	71	Pass
0.2526	460	350	76	Pass
0.2625	421	320	76	Pass
0.2724	389	295	75	Pass
0.2823	360	276	76	Pass
0.2922	328	257	78	Pass
0.3021	305	236	77	Pass
0.3120	279	224	80	Pass
0.3219	256	213	83	Pass
0.3318	235	204	86	Pass
0.3417	223	190	85	Pass
0.3516	208	175	84	Pass
0.3615	195	168	86	Pass
0.3714	180	161	89	Pass
0.3813	170	147	86	Pass
0.3912	160	140	87	Pass
0.4012	153	137	89	Pass
0.4111	148	130	87	Pass
0.4210	140	126	90	Pass
0.4309	136	123	90	Pass
0.4408	128	115	89	Pass
0.4507	113	110	97	Pass
0.4606	105	103	98	Pass
0.4705	100	102	102	Pass
0.4804	96	95	98	Pass
0.4903	90	87	96	Pass
0.5002	89	82	92	Pass
0.5101	85	80	94	Pass
0.5200	80	75	93	Pass
0.5299	73	70	95	Pass
0.5398	68	67	98	Pass
0.5497	67	63	94	Pass
0.5596	64	62	96	Pass

0.5695	64	59	92	Pass
0.5794	61	58	95	Pass
0.5893	58	54	93	Pass
0.5992	56	52	92	Pass
0.6091	54	52	96	Pass
0.6190	52	50	96	Pass
0.6289	48	46	95	Pass
0.6388	46	46	100	Pass
0.6487	43	44	102	Pass
0.6586	41	39	95	Pass
0.6685	40	37	92	Pass
0.6784	36	34	94	Pass
0.6883	35	34	97	Pass
0.6982	33	32	96	Pass
0.7081	32	30	93	Pass
0.7180	30	30	100	Pass
0.7279	28	29	103	Pass
0.7378	26	28	107	Pass
0.7477	25	26	104	Pass
0.7576	25	25	100	Pass
0.7675	23	24	104	Pass
0.7774	21	21	100	Pass
0.7874	21	20	95	Pass
0.7973	20	20	100	Pass
0.8072	20	20	100	Pass
0.8171	20	19	95	Pass
0.8270	19	17	89	Pass
0.8369	17	16	94	Pass
0.8468	16	13	81	Pass
0.8567	15	13	86	Pass
0.8666	14	12	85	Pass
0.8765	14	12	85	Pass
0.8864	14	10	71	Pass
0.8963	13	7	53	Pass
0.9062	11	6	54	Pass
0.9161	11	6	54	Pass
0.9260	11	6	54	Pass
0.9359	11	6	54	Pass
0.9458	10	6	60	Pass
0.9557	10	6	60	Pass
0.9656	10	6	60	Pass
0.9755	10	6	60	Pass
0.9854	10	6	60	Pass
0.9953	10	6	60	Pass
1.0052	9	6	66	Pass
1.0151	8	6	75	Pass
1.0250	8	5	62	Pass

Model Default Modifications

Total of 0 changes have been made.

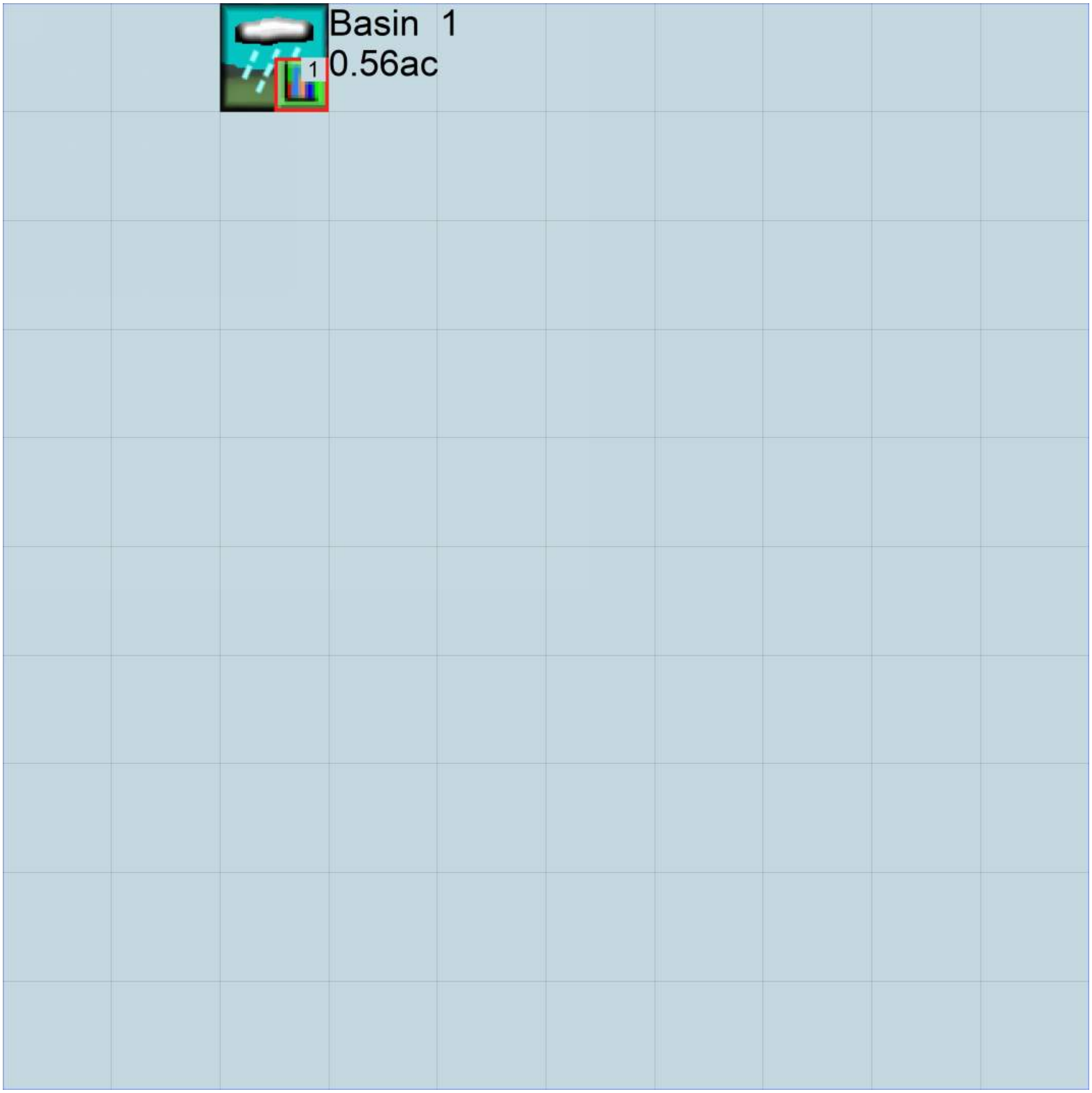
PERLND Changes

No PERLND changes have been made.

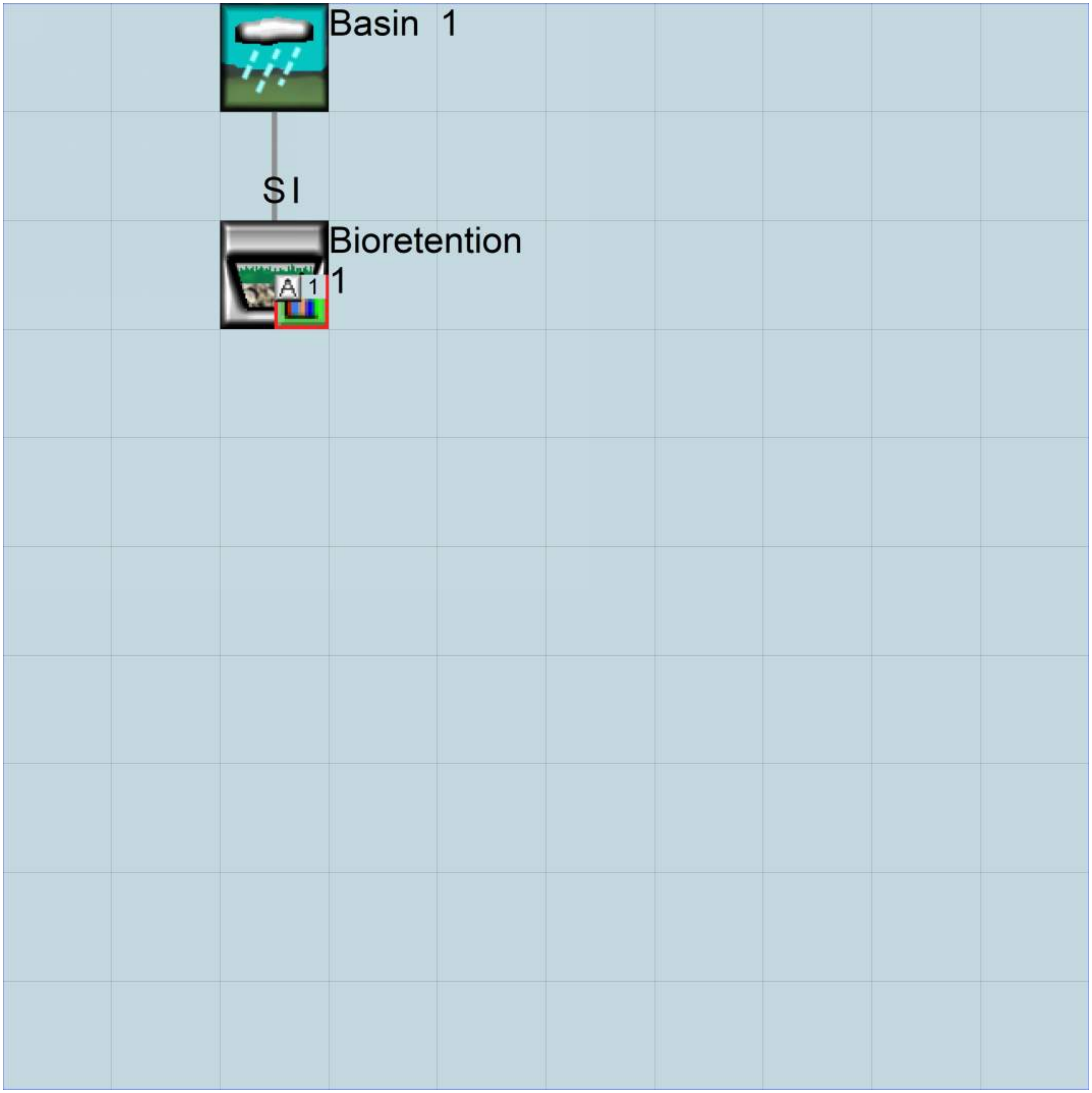
IMPLND Changes

No IMPLND changes have been made.

Appendix
Pre-Project Schematic



Mitigated Schematic



Disclaimer

Legal Notice

This program and accompanying documentation are provided 'as-is' without warranty of any kind.The entire risk regarding the performance and results of this program is assumed by End User. Clear Creek Solutions Inc. and the governmental licensee or sublicensees disclaim all warranties, either expressed or implied, including but not limited to implied warranties of program and accompanying documentation. In no event shall Clear Creek Solutions Inc, Applied Marine SciencesIncorporated, the Alameda County Flood Control and Water Conservation District, EOA Incorporated, member agencies of the Alameda Countywide Clean Water Program, member agencies of the San Mateo Countywide Water Pollution Prevention Program, member agencies of the Santa Clara Valley Urban Runoff Pollution Prevention Program or any other LOU Participants or authorized representatives of LOU Participants be liable for any damages whatsoever (including without limitation to damages for loss of business profits, loss of business information,business interruption, and the like) arising out of the use of, or inability to use this programeven if Clear Creek Solutions Inc., Applied Marine Sciences Incorporated, the Alameda County Flood Control and Water Conservation District, EOA Incorporated or any member agencies of the LOU Participants or their authorized representatives have been advised of the possibility of such damages.

Clear Creek Solutions, Inc.
6200 Capitol Blvd. Ste F
Olympia, WA. 98501
Toll Free 1(866)943-0304
Local (360)943-0304

www.clearcreeksolutions.com

BAHM2023

PROJECT REPORT

General Model Information

BAHM2023 Project Name: P1 DMA4

Site Name:	Smith Field Park
Site Address:	400 Wavecrest Rd
City:	Half Moon Bay
Report Date:	5/31/2024
Gage:	San Francisco
Data Start:	1959/10/01
Data End:	2022/09/30
Timestep:	Hourly
Precip Scale:	2.000
Version Date:	2023/12/22

POC Thresholds

Low Flow Threshold for POC1:	10 Percent of the 2 Year
High Flow Threshold for POC1:	10 Year

Landuse Basin Data
Pre-Project Land Use

Basin 1

Bypass:	No
GroundWater:	No
Pervious Land Use	acre
C D,Grass,Flat(0-5%)	0.448
Pervious Total	0.448
Impervious Land Use	acre
Parking,Flat(0-5%)	0.144
Impervious Total	0.144
Basin Total	0.592

Element Flow Componants:

Surface	Interflow	Groundwater
Componant Flows To:		
POC 1	POC 1	

Mitigated Land Use

Basin 1

Bypass:	No
GroundWater:	No
Pervious Land Use	acre
Pervious Total	0
Impervious Land Use	acre
Parking,Flat(0-5%)	0.5691
Impervious Total	0.5691
Basin Total	0.5691

Element Flow Componants:

Surface	Interflow	Groundwater
Componant Flows To:		
Surface retention 1	Surface retention 1	

Routing Elements
Pre-Project Routing

Mitigated Routing

Bioretention 1

Bottom Length:	32.00 ft.
Bottom Width:	32.00 ft.
Material thickness of first layer:	1.5
Material type for first layer:	BAHM 5
Material thickness of second layer:	1
Material type for second layer:	ASTM 9
Material thickness of third layer:	0
Material type for third layer:	GRAVEL
Underdrain used	
Underdrain Diameter (feet):	0.333333333333333
Orifice Diameter (in.):	1.25
Offset (in.):	0
Flow Through Underdrain (ac-ft.):	98.422
Total Outflow (ac-ft.):	121.202
Percent Through Underdrain:	81.2

Discharge Structure
Riser Height: 1 ft.
Riser Diameter: 12 in.
Element Outlets:
Outlet 1 Outlet 2
Outlet Flows To:

Bioretention Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.0507	0.0000	0.0000	0.0000
0.0440	0.0502	0.0004	0.0000	0.0000
0.0879	0.0497	0.0008	0.0000	0.0000
0.1319	0.0491	0.0012	0.0000	0.0000
0.1758	0.0485	0.0016	0.0000	0.0000
0.2198	0.0480	0.0020	0.0000	0.0000
0.2637	0.0474	0.0025	0.0000	0.0000
0.3077	0.0469	0.0029	0.0000	0.0000
0.3516	0.0463	0.0034	0.0000	0.0000
0.3956	0.0458	0.0038	0.0000	0.0000
0.4396	0.0452	0.0043	0.0000	0.0000
0.4835	0.0447	0.0047	0.0000	0.0000
0.5275	0.0442	0.0052	0.0047	0.0000
0.5714	0.0436	0.0057	0.0055	0.0000
0.6154	0.0431	0.0062	0.0065	0.0000
0.6593	0.0426	0.0066	0.0071	0.0000
0.7033	0.0421	0.0071	0.0078	0.0000
0.7473	0.0416	0.0077	0.0093	0.0000
0.7912	0.0410	0.0082	0.0102	0.0000
0.8352	0.0405	0.0087	0.0110	0.0000
0.8791	0.0400	0.0092	0.0129	0.0000
0.9231	0.0395	0.0098	0.0140	0.0000
0.9670	0.0390	0.0103	0.0150	0.0000
1.0110	0.0385	0.0109	0.0174	0.0000
1.0549	0.0380	0.0114	0.0187	0.0000
1.0989	0.0375	0.0120	0.0201	0.0000
1.1429	0.0371	0.0126	0.0229	0.0000
1.1868	0.0366	0.0131	0.0242	0.0000

1.2308	0.0361	0.0137	0.0261	0.0000
1.2747	0.0356	0.0143	0.0263	0.0000
1.3187	0.0351	0.0149	0.0271	0.0000
1.3626	0.0347	0.0155	0.0279	0.0000
1.4066	0.0342	0.0162	0.0287	0.0000
1.4505	0.0337	0.0168	0.0294	0.0000
1.4945	0.0333	0.0174	0.0302	0.0000
1.5385	0.0328	0.0182	0.0309	0.0000
1.5824	0.0323	0.0189	0.0316	0.0000
1.6264	0.0319	0.0196	0.0322	0.0000
1.6703	0.0314	0.0204	0.0329	0.0000
1.7143	0.0310	0.0212	0.0335	0.0000
1.7582	0.0306	0.0219	0.0342	0.0000
1.8022	0.0301	0.0227	0.0348	0.0000
1.8462	0.0297	0.0235	0.0354	0.0000
1.8901	0.0292	0.0243	0.0360	0.0000
1.9341	0.0288	0.0251	0.0366	0.0000
1.9780	0.0284	0.0259	0.0371	0.0000
2.0220	0.0280	0.0268	0.0377	0.0000
2.0659	0.0275	0.0276	0.0382	0.0000
2.1099	0.0271	0.0285	0.0388	0.0000
2.1538	0.0267	0.0293	0.0393	0.0000
2.1978	0.0263	0.0302	0.0399	0.0000
2.2418	0.0259	0.0311	0.0404	0.0000
2.2857	0.0255	0.0320	0.0410	0.0000
2.3297	0.0251	0.0329	0.0415	0.0000
2.3736	0.0247	0.0338	0.0420	0.0000
2.4176	0.0243	0.0347	0.0426	0.0000
2.4615	0.0239	0.0356	0.0431	0.0000
2.5000	0.0235	0.0364	0.0435	0.0000

Bioretention Surface Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	To Amended(cfs)	Infilt(cfs)
2.5000	0.0507	0.0364	0.0000	0.0435	0.0000
2.5440	0.0513	0.0387	0.0000	0.0435	0.0000
2.5879	0.0519	0.0410	0.0000	0.0435	0.0000
2.6319	0.0524	0.0432	0.0000	0.0435	0.0000
2.6758	0.0530	0.0456	0.0000	0.0435	0.0000
2.7198	0.0536	0.0479	0.0000	0.0435	0.0000
2.7637	0.0542	0.0503	0.0000	0.0435	0.0000
2.8077	0.0548	0.0527	0.0000	0.0435	0.0000
2.8516	0.0554	0.0551	0.0000	0.0435	0.0000
2.8956	0.0560	0.0575	0.0000	0.0435	0.0000
2.9396	0.0566	0.0600	0.0000	0.0435	0.0000
2.9835	0.0572	0.0625	0.0000	0.0435	0.0000
3.0275	0.0578	0.0650	0.0000	0.0435	0.0000
3.0714	0.0584	0.0676	0.0000	0.0435	0.0000
3.1154	0.0590	0.0702	0.0000	0.0435	0.0000
3.1593	0.0596	0.0728	0.0000	0.0435	0.0000
3.2033	0.0602	0.0754	0.0000	0.0435	0.0000
3.2473	0.0608	0.0781	0.0000	0.0435	0.0000
3.2912	0.0615	0.0808	0.0000	0.0435	0.0000
3.3352	0.0621	0.0835	0.0000	0.0435	0.0000
3.3791	0.0627	0.0862	0.0000	0.0435	0.0000
3.4231	0.0634	0.0890	0.0000	0.0435	0.0000
3.4670	0.0640	0.0918	0.0000	0.0435	0.0000
3.5110	0.0646	0.0946	0.0122	0.0435	0.0000
3.5549	0.0653	0.0975	0.1365	0.0435	0.0000

3.5989	0.0659	0.1004	0.3281	0.0435	0.0000
3.6429	0.0666	0.1033	0.5635	0.0435	0.0000
3.6868	0.0672	0.1062	0.8261	0.0435	0.0000
3.7308	0.0679	0.1092	1.0991	0.0435	0.0000
3.7747	0.0686	0.1122	1.3657	0.0435	0.0000
3.8187	0.0692	0.1152	1.6096	0.0435	0.0000
3.8626	0.0699	0.1183	1.8176	0.0435	0.0000
3.9066	0.0706	0.1214	1.9818	0.0435	0.0000
3.9505	0.0712	0.1245	2.1028	0.0435	0.0000
3.9945	0.0719	0.1276	2.1930	0.0435	0.0000
4.0000	0.0720	0.1280	2.3112	0.0435	0.0000

Discharge Structure
Riser Height: 1 ft.
Riser Diameter: 12 in.
Element Flow Outlets:
Outlet 1 Outlet 2
Outlets Flow To:

Bioretention Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.0507	0.0000	0.0000	0.0000
0.0440	0.0502	0.0004	0.0000	0.0000
0.0879	0.0497	0.0008	0.0000	0.0000
0.1319	0.0491	0.0012	0.0000	0.0000
0.1758	0.0485	0.0016	0.0000	0.0000
0.2198	0.0480	0.0020	0.0000	0.0000
0.2637	0.0474	0.0025	0.0000	0.0000
0.3077	0.0469	0.0029	0.0000	0.0000
0.3516	0.0463	0.0034	0.0000	0.0000
0.3956	0.0458	0.0038	0.0000	0.0000
0.4396	0.0452	0.0043	0.0000	0.0000
0.4835	0.0447	0.0047	0.0000	0.0000
0.5275	0.0442	0.0052	0.0047	0.0000
0.5714	0.0436	0.0057	0.0055	0.0000
0.6154	0.0431	0.0062	0.0065	0.0000
0.6593	0.0426	0.0066	0.0071	0.0000
0.7033	0.0421	0.0071	0.0078	0.0000
0.7473	0.0416	0.0077	0.0093	0.0000
0.7912	0.0410	0.0082	0.0102	0.0000
0.8352	0.0405	0.0087	0.0110	0.0000
0.8791	0.0400	0.0092	0.0129	0.0000
0.9231	0.0395	0.0098	0.0140	0.0000
0.9670	0.0390	0.0103	0.0150	0.0000
1.0110	0.0385	0.0109	0.0174	0.0000
1.0549	0.0380	0.0114	0.0187	0.0000
1.0989	0.0375	0.0120	0.0201	0.0000
1.1429	0.0371	0.0126	0.0229	0.0000
1.1868	0.0366	0.0131	0.0242	0.0000
1.2308	0.0361	0.0137	0.0261	0.0000
1.2747	0.0356	0.0143	0.0263	0.0000
1.3187	0.0351	0.0149	0.0271	0.0000
1.3626	0.0347	0.0155	0.0279	0.0000
1.4066	0.0342	0.0162	0.0287	0.0000
1.4505	0.0337	0.0168	0.0294	0.0000
1.4945	0.0333	0.0174	0.0302	0.0000

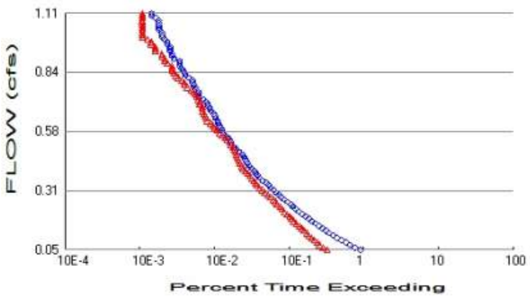
1.5385	0.0328	0.0182	0.0309	0.0000
1.5824	0.0323	0.0189	0.0316	0.0000
1.6264	0.0319	0.0196	0.0322	0.0000
1.6703	0.0314	0.0204	0.0329	0.0000
1.7143	0.0310	0.0212	0.0335	0.0000
1.7582	0.0306	0.0219	0.0342	0.0000
1.8022	0.0301	0.0227	0.0348	0.0000
1.8462	0.0297	0.0235	0.0354	0.0000
1.8901	0.0292	0.0243	0.0360	0.0000
1.9341	0.0288	0.0251	0.0366	0.0000
1.9780	0.0284	0.0259	0.0371	0.0000
2.0220	0.0280	0.0268	0.0377	0.0000
2.0659	0.0275	0.0276	0.0382	0.0000
2.1099	0.0271	0.0285	0.0388	0.0000
2.1538	0.0267	0.0293	0.0393	0.0000
2.1978	0.0263	0.0302	0.0399	0.0000
2.2418	0.0259	0.0311	0.0404	0.0000
2.2857	0.0255	0.0320	0.0410	0.0000
2.3297	0.0251	0.0329	0.0415	0.0000
2.3736	0.0247	0.0338	0.0420	0.0000
2.4176	0.0243	0.0347	0.0426	0.0000
2.4615	0.0239	0.0356	0.0431	0.0000
2.5000	0.0235	0.0364	0.0435	0.0000

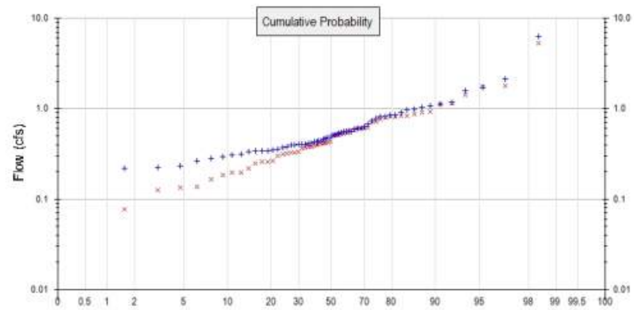
Bioretention Surface Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	To Amended(cfs)	Infilt(cfs)
2.5000	0.0507	0.0364	0.0000	0.0435	0.0000
2.5440	0.0513	0.0387	0.0000	0.0435	0.0000
2.5879	0.0519	0.0410	0.0000	0.0435	0.0000
2.6319	0.0524	0.0432	0.0000	0.0435	0.0000
2.6758	0.0530	0.0456	0.0000	0.0435	0.0000
2.7198	0.0536	0.0479	0.0000	0.0435	0.0000
2.7637	0.0542	0.0503	0.0000	0.0435	0.0000
2.8077	0.0548	0.0527	0.0000	0.0435	0.0000
2.8516	0.0554	0.0551	0.0000	0.0435	0.0000
2.8956	0.0560	0.0575	0.0000	0.0435	0.0000
2.9396	0.0566	0.0600	0.0000	0.0435	0.0000
2.9835	0.0572	0.0625	0.0000	0.0435	0.0000
3.0275	0.0578	0.0650	0.0000	0.0435	0.0000
3.0714	0.0584	0.0676	0.0000	0.0435	0.0000
3.1154	0.0590	0.0702	0.0000	0.0435	0.0000
3.1593	0.0596	0.0728	0.0000	0.0435	0.0000
3.2033	0.0602	0.0754	0.0000	0.0435	0.0000
3.2473	0.0608	0.0781	0.0000	0.0435	0.0000
3.2912	0.0615	0.0808	0.0000	0.0435	0.0000
3.3352	0.0621	0.0835	0.0000	0.0435	0.0000
3.3791	0.0627	0.0862	0.0000	0.0435	0.0000
3.4231	0.0634	0.0890	0.0000	0.0435	0.0000
3.4670	0.0640	0.0918	0.0000	0.0435	0.0000
3.5110	0.0646	0.0946	0.0122	0.0435	0.0000
3.5549	0.0653	0.0975	0.1365	0.0435	0.0000
3.5989	0.0659	0.1004	0.3281	0.0435	0.0000
3.6429	0.0666	0.1033	0.5635	0.0435	0.0000
3.6868	0.0672	0.1062	0.8261	0.0435	0.0000
3.7308	0.0679	0.1092	1.0991	0.0435	0.0000
3.7747	0.0686	0.1122	1.3657	0.0435	0.0000
3.8187	0.0692	0.1152	1.6096	0.0435	0.0000
3.8626	0.0699	0.1183	1.8176	0.0435	0.0000

3.9066	0.0706	0.1214	1.9818	0.0435	0.0000
3.9505	0.0712	0.1245	2.1028	0.0435	0.0000
3.9945	0.0719	0.1276	2.1930	0.0435	0.0000
4.0000	0.0720	0.1280	2.3112	0.0435	0.0000

Analysis Results
POC 1





+ Pre-Project   x Mitigated

Pre-Project Landuse Totals for POC #1
Total Pervious Area: 0.448
Total Impervious Area: 0.144

Mitigated Landuse Totals for POC #1
Total Pervious Area: 0
Total Impervious Area: 0.5691

Flow Frequency Method: Weibull

Flow Frequency Return Periods for Pre-Project. POC #1

Return Period	**Flow(cfs)**
2 year	0.478828
5 year	0.846367
10 year	1.107006
25 year	1.869421

Flow Frequency Return Periods for Mitigated. POC #1

Return Period	**Flow(cfs)**
2 year	0.434042
5 year	0.814548
10 year	1.033852
25 year	1.772984

Annual Peaks

Annual Peaks for Pre-Project and Mitigated. POC #1

Year	**Pre-Project**	**Mitigated**
1960	0.263	0.257
1961	0.560	0.396
1962	0.429	0.314
1963	0.515	0.722
1964	0.901	0.802
1965	0.417	0.375
1966	0.557	0.582
1967	0.523	0.577
1968	0.479	0.498
1969	0.417	0.380
1970	0.233	0.125
1971	0.351	0.077
1972	0.139	0.038
1973	0.342	0.265

1974	0.400	0.220
1975	0.607	0.509
1976	0.220	0.261
1977	0.529	0.405
1978	0.591	0.332
1979	0.430	0.318
1980	0.667	0.547
1981	0.221	0.198
1982	0.808	0.873
1983	0.509	0.538
1984	0.396	0.327
1985	0.315	0.328
1986	0.555	0.565
1987	0.341	0.377
1988	0.408	0.198
1989	0.333	0.137
1990	0.436	0.303
1991	0.305	0.182
1992	0.459	0.389
1993	0.476	0.515
1994	0.291	0.249
1995	0.354	0.434
1996	0.343	0.364
1997	0.395	0.411
1998	0.612	0.532
1999	0.284	0.164
2000	0.471	0.420
2001	0.989	0.510
2002	0.550	0.610
2003	1.081	1.112
2004	6.281	5.346
2005	0.631	0.772
2006	0.778	0.841
2007	1.027	0.600
2008	1.575	1.807
2009	0.383	0.418
2010	1.172	1.146
2011	0.812	0.816
2012	0.844	0.908
2013	0.561	0.616
2014	0.403	0.133
2015	1.733	1.408
2016	0.965	0.933
2017	2.130	1.755
2018	0.370	0.416
2019	1.127	0.830
2020	0.441	0.721
2021	0.727	0.610
2022	0.857	0.814

Ranked Annual Peaks

Ranked Annual Peaks for Pre-Project and Mitigated. POC #1

Rank	Pre-Project	Mitigated
1	6.2807	5.3461
2	2.1297	1.8072
3	1.7331	1.7550
4	1.5754	1.4081
5	1.1724	1.1458

6	1.1272	1.1125
7	1.0810	0.9328
8	1.0274	0.9077
9	0.9888	0.8730
10	0.9645	0.8414
11	0.9012	0.8300
12	0.8572	0.8156
13	0.8439	0.8143
14	0.8119	0.8019
15	0.8081	0.7724
16	0.7776	0.7216
17	0.7267	0.7206
18	0.6668	0.6160
19	0.6312	0.6104
20	0.6120	0.6104
21	0.6073	0.6000
22	0.5911	0.5816
23	0.5607	0.5766
24	0.5604	0.5647
25	0.5572	0.5469
26	0.5549	0.5384
27	0.5500	0.5320
28	0.5289	0.5147
29	0.5229	0.5097
30	0.5147	0.5092
31	0.5087	0.4976
32	0.4788	0.4340
33	0.4761	0.4197
34	0.4706	0.4184
35	0.4587	0.4155
36	0.4407	0.4105
37	0.4363	0.4050
38	0.4298	0.3965
39	0.4294	0.3891
40	0.4169	0.3798
41	0.4166	0.3771
42	0.4079	0.3750
43	0.4029	0.3638
44	0.4003	0.3323
45	0.3961	0.3284
46	0.3947	0.3268
47	0.3833	0.3176
48	0.3698	0.3144
49	0.3544	0.3031
50	0.3508	0.2648
51	0.3431	0.2609
52	0.3420	0.2575
53	0.3406	0.2488
54	0.3329	0.2196
55	0.3153	0.1980
56	0.3050	0.1980
57	0.2909	0.1823
58	0.2841	0.1644
59	0.2635	0.1371
60	0.2333	0.1330
61	0.2215	0.1246
62	0.2199	0.0770
63	0.1394	0.0380

Duration Flows
The Facility PASSED

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
0.0479	5038	1790	35	Pass
0.0586	4251	1578	37	Pass
0.0693	3615	1427	39	Pass
0.0800	3187	1314	41	Pass
0.0907	2759	1208	43	Pass
0.1014	2437	1101	45	Pass
0.1121	2147	1014	47	Pass
0.1228	1925	958	49	Pass
0.1335	1729	872	50	Pass
0.1442	1535	816	53	Pass
0.1549	1395	764	54	Pass
0.1656	1252	697	55	Pass
0.1763	1117	641	57	Pass
0.1870	1021	602	58	Pass
0.1977	920	562	61	Pass
0.2084	830	516	62	Pass
0.2191	749	475	63	Pass
0.2298	683	446	65	Pass
0.2405	622	417	67	Pass
0.2511	582	384	65	Pass
0.2618	531	364	68	Pass
0.2725	478	343	71	Pass
0.2832	434	312	71	Pass
0.2939	405	288	71	Pass
0.3046	370	262	70	Pass
0.3153	345	241	69	Pass
0.3260	316	222	70	Pass
0.3367	292	206	70	Pass
0.3474	273	196	71	Pass
0.3581	245	188	76	Pass
0.3688	224	175	78	Pass
0.3795	209	165	78	Pass
0.3902	199	153	76	Pass
0.4009	187	144	77	Pass
0.4116	174	135	77	Pass
0.4223	164	128	78	Pass
0.4330	154	121	78	Pass
0.4437	149	119	79	Pass
0.4544	144	115	79	Pass
0.4651	137	111	81	Pass
0.4758	131	109	83	Pass
0.4865	118	105	88	Pass
0.4972	109	103	94	Pass
0.5079	103	98	95	Pass
0.5186	95	92	96	Pass
0.5293	91	89	97	Pass
0.5400	88	82	93	Pass
0.5507	84	77	91	Pass
0.5614	77	70	90	Pass
0.5721	73	64	87	Pass
0.5828	70	60	85	Pass
0.5935	67	56	83	Pass
0.6042	65	53	81	Pass

0.6149	63	49	77	Pass
0.6256	61	45	73	Pass
0.6363	57	43	75	Pass
0.6470	56	42	75	Pass
0.6577	54	40	74	Pass
0.6684	51	38	74	Pass
0.6791	48	38	79	Pass
0.6898	46	38	82	Pass
0.7005	45	35	77	Pass
0.7112	43	35	81	Pass
0.7219	40	34	85	Pass
0.7326	34	32	94	Pass
0.7433	34	31	91	Pass
0.7540	34	29	85	Pass
0.7647	31	27	87	Pass
0.7754	31	24	77	Pass
0.7861	29	22	75	Pass
0.7968	28	22	78	Pass
0.8075	28	20	71	Pass
0.8182	25	18	72	Pass
0.8289	23	17	73	Pass
0.8396	22	16	72	Pass
0.8502	21	15	71	Pass
0.8609	20	15	75	Pass
0.8716	19	15	78	Pass
0.8823	19	13	68	Pass
0.8930	19	12	63	Pass
0.9037	16	12	75	Pass
0.9144	15	11	73	Pass
0.9251	15	11	73	Pass
0.9358	14	9	64	Pass
0.9465	14	9	64	Pass
0.9572	14	9	64	Pass
0.9679	13	8	61	Pass
0.9786	13	8	61	Pass
0.9893	12	7	58	Pass
1.0000	11	6	54	Pass
1.0107	11	6	54	Pass
1.0214	11	6	54	Pass
1.0321	10	6	60	Pass
1.0428	10	6	60	Pass
1.0535	10	6	60	Pass
1.0642	10	6	60	Pass
1.0749	10	6	60	Pass
1.0856	9	6	66	Pass
1.0963	8	6	75	Pass
1.1070	8	6	75	Pass

Water Quality

Model Default Modifications

Total of 0 changes have been made.

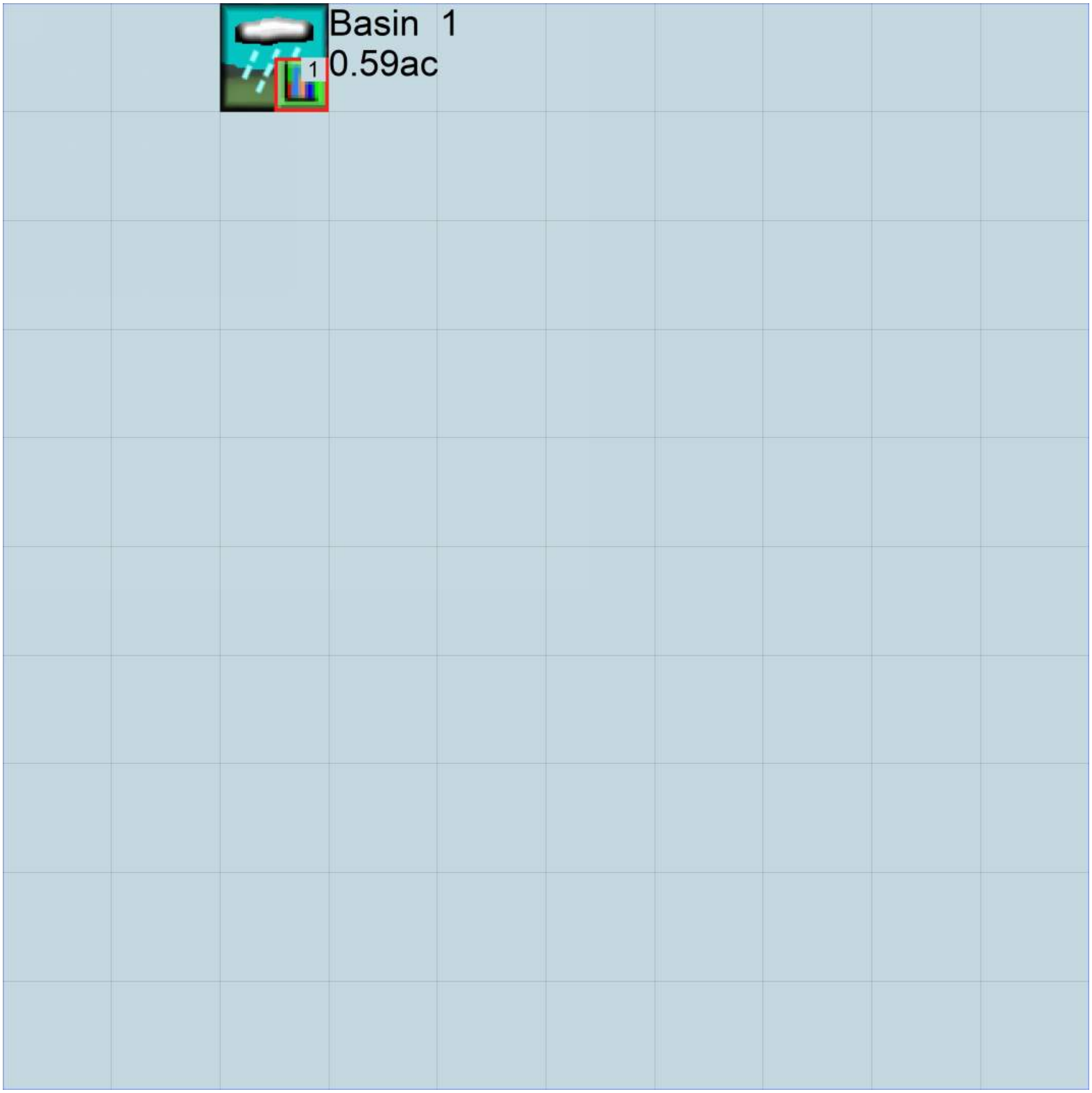
PERLND Changes

No PERLND changes have been made.

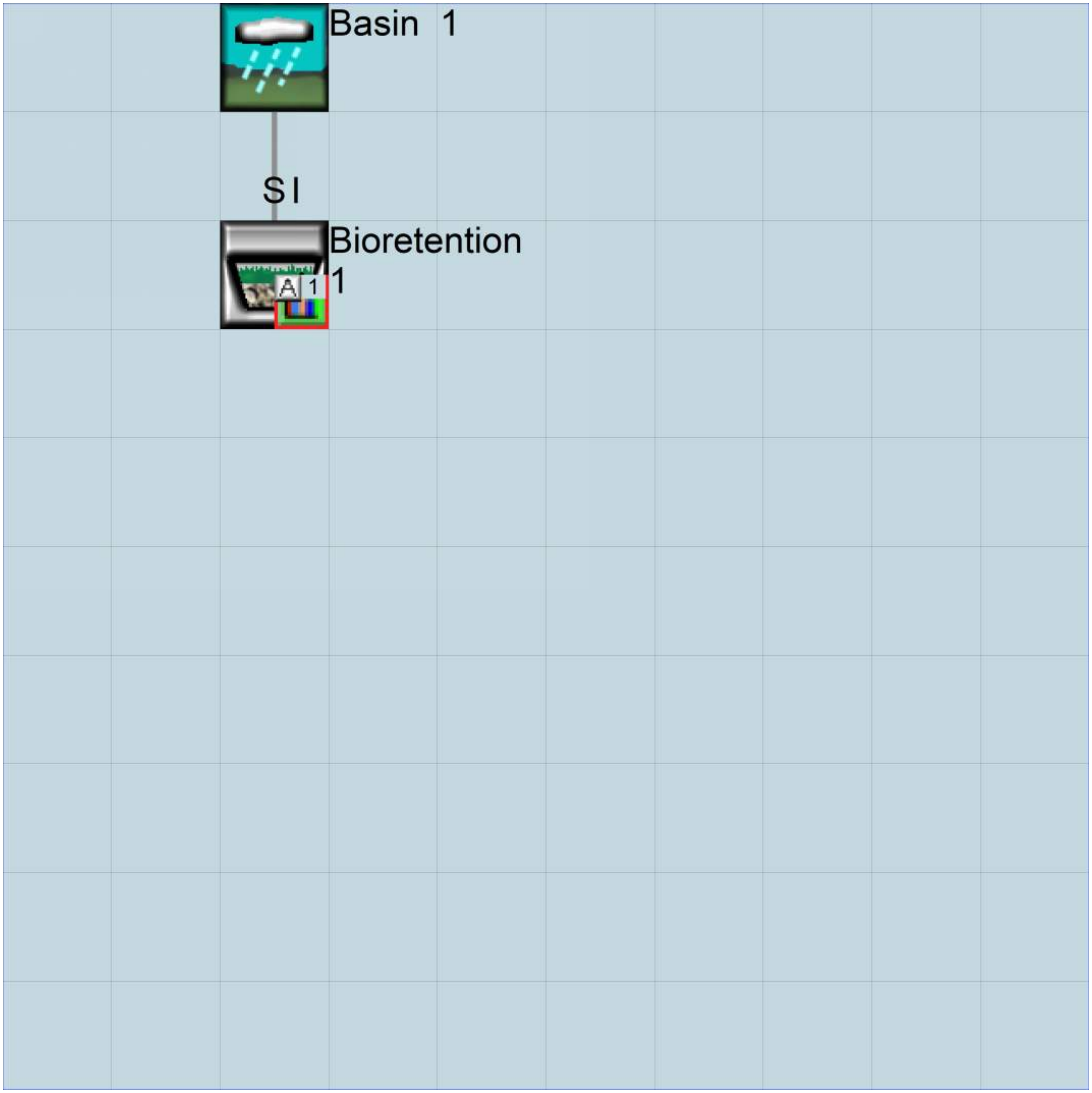
IMPLND Changes

No IMPLND changes have been made.

Appendix
Pre-Project Schematic



Mitigated Schematic



Disclaimer

Legal Notice

This program and accompanying documentation are provided 'as-is' without warranty of any kind.The entire risk regarding the performance and results of this program is assumed by End User. Clear Creek Solutions Inc. and the governmental licensee or sublicensees disclaim all warranties, either expressed or implied, including but not limited to implied warranties of program and accompanying documentation. In no event shall Clear Creek Solutions Inc, Applied Marine SciencesIncorporated, the Alameda County Flood Control and Water Conservation District, EOA Incorporated, member agencies of the Alameda Countywide Clean Water Program, member agencies of the San Mateo Countywide Water Pollution Prevention Program, member agencies of the Santa Clara Valley Urban Runoff Pollution Prevention Program or any other LOU Participants or authorized representatives of LOU Participants be liable for any damages whatsoever (including without limitation to damages for loss of business profits, loss of business information,business interruption, and the like) arising out of the use of, or inability to use this programeven if Clear Creek Solutions Inc., Applied Marine Sciences Incorporated, the Alameda County Flood Control and Water Conservation District, EOA Incorporated or any member agencies of the LOU Participants or their authorized representatives have been advised of the possibility of such damages.

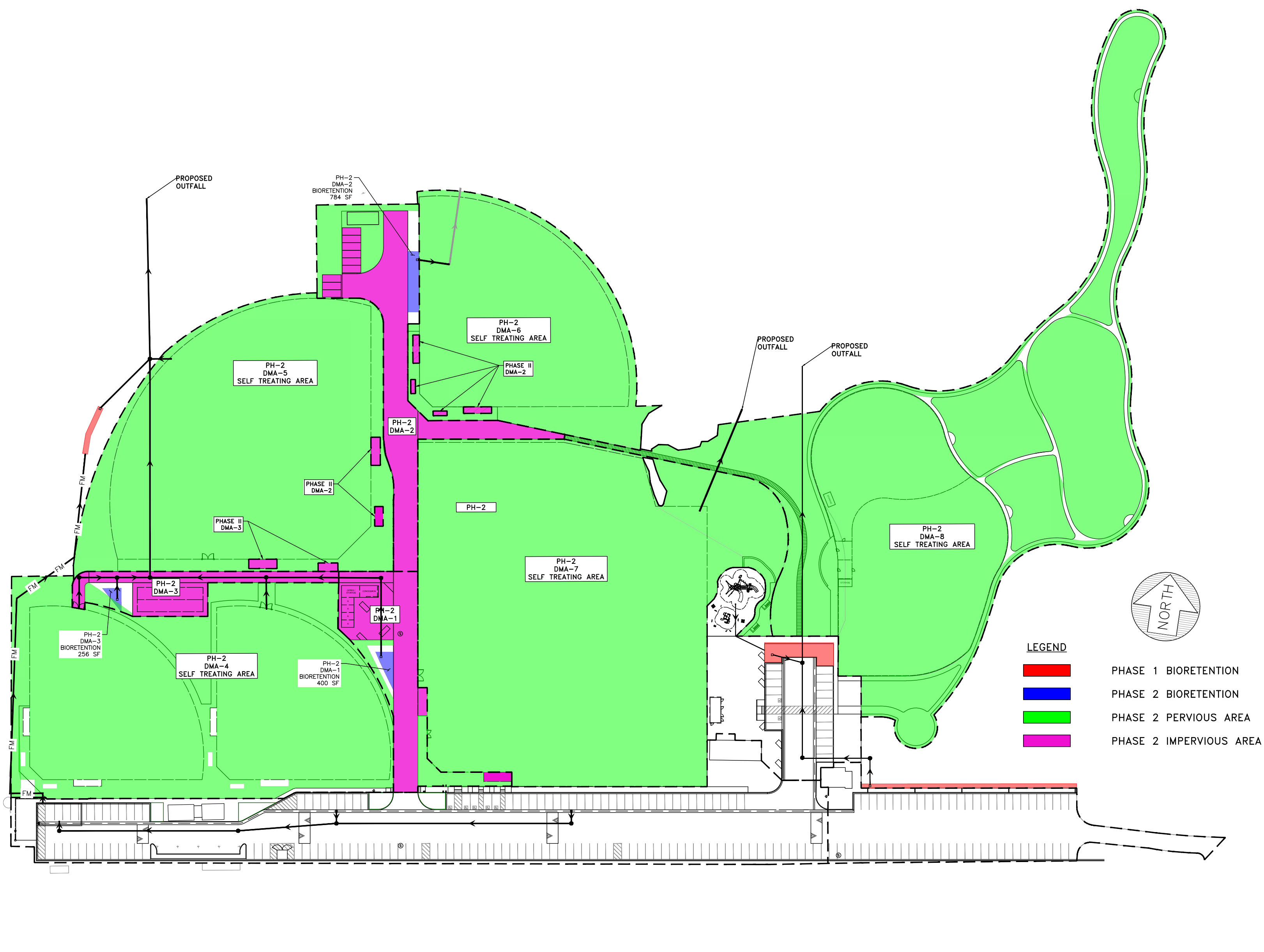
Clear Creek Solutions, Inc.
6200 Capitol Blvd. Ste F
Olympia, WA. 98501
Toll Free 1(866)943-0304
Local (360)943-0304

www.clearcreeksolutions.com

Smith Field Park

BAHM Reports

Phase 2



BAHM2023

PROJECT REPORT

General Model Information

BAHM2023 Project Name: P2 DMA1

Site Name:	Smith Field Park
Site Address:	400 Wavecrest Rd
City:	Half Moon Bay
Report Date:	5/31/2024
Gage:	San Francisco
Data Start:	1959/10/01
Data End:	2022/09/30
Timestep:	Hourly
Precip Scale:	2.000
Version Date:	2023/12/22

POC Thresholds

Low Flow Threshold for POC1:	10 Percent of the 2 Year
High Flow Threshold for POC1:	10 Year

Landuse Basin Data
Pre-Project Land Use

Basin 1

Bypass:	No
GroundWater:	No
Pervious Land Use	acre
C D,Grass,Flat(0-5%)	0.246
Pervious Total	0.246
Impervious Land Use	acre
Parking,Flat(0-5%)	0.084
Impervious Total	0.084
Basin Total	0.33

Element Flow Componants:

Surface	Interflow	Groundwater
Componant Flows To:		
POC 1	POC 1	

Mitigated Land Use

Basin 1

Bypass:	No
GroundWater:	No
Pervious Land Use	acre
C D,Grass,Flat(0-5%)	0.07
Pervious Total	0.07
Impervious Land Use	acre
Parking,Flat(0-5%)	0.251
Impervious Total	0.251
Basin Total	0.321

Element Flow Componants:

Surface	Interflow	Groundwater
Componant Flows To:		
Surface retention 1	Surface retention 1	

Mitigated Routing

Bioretention 1

Bottom Length:		20.00 ft.
Bottom Width:		20.00 ft.
Material thickness of first layer:		1.5
Material type for first layer:		BAHM 5
Material thickness of second layer:		1
Material type for second layer:		ASTM 9
Material thickness of third layer:		0
Material type for third layer:		GRAVEL
Underdrain used		
Underdrain Diameter (feet):		0.333333333333333
Orifice Diameter (in.):		2
Offset (in.):		0
Flow Through Underdrain (ac-ft.):		52.954
Total Outflow (ac-ft.):		61.914
Percent Through Underdrain:		85.53
Discharge Structure		
Riser Height:	0.5 ft.	
Riser Diameter:	12 in.	
Element Outlets:		
Outlet 1	Outlet 2	
Outlet Flows To:		

Bioretention Hydraulic Table

Stage(feet)	**Area(ac.)**	**Volume(ac-ft.)**	**Discharge(cfs)**	**Infilt(cfs)**
0.0000	0.0281	0.0000	0.0000	0.0000
0.0385	0.0281	0.0001	0.0000	0.0000
0.0769	0.0278	0.0003	0.0000	0.0000
0.1154	0.0274	0.0004	0.0000	0.0000
0.1538	0.0270	0.0006	0.0000	0.0000
0.1923	0.0267	0.0007	0.0000	0.0000
0.2308	0.0263	0.0009	0.0000	0.0000
0.2692	0.0259	0.0010	0.0000	0.0000
0.3077	0.0256	0.0012	0.0000	0.0000
0.3462	0.0252	0.0013	0.0000	0.0000
0.3846	0.0249	0.0015	0.0000	0.0000
0.4231	0.0245	0.0017	0.0000	0.0000
0.4615	0.0242	0.0018	0.0000	0.0000
0.5000	0.0238	0.0020	0.0015	0.0000
0.5385	0.0235	0.0022	0.0021	0.0000
0.5769	0.0232	0.0024	0.0022	0.0000
0.6154	0.0228	0.0026	0.0024	0.0000
0.6538	0.0225	0.0028	0.0029	0.0000
0.6923	0.0222	0.0030	0.0030	0.0000
0.7308	0.0218	0.0031	0.0033	0.0000
0.7692	0.0215	0.0034	0.0039	0.0000
0.8077	0.0212	0.0036	0.0041	0.0000
0.8462	0.0209	0.0038	0.0045	0.0000
0.8846	0.0206	0.0040	0.0051	0.0000
0.9231	0.0202	0.0042	0.0055	0.0000
0.9615	0.0199	0.0044	0.0059	0.0000
1.0000	0.0196	0.0046	0.0067	0.0000
1.0385	0.0193	0.0049	0.0070	0.0000

1.0769	0.0190	0.0051	0.0076	0.0000
1.1154	0.0187	0.0053	0.0085	0.0000
1.1538	0.0184	0.0056	0.0089	0.0000
1.1923	0.0181	0.0058	0.0096	0.0000
1.2308	0.0178	0.0061	0.0107	0.0000
1.2692	0.0175	0.0063	0.0110	0.0000
1.3077	0.0172	0.0066	0.0119	0.0000
1.3462	0.0169	0.0068	0.0132	0.0000
1.3846	0.0166	0.0071	0.0134	0.0000
1.4231	0.0164	0.0074	0.0145	0.0000
1.4615	0.0161	0.0077	0.0160	0.0000
1.5000	0.0158	0.0080	0.0161	0.0000
1.5385	0.0155	0.0083	0.0175	0.0000
1.5769	0.0152	0.0086	0.0192	0.0000
1.6154	0.0150	0.0089	0.0192	0.0000
1.6538	0.0147	0.0093	0.0209	0.0000
1.6923	0.0144	0.0096	0.0226	0.0000
1.7308	0.0142	0.0100	0.0227	0.0000
1.7692	0.0139	0.0103	0.0247	0.0000
1.8077	0.0137	0.0107	0.0263	0.0000
1.8462	0.0134	0.0110	0.0267	0.0000
1.8846	0.0131	0.0114	0.0288	0.0000
1.9231	0.0129	0.0118	0.0303	0.0000
1.9615	0.0126	0.0121	0.0310	0.0000
2.0000	0.0124	0.0125	0.0333	0.0000
2.0385	0.0121	0.0129	0.0347	0.0000
2.0769	0.0119	0.0133	0.0357	0.0000
2.1154	0.0117	0.0137	0.0383	0.0000
2.1538	0.0114	0.0141	0.0395	0.0000
2.1923	0.0112	0.0145	0.0409	0.0000
2.2308	0.0110	0.0149	0.0436	0.0000
2.2692	0.0107	0.0153	0.0617	0.0000
2.3077	0.0105	0.0158	0.0617	0.0000
2.3462	0.0103	0.0162	0.0617	0.0000
2.3846	0.0100	0.0166	0.0617	0.0000
2.4231	0.0098	0.0171	0.0617	0.0000
2.4615	0.0096	0.0175	0.0617	0.0000
2.5000	0.0094	0.0180	0.0617	0.0000
2.5000	0.0092	0.0180	0.0617	0.0000

Bioretention Surface Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	To Amended(cfs)	Infilt(cfs)
2.5000	0.0281	0.0180	0.0000	0.0463	0.0000
2.5385	0.0285	0.0191	0.0000	0.0463	0.0000
2.5769	0.0289	0.0202	0.0000	0.0487	0.0000
2.6154	0.0292	0.0213	0.0000	0.0499	0.0000
2.6538	0.0296	0.0224	0.0000	0.0510	0.0000
2.6923	0.0300	0.0236	0.0000	0.0522	0.0000
2.7308	0.0304	0.0247	0.0000	0.0534	0.0000
2.7692	0.0308	0.0259	0.0000	0.0546	0.0000
2.8077	0.0312	0.0271	0.0000	0.0558	0.0000
2.8462	0.0316	0.0283	0.0000	0.0570	0.0000
2.8846	0.0320	0.0295	0.0000	0.0582	0.0000
2.9231	0.0323	0.0308	0.0000	0.0594	0.0000
2.9615	0.0327	0.0320	0.0000	0.0605	0.0000
3.0000	0.0331	0.0333	0.0000	0.0617	0.0000
3.0385	0.0336	0.0346	0.0800	0.0617	0.0000
3.0769	0.0340	0.0359	0.2257	0.0617	0.0000

3.1154	0.0344	0.0372	0.4122	0.0617	0.0000
3.1538	0.0348	0.0385	0.6273	0.0617	0.0000
3.1923	0.0352	0.0399	0.8600	0.0617	0.0000
3.2308	0.0356	0.0412	1.0991	0.0617	0.0000
3.2692	0.0360	0.0426	1.3333	0.0617	0.0000
3.3077	0.0364	0.0440	1.5516	0.0617	0.0000
3.3462	0.0369	0.0454	1.7445	0.0617	0.0000
3.3846	0.0373	0.0468	1.9054	0.0617	0.0000
3.4231	0.0377	0.0483	2.0318	0.0617	0.0000
3.4615	0.0382	0.0497	2.1274	0.0617	0.0000
3.5000	0.0386	0.0512	2.2033	0.0617	0.0000

Discharge Structure
Riser Height: 0.5 ft.
Riser Diameter: 12 in.
Element Flow Outlets:
Outlet 1 Outlet 2
Outlets Flow To:

Bioretention Hydraulic Table

Stage(feet)	**Area(ac.)**	**Volume(ac-ft.)**	**Discharge(cfs)**	**Infilt(cfs)**
0.0000	0.0281	0.0000	0.0000	0.0000
0.0385	0.0281	0.0001	0.0000	0.0000
0.0769	0.0278	0.0003	0.0000	0.0000
0.1154	0.0274	0.0004	0.0000	0.0000
0.1538	0.0270	0.0006	0.0000	0.0000
0.1923	0.0267	0.0007	0.0000	0.0000
0.2308	0.0263	0.0009	0.0000	0.0000
0.2692	0.0259	0.0010	0.0000	0.0000
0.3077	0.0256	0.0012	0.0000	0.0000
0.3462	0.0252	0.0013	0.0000	0.0000
0.3846	0.0249	0.0015	0.0000	0.0000
0.4231	0.0245	0.0017	0.0000	0.0000
0.4615	0.0242	0.0018	0.0000	0.0000
0.5000	0.0238	0.0020	0.0015	0.0000
0.5385	0.0235	0.0022	0.0021	0.0000
0.5769	0.0232	0.0024	0.0022	0.0000
0.6154	0.0228	0.0026	0.0024	0.0000
0.6538	0.0225	0.0028	0.0029	0.0000
0.6923	0.0222	0.0030	0.0030	0.0000
0.7308	0.0218	0.0031	0.0033	0.0000
0.7692	0.0215	0.0034	0.0039	0.0000
0.8077	0.0212	0.0036	0.0041	0.0000
0.8462	0.0209	0.0038	0.0045	0.0000
0.8846	0.0206	0.0040	0.0051	0.0000
0.9231	0.0202	0.0042	0.0055	0.0000
0.9615	0.0199	0.0044	0.0059	0.0000
1.0000	0.0196	0.0046	0.0067	0.0000
1.0385	0.0193	0.0049	0.0070	0.0000
1.0769	0.0190	0.0051	0.0076	0.0000
1.1154	0.0187	0.0053	0.0085	0.0000
1.1538	0.0184	0.0056	0.0089	0.0000
1.1923	0.0181	0.0058	0.0096	0.0000
1.2308	0.0178	0.0061	0.0107	0.0000
1.2692	0.0175	0.0063	0.0110	0.0000
1.3077	0.0172	0.0066	0.0119	0.0000

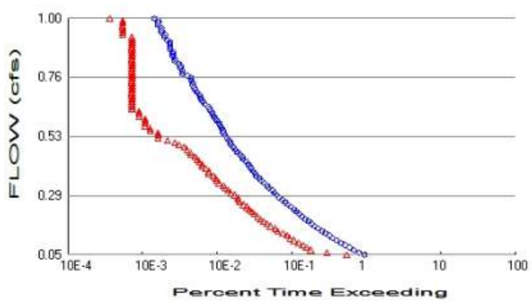
1.3462	0.0169	0.0068	0.0132	0.0000
1.3846	0.0166	0.0071	0.0134	0.0000
1.4231	0.0164	0.0074	0.0145	0.0000
1.4615	0.0161	0.0077	0.0160	0.0000
1.5000	0.0158	0.0080	0.0161	0.0000
1.5385	0.0155	0.0083	0.0175	0.0000
1.5769	0.0152	0.0086	0.0192	0.0000
1.6154	0.0150	0.0089	0.0192	0.0000
1.6538	0.0147	0.0093	0.0209	0.0000
1.6923	0.0144	0.0096	0.0226	0.0000
1.7308	0.0142	0.0100	0.0227	0.0000
1.7692	0.0139	0.0103	0.0247	0.0000
1.8077	0.0137	0.0107	0.0263	0.0000
1.8462	0.0134	0.0110	0.0267	0.0000
1.8846	0.0131	0.0114	0.0288	0.0000
1.9231	0.0129	0.0118	0.0303	0.0000
1.9615	0.0126	0.0121	0.0310	0.0000
2.0000	0.0124	0.0125	0.0333	0.0000
2.0385	0.0121	0.0129	0.0347	0.0000
2.0769	0.0119	0.0133	0.0357	0.0000
2.1154	0.0117	0.0137	0.0383	0.0000
2.1538	0.0114	0.0141	0.0395	0.0000
2.1923	0.0112	0.0145	0.0409	0.0000
2.2308	0.0110	0.0149	0.0436	0.0000
2.2692	0.0107	0.0153	0.0617	0.0000
2.3077	0.0105	0.0158	0.0617	0.0000
2.3462	0.0103	0.0162	0.0617	0.0000
2.3846	0.0100	0.0166	0.0617	0.0000
2.4231	0.0098	0.0171	0.0617	0.0000
2.4615	0.0096	0.0175	0.0617	0.0000
2.5000	0.0094	0.0180	0.0617	0.0000
2.5000	0.0092	0.0180	0.0617	0.0000

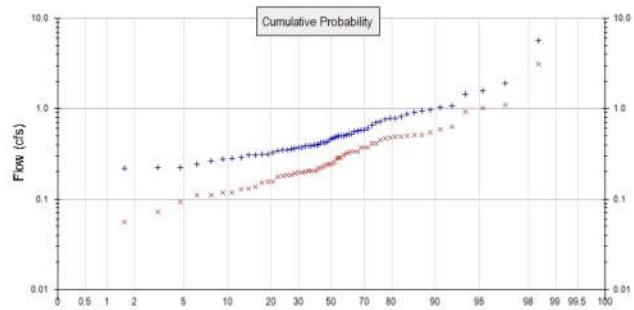
Bioretention Surface Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	To Amended(cfs)	Infilt(cfs)
2.5000	0.0281	0.0180	0.0000	0.0463	0.0000
2.5385	0.0285	0.0191	0.0000	0.0463	0.0000
2.5769	0.0289	0.0202	0.0000	0.0487	0.0000
2.6154	0.0292	0.0213	0.0000	0.0499	0.0000
2.6538	0.0296	0.0224	0.0000	0.0510	0.0000
2.6923	0.0300	0.0236	0.0000	0.0522	0.0000
2.7308	0.0304	0.0247	0.0000	0.0534	0.0000
2.7692	0.0308	0.0259	0.0000	0.0546	0.0000
2.8077	0.0312	0.0271	0.0000	0.0558	0.0000
2.8462	0.0316	0.0283	0.0000	0.0570	0.0000
2.8846	0.0320	0.0295	0.0000	0.0582	0.0000
2.9231	0.0323	0.0308	0.0000	0.0594	0.0000
2.9615	0.0327	0.0320	0.0000	0.0605	0.0000
3.0000	0.0331	0.0333	0.0000	0.0617	0.0000
3.0385	0.0336	0.0346	0.0800	0.0617	0.0000
3.0769	0.0340	0.0359	0.2257	0.0617	0.0000
3.1154	0.0344	0.0372	0.4122	0.0617	0.0000
3.1538	0.0348	0.0385	0.6273	0.0617	0.0000
3.1923	0.0352	0.0399	0.8600	0.0617	0.0000
3.2308	0.0356	0.0412	1.0991	0.0617	0.0000
3.2692	0.0360	0.0426	1.3333	0.0617	0.0000
3.3077	0.0364	0.0440	1.5516	0.0617	0.0000
3.3462	0.0369	0.0454	1.7445	0.0617	0.0000

3.3846	0.0373	0.0468	1.9054	0.0617	0.0000
3.4231	0.0377	0.0483	2.0318	0.0617	0.0000
3.4615	0.0382	0.0497	2.1274	0.0617	0.0000
3.5000	0.0386	0.0512	2.2033	0.0617	0.0000

Analysis Results
POC 1





+ Pre-Project   x Mitigated

Pre-Project Landuse Totals for POC #1
Total Pervious Area: 0.246
Total Impervious Area: 0.084

Mitigated Landuse Totals for POC #1
Total Pervious Area: 0.07
Total Impervious Area: 0.251

Flow Frequency Method: Weibull

Flow Frequency Return Periods for Pre-Project. POC #1

Return Period	**Flow(cfs)**
2 year	0.46354
5 year	0.775106
10 year	1.004021
25 year	1.696235

Flow Frequency Return Periods for Mitigated. POC #1

Return Period	**Flow(cfs)**
2 year	0.24445
5 year	0.479326
10 year	0.57497
25 year	1.039158

Annual Peaks
Annual Peaks for Pre-Project and Mitigated. POC #1

Year	**Pre-Project**	**Mitigated**
1960	0.245	0.109
1961	0.518	0.247
1962	0.391	0.135
1963	0.492	0.369
1964	0.817	0.516
1965	0.387	0.242
1966	0.504	0.332
1967	0.476	0.317
1968	0.464	0.284
1969	0.375	0.179
1970	0.220	0.056
1971	0.345	0.073
1972	0.138	0.040
1973	0.314	0.152

1974	0.362	0.205
1975	0.583	0.287
1976	0.222	0.132
1977	0.517	0.224
1978	0.554	0.196
1979	0.402	0.205
1980	0.607	0.333
1981	0.218	0.093
1982	0.718	0.489
1983	0.472	0.256
1984	0.373	0.197
1985	0.286	0.184
1986	0.515	0.244
1987	0.310	0.204
1988	0.385	0.127
1989	0.305	0.118
1990	0.394	0.227
1991	0.284	0.157
1992	0.426	0.176
1993	0.424	0.290
1994	0.263	0.154
1995	0.327	0.184
1996	0.315	0.201
1997	0.356	0.219
1998	0.564	0.308
1999	0.274	0.118
2000	0.430	0.191
2001	0.914	0.414
2002	0.503	0.327
2003	0.974	0.634
2004	5.671	3.088
2005	0.586	0.371
2006	0.708	0.477
2007	0.943	0.469
2008	1.453	1.003
2009	0.352	0.236
2010	1.070	0.597
2011	0.765	0.510
2012	0.775	0.489
2013	0.501	0.334
2014	0.398	0.110
2015	1.573	0.933
2016	0.870	0.547
2017	1.931	1.109
2018	0.351	0.210
2019	1.027	0.502
2020	0.422	0.368
2021	0.663	0.417
2022	0.777	0.448

Ranked Annual Peaks

Ranked Annual Peaks for Pre-Project and Mitigated. POC #1

Rank	**Pre-Project**	**Mitigated**
1	5.6706	3.0883
2	1.9311	1.1085
3	1.5732	1.0028
4	1.4526	0.9330
5	1.0697	0.6338

6	1.0271	0.5970
7	0.9743	0.5466
8	0.9433	0.5156
9	0.9141	0.5101
10	0.8704	0.5021
11	0.8165	0.4893
12	0.7769	0.4892
13	0.7747	0.4770
14	0.7653	0.4692
15	0.7180	0.4478
16	0.7082	0.4170
17	0.6629	0.4142
18	0.6074	0.3706
19	0.5856	0.3693
20	0.5829	0.3680
21	0.5639	0.3343
22	0.5535	0.3333
23	0.5183	0.3318
24	0.5172	0.3273
25	0.5149	0.3173
26	0.5044	0.3079
27	0.5030	0.2896
28	0.5007	0.2865
29	0.4917	0.2837
30	0.4762	0.2563
31	0.4719	0.2474
32	0.4635	0.2445
33	0.4302	0.2417
34	0.4262	0.2355
35	0.4241	0.2268
36	0.4215	0.2242
37	0.4021	0.2190
38	0.3978	0.2103
39	0.3943	0.2050
40	0.3906	0.2048
41	0.3866	0.2036
42	0.3851	0.2006
43	0.3746	0.1965
44	0.3726	0.1961
45	0.3618	0.1909
46	0.3557	0.1844
47	0.3516	0.1840
48	0.3507	0.1791
49	0.3445	0.1760
50	0.3274	0.1566
51	0.3152	0.1543
52	0.3143	0.1518
53	0.3096	0.1352
54	0.3049	0.1321
55	0.2864	0.1275
56	0.2841	0.1185
57	0.2740	0.1176
58	0.2631	0.1096
59	0.2449	0.1092
60	0.2223	0.0926
61	0.2203	0.0726
62	0.2181	0.0563
63	0.1380	0.0401

Duration Flows

The Facility PASSED

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
0.0464	5257	3029	57	Pass
0.0560	4414	1647	37	Pass
0.0657	3840	1008	26	Pass
0.0754	3313	879	26	Pass
0.0850	2867	785	27	Pass
0.0947	2566	685	26	Pass
0.1044	2235	602	26	Pass
0.1141	1983	528	26	Pass
0.1237	1774	479	27	Pass
0.1334	1574	425	27	Pass
0.1431	1416	361	25	Pass
0.1528	1271	335	26	Pass
0.1624	1146	290	25	Pass
0.1721	1028	258	25	Pass
0.1818	934	234	25	Pass
0.1915	844	209	24	Pass
0.2011	763	193	25	Pass
0.2108	701	175	24	Pass
0.2205	642	163	25	Pass
0.2301	598	149	24	Pass
0.2398	555	138	24	Pass
0.2495	497	126	25	Pass
0.2592	452	112	24	Pass
0.2688	413	108	26	Pass
0.2785	379	105	27	Pass
0.2882	353	95	26	Pass
0.2979	328	85	25	Pass
0.3075	303	77	25	Pass
0.3172	275	71	25	Pass
0.3269	260	68	26	Pass
0.3366	239	59	24	Pass
0.3462	217	55	25	Pass
0.3559	205	53	25	Pass
0.3656	186	50	26	Pass
0.3752	178	43	24	Pass
0.3849	169	43	25	Pass
0.3946	159	39	24	Pass
0.4043	153	35	22	Pass
0.4139	146	35	23	Pass
0.4236	136	32	23	Pass
0.4333	124	30	24	Pass
0.4430	120	28	23	Pass
0.4526	113	25	22	Pass
0.4623	103	24	23	Pass
0.4720	97	22	22	Pass
0.4817	91	20	21	Pass
0.4913	86	17	19	Pass
0.5010	84	15	17	Pass
0.5107	79	12	15	Pass
0.5204	75	9	12	Pass
0.5300	70	9	12	Pass
0.5397	67	9	13	Pass
0.5494	67	7	10	Pass

0.5590	65	7	10	Pass
0.5687	61	6	9	Pass
0.5784	59	6	10	Pass
0.5881	55	6	10	Pass
0.5977	53	6	11	Pass
0.6074	51	5	9	Pass
0.6171	48	5	10	Pass
0.6268	46	5	10	Pass
0.6364	44	4	9	Pass
0.6461	43	4	9	Pass
0.6558	38	4	10	Pass
0.6655	36	4	11	Pass
0.6751	34	4	11	Pass
0.6848	33	4	12	Pass
0.6945	32	4	12	Pass
0.7041	30	4	13	Pass
0.7138	28	4	14	Pass
0.7235	27	4	14	Pass
0.7332	26	4	15	Pass
0.7428	26	4	15	Pass
0.7525	25	4	16	Pass
0.7622	25	4	16	Pass
0.7719	22	4	18	Pass
0.7815	19	4	21	Pass
0.7912	19	4	21	Pass
0.8009	18	4	22	Pass
0.8106	18	4	22	Pass
0.8202	17	4	23	Pass
0.8299	15	4	26	Pass
0.8396	15	4	26	Pass
0.8492	14	4	28	Pass
0.8589	14	4	28	Pass
0.8686	14	4	28	Pass
0.8783	13	4	30	Pass
0.8879	13	4	30	Pass
0.8976	13	4	30	Pass
0.9073	13	4	30	Pass
0.9170	12	4	33	Pass
0.9266	11	4	36	Pass
0.9363	11	3	27	Pass
0.9460	10	3	30	Pass
0.9557	10	3	30	Pass
0.9653	10	3	30	Pass
0.9750	9	3	33	Pass
0.9847	9	3	33	Pass
0.9943	9	3	33	Pass
1.0040	8	2	25	Pass

Water Quality

Model Default Modifications

Total of 0 changes have been made.

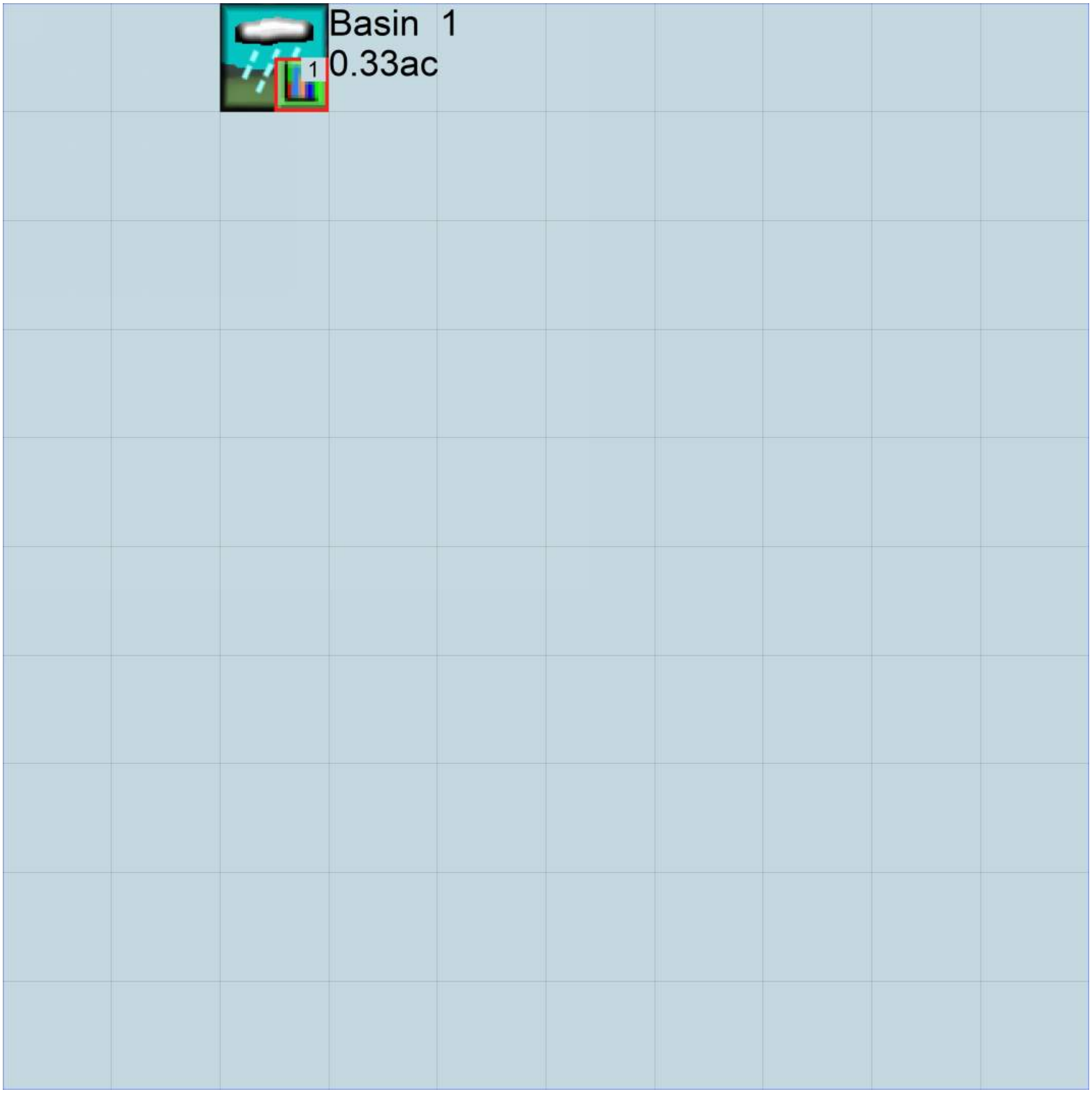
PERLND Changes

No PERLND changes have been made.

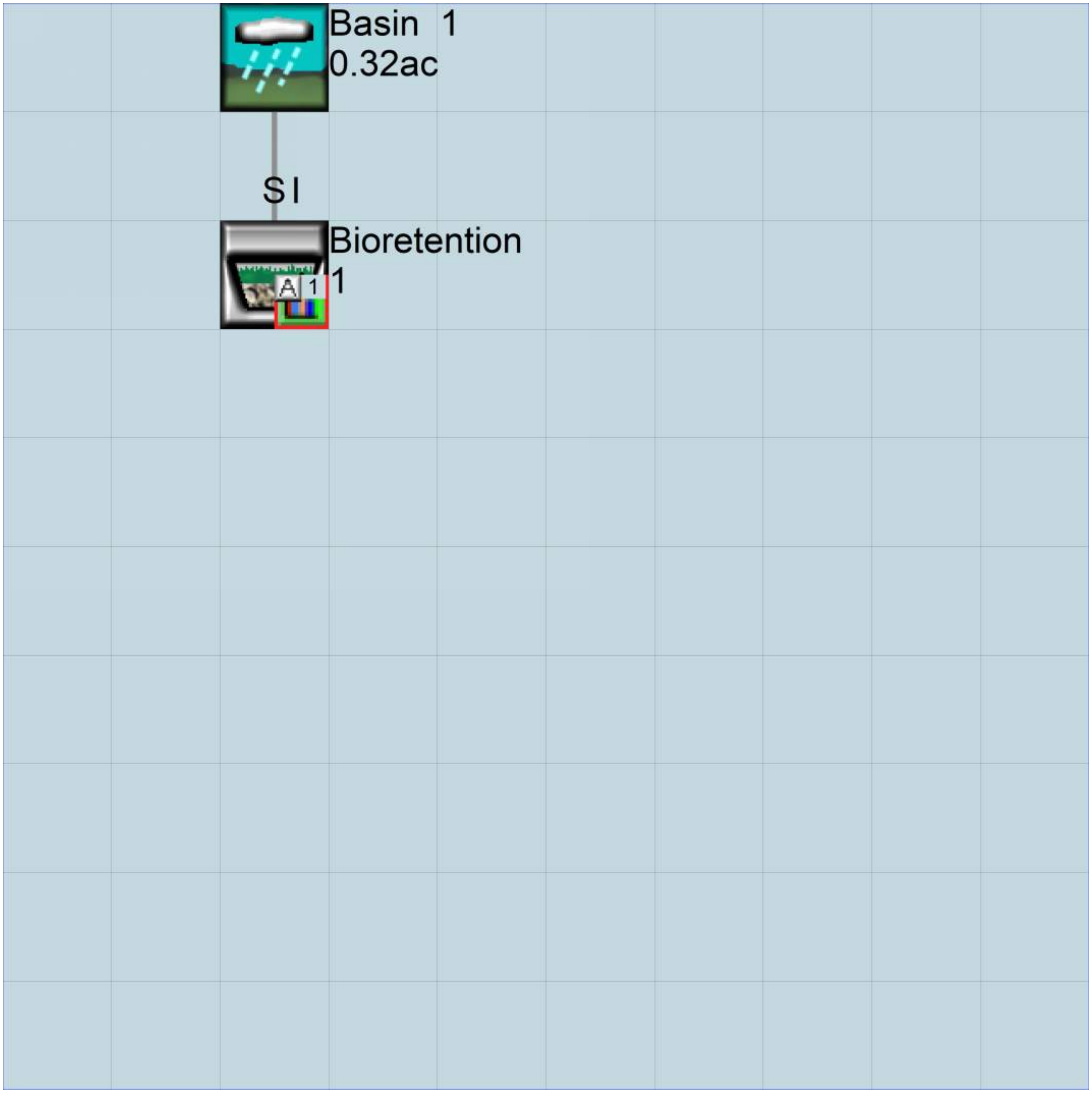
IMPLND Changes

No IMPLND changes have been made.

Appendix
Pre-Project Schematic



Mitigated Schematic



Disclaimer

Legal Notice

Clear Creek Solutions, Inc.
6200 Capitol Blvd. Ste F
Olympia, WA. 98501
Toll Free 1(866)943-0304
Local (360)943-0304

www.clearcreeksolutions.com

BAHM2023

PROJECT REPORT

General Model Information

BAHM2023 Project Name:	P2 DMA2
Site Name:	Smith Field Park
Site Address:	400 Wavecrest Rd
City:	Half Moon Bay
Report Date:	5/31/2024
Gage:	San Francisco
Data Start:	1959/10/01
Data End:	2022/09/30
Timestep:	Hourly
Precip Scale:	2.000
Version Date:	2023/12/22

POC Thresholds

Low Flow Threshold for POC1:	10 Percent of the 2 Year
High Flow Threshold for POC1:	10 Year

Landuse Basin Data
Pre-Project Land Use

Basin 1

Bypass:	No
GroundWater:	No
Pervious Land Use	acre
C D,Grass,Flat(0-5%)	0.313
Pervious Total	0.313
Impervious Land Use	acre
Parking,Flat(0-5%)	0.211
Impervious Total	0.211
Basin Total	0.524

Element Flow Componants:

Surface	Interflow	Groundwater
Componant Flows To:		
POC 1	POC 1	

Mitigated Land Use

Basin 1

Bypass:	No
GroundWater:	No
Pervious Land Use	acre
C D,Grass,Flat(0-5%)	0.112
Pervious Total	0.112
Impervious Land Use	acre
Parking,Flat(0-5%)	0.397
Impervious Total	0.397
Basin Total	0.509

Element Flow Componants:

Surface	Interflow	Groundwater
Componant Flows To:		
Surface retention 1	Surface retention 1	

Routing Elements
Pre-Project Routing

Mitigated Routing

Bioretention 1

Bottom Length:	28.00 ft.
Bottom Width:	28.00 ft.
Material thickness of first layer:	1.5
Material type for first layer:	BAHM 5
Material thickness of second layer:	1
Material type for second layer:	ASTM 9
Material thickness of third layer:	0
Material type for third layer:	GRAVEL
Underdrain used	
Underdrain Diameter (feet):	0.333333333333333
Orifice Diameter (in.):	1.25
Offset (in.):	0
Flow Through Underdrain (ac-ft.):	81.793
Total Outflow (ac-ft.):	98.827
Percent Through Underdrain:	82.76

Discharge Structure
Riser Height: 1 ft.
Riser Diameter: 12 in.
Element Outlets:
Outlet 1 Outlet 2
Outlet Flows To:

Bioretention Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.0424	0.0000	0.0000	0.0000
0.0440	0.0420	0.0003	0.0000	0.0000
0.0879	0.0415	0.0006	0.0000	0.0000
0.1319	0.0410	0.0009	0.0000	0.0000
0.1758	0.0405	0.0012	0.0000	0.0000
0.2198	0.0399	0.0016	0.0000	0.0000
0.2637	0.0394	0.0019	0.0000	0.0000
0.3077	0.0389	0.0022	0.0000	0.0000
0.3516	0.0384	0.0026	0.0000	0.0000
0.3956	0.0380	0.0029	0.0000	0.0000
0.4396	0.0375	0.0033	0.0000	0.0000
0.4835	0.0370	0.0037	0.0000	0.0000
0.5275	0.0365	0.0040	0.0036	0.0000
0.5714	0.0360	0.0044	0.0042	0.0000
0.6154	0.0355	0.0048	0.0050	0.0000
0.6593	0.0351	0.0052	0.0054	0.0000
0.7033	0.0346	0.0056	0.0060	0.0000
0.7473	0.0341	0.0060	0.0071	0.0000
0.7912	0.0337	0.0064	0.0078	0.0000
0.8352	0.0332	0.0068	0.0084	0.0000
0.8791	0.0327	0.0072	0.0099	0.0000
0.9231	0.0323	0.0076	0.0107	0.0000
0.9670	0.0318	0.0081	0.0115	0.0000
1.0110	0.0314	0.0085	0.0133	0.0000
1.0549	0.0309	0.0090	0.0143	0.0000
1.0989	0.0305	0.0094	0.0154	0.0000
1.1429	0.0300	0.0099	0.0176	0.0000
1.1868	0.0296	0.0104	0.0186	0.0000

1.2308	0.0292	0.0108	0.0200	0.0000
1.2747	0.0287	0.0113	0.0226	0.0000
1.3187	0.0283	0.0118	0.0235	0.0000
1.3626	0.0279	0.0123	0.0254	0.0000
1.4066	0.0275	0.0128	0.0279	0.0000
1.4505	0.0271	0.0133	0.0287	0.0000
1.4945	0.0266	0.0138	0.0294	0.0000
1.5385	0.0262	0.0144	0.0302	0.0000
1.5824	0.0258	0.0150	0.0309	0.0000
1.6264	0.0254	0.0156	0.0316	0.0000
1.6703	0.0250	0.0163	0.0322	0.0000
1.7143	0.0246	0.0169	0.0329	0.0000
1.7582	0.0242	0.0175	0.0335	0.0000
1.8022	0.0238	0.0182	0.0342	0.0000
1.8462	0.0234	0.0188	0.0348	0.0000
1.8901	0.0231	0.0195	0.0354	0.0000
1.9341	0.0227	0.0201	0.0360	0.0000
1.9780	0.0223	0.0208	0.0366	0.0000
2.0220	0.0219	0.0215	0.0371	0.0000
2.0659	0.0215	0.0222	0.0377	0.0000
2.1099	0.0212	0.0229	0.0382	0.0000
2.1538	0.0208	0.0236	0.0388	0.0000
2.1978	0.0204	0.0243	0.0393	0.0000
2.2418	0.0201	0.0251	0.0399	0.0000
2.2857	0.0197	0.0258	0.0404	0.0000
2.3297	0.0194	0.0266	0.0410	0.0000
2.3736	0.0190	0.0273	0.0415	0.0000
2.4176	0.0187	0.0281	0.0420	0.0000
2.4615	0.0183	0.0289	0.0426	0.0000
2.5000	0.0180	0.0296	0.0430	0.0000

Bioretention Surface Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	To Amended(cfs)	Infilt(cfs)
2.5000	0.0424	0.0296	0.0000	0.0430	0.0000
2.5440	0.0430	0.0314	0.0000	0.0430	0.0000
2.5879	0.0435	0.0333	0.0000	0.0430	0.0000
2.6319	0.0440	0.0353	0.0000	0.0430	0.0000
2.6758	0.0446	0.0372	0.0000	0.0430	0.0000
2.7198	0.0451	0.0392	0.0000	0.0430	0.0000
2.7637	0.0456	0.0412	0.0000	0.0430	0.0000
2.8077	0.0462	0.0432	0.0000	0.0430	0.0000
2.8516	0.0467	0.0452	0.0000	0.0430	0.0000
2.8956	0.0473	0.0473	0.0000	0.0430	0.0000
2.9396	0.0478	0.0494	0.0000	0.0430	0.0000
2.9835	0.0484	0.0515	0.0000	0.0430	0.0000
3.0275	0.0489	0.0536	0.0000	0.0430	0.0000
3.0714	0.0495	0.0558	0.0000	0.0430	0.0000
3.1154	0.0500	0.0580	0.0000	0.0430	0.0000
3.1593	0.0506	0.0602	0.0000	0.0430	0.0000
3.2033	0.0512	0.0624	0.0000	0.0430	0.0000
3.2473	0.0518	0.0647	0.0000	0.0430	0.0000
3.2912	0.0523	0.0670	0.0000	0.0430	0.0000
3.3352	0.0529	0.0693	0.0000	0.0430	0.0000
3.3791	0.0535	0.0716	0.0000	0.0430	0.0000
3.4231	0.0541	0.0740	0.0000	0.0430	0.0000
3.4670	0.0547	0.0764	0.0000	0.0430	0.0000
3.5110	0.0553	0.0788	0.0122	0.0430	0.0000
3.5549	0.0559	0.0812	0.1365	0.0430	0.0000

3.5989	0.0565	0.0837	0.3281	0.0430	0.0000
3.6429	0.0571	0.0862	0.5635	0.0430	0.0000
3.6868	0.0577	0.0887	0.8261	0.0430	0.0000
3.7308	0.0583	0.0913	1.0991	0.0430	0.0000
3.7747	0.0589	0.0939	1.3657	0.0430	0.0000
3.8187	0.0595	0.0965	1.6096	0.0430	0.0000
3.8626	0.0601	0.0991	1.8176	0.0430	0.0000
3.9066	0.0607	0.1017	1.9818	0.0430	0.0000
3.9505	0.0614	0.1044	2.1028	0.0430	0.0000
3.9945	0.0620	0.1071	2.1930	0.0430	0.0000
4.0000	0.0621	0.1075	2.3112	0.0430	0.0000

Discharge Structure
Riser Height: 1 ft.
Riser Diameter: 12 in.
Element Flow Outlets:
Outlet 1 Outlet 2
Outlets Flow To:

Bioretention Hydraulic Table

Stage(feet)	**Area(ac.)**	**Volume(ac-ft.)**	**Discharge(cfs)**	**Infilt(cfs)**
0.0000	0.0424	0.0000	0.0000	0.0000
0.0440	0.0420	0.0003	0.0000	0.0000
0.0879	0.0415	0.0006	0.0000	0.0000
0.1319	0.0410	0.0009	0.0000	0.0000
0.1758	0.0405	0.0012	0.0000	0.0000
0.2198	0.0399	0.0016	0.0000	0.0000
0.2637	0.0394	0.0019	0.0000	0.0000
0.3077	0.0389	0.0022	0.0000	0.0000
0.3516	0.0384	0.0026	0.0000	0.0000
0.3956	0.0380	0.0029	0.0000	0.0000
0.4396	0.0375	0.0033	0.0000	0.0000
0.4835	0.0370	0.0037	0.0000	0.0000
0.5275	0.0365	0.0040	0.0036	0.0000
0.5714	0.0360	0.0044	0.0042	0.0000
0.6154	0.0355	0.0048	0.0050	0.0000
0.6593	0.0351	0.0052	0.0054	0.0000
0.7033	0.0346	0.0056	0.0060	0.0000
0.7473	0.0341	0.0060	0.0071	0.0000
0.7912	0.0337	0.0064	0.0078	0.0000
0.8352	0.0332	0.0068	0.0084	0.0000
0.8791	0.0327	0.0072	0.0099	0.0000
0.9231	0.0323	0.0076	0.0107	0.0000
0.9670	0.0318	0.0081	0.0115	0.0000
1.0110	0.0314	0.0085	0.0133	0.0000
1.0549	0.0309	0.0090	0.0143	0.0000
1.0989	0.0305	0.0094	0.0154	0.0000
1.1429	0.0300	0.0099	0.0176	0.0000
1.1868	0.0296	0.0104	0.0186	0.0000
1.2308	0.0292	0.0108	0.0200	0.0000
1.2747	0.0287	0.0113	0.0226	0.0000
1.3187	0.0283	0.0118	0.0235	0.0000
1.3626	0.0279	0.0123	0.0254	0.0000
1.4066	0.0275	0.0128	0.0279	0.0000
1.4505	0.0271	0.0133	0.0287	0.0000
1.4945	0.0266	0.0138	0.0294	0.0000

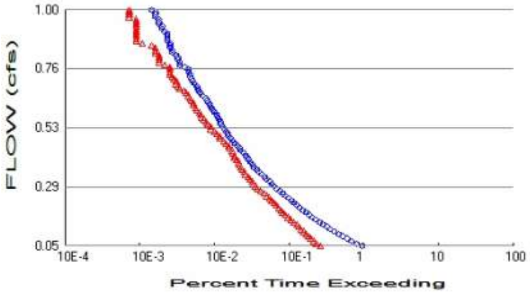
1.5385	0.0262	0.0144	0.0302	0.0000
1.5824	0.0258	0.0150	0.0309	0.0000
1.6264	0.0254	0.0156	0.0316	0.0000
1.6703	0.0250	0.0163	0.0322	0.0000
1.7143	0.0246	0.0169	0.0329	0.0000
1.7582	0.0242	0.0175	0.0335	0.0000
1.8022	0.0238	0.0182	0.0342	0.0000
1.8462	0.0234	0.0188	0.0348	0.0000
1.8901	0.0231	0.0195	0.0354	0.0000
1.9341	0.0227	0.0201	0.0360	0.0000
1.9780	0.0223	0.0208	0.0366	0.0000
2.0220	0.0219	0.0215	0.0371	0.0000
2.0659	0.0215	0.0222	0.0377	0.0000
2.1099	0.0212	0.0229	0.0382	0.0000
2.1538	0.0208	0.0236	0.0388	0.0000
2.1978	0.0204	0.0243	0.0393	0.0000
2.2418	0.0201	0.0251	0.0399	0.0000
2.2857	0.0197	0.0258	0.0404	0.0000
2.3297	0.0194	0.0266	0.0410	0.0000
2.3736	0.0190	0.0273	0.0415	0.0000
2.4176	0.0187	0.0281	0.0420	0.0000
2.4615	0.0183	0.0289	0.0426	0.0000
2.5000	0.0180	0.0296	0.0430	0.0000

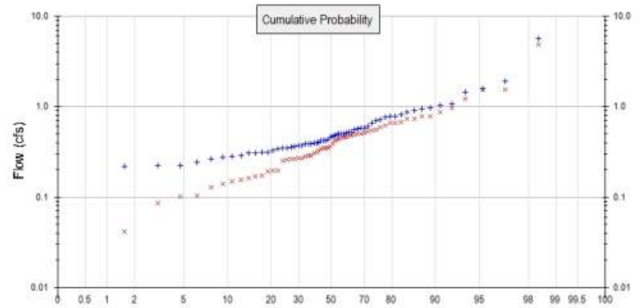
Bioretention Surface Hydraulic Table

Stage(feet)	**Area(ac.)**	**Volume(ac-ft.)**	**Discharge(cfs)**	**To Amended(cfs)**	**Infilt(cfs)**
2.5000	0.0424	0.0296	0.0000	0.0430	0.0000
2.5440	0.0430	0.0314	0.0000	0.0430	0.0000
2.5879	0.0435	0.0333	0.0000	0.0430	0.0000
2.6319	0.0440	0.0353	0.0000	0.0430	0.0000
2.6758	0.0446	0.0372	0.0000	0.0430	0.0000
2.7198	0.0451	0.0392	0.0000	0.0430	0.0000
2.7637	0.0456	0.0412	0.0000	0.0430	0.0000
2.8077	0.0462	0.0432	0.0000	0.0430	0.0000
2.8516	0.0467	0.0452	0.0000	0.0430	0.0000
2.8956	0.0473	0.0473	0.0000	0.0430	0.0000
2.9396	0.0478	0.0494	0.0000	0.0430	0.0000
2.9835	0.0484	0.0515	0.0000	0.0430	0.0000
3.0275	0.0489	0.0536	0.0000	0.0430	0.0000
3.0714	0.0495	0.0558	0.0000	0.0430	0.0000
3.1154	0.0500	0.0580	0.0000	0.0430	0.0000
3.1593	0.0506	0.0602	0.0000	0.0430	0.0000
3.2033	0.0512	0.0624	0.0000	0.0430	0.0000
3.2473	0.0518	0.0647	0.0000	0.0430	0.0000
3.2912	0.0523	0.0670	0.0000	0.0430	0.0000
3.3352	0.0529	0.0693	0.0000	0.0430	0.0000
3.3791	0.0535	0.0716	0.0000	0.0430	0.0000
3.4231	0.0541	0.0740	0.0000	0.0430	0.0000
3.4670	0.0547	0.0764	0.0000	0.0430	0.0000
3.5110	0.0553	0.0788	0.0122	0.0430	0.0000
3.5549	0.0559	0.0812	0.1365	0.0430	0.0000
3.5989	0.0565	0.0837	0.3281	0.0430	0.0000
3.6429	0.0571	0.0862	0.5635	0.0430	0.0000
3.6868	0.0577	0.0887	0.8261	0.0430	0.0000
3.7308	0.0583	0.0913	1.0991	0.0430	0.0000
3.7747	0.0589	0.0939	1.3657	0.0430	0.0000
3.8187	0.0595	0.0965	1.6096	0.0430	0.0000
3.8626	0.0601	0.0991	1.8176	0.0430	0.0000

3.9066	0.0607	0.1017	1.9818	0.0430	0.0000
3.9505	0.0614	0.1044	2.1028	0.0430	0.0000
3.9945	0.0620	0.1071	2.1930	0.0430	0.0000
4.0000	0.0621	0.1075	2.3112	0.0430	0.0000

Analysis Results
POC 1





+ Pre-Project x Mitigated

Pre-Project Landuse Totals for POC #1
Total Pervious Area: 0.313
Total Impervious Area: 0.211

Mitigated Landuse Totals for POC #1
Total Pervious Area: 0.112
Total Impervious Area: 0.397

Flow Frequency Method: Weibull

Flow Frequency Return Periods for Pre-Project. POC #1

Return Period	**Flow(cfs)**
2 year	0.46354
5 year	0.775106
10 year	1.004021
25 year	1.696235

Flow Frequency Return Periods for Mitigated. POC #1

Return Period	**Flow(cfs)**
2 year	0.362085
5 year	0.656762
10 year	0.830438
25 year	1.534139

Annual Peaks
Annual Peaks for Pre-Project and Mitigated. POC #1

Year	**Pre-Project**	**Mitigated**
1960	0.245	0.173
1961	0.518	0.251
1962	0.391	0.270
1963	0.492	0.590
1964	0.817	0.679
1965	0.387	0.259
1966	0.504	0.498
1967	0.476	0.503
1968	0.464	0.434
1969	0.375	0.306
1970	0.220	0.103
1971	0.345	0.042
1972	0.138	0.037
1973	0.314	0.153

1974	0.362	0.167
1975	0.583	0.442
1976	0.222	0.196
1977	0.517	0.344
1978	0.554	0.289
1979	0.402	0.269
1980	0.607	0.459
1981	0.218	0.160
1982	0.718	0.775
1983	0.472	0.460
1984	0.373	0.287
1985	0.286	0.283
1986	0.515	0.479
1987	0.310	0.328
1988	0.385	0.147
1989	0.305	0.102
1990	0.394	0.196
1991	0.284	0.127
1992	0.426	0.265
1993	0.424	0.453
1994	0.263	0.191
1995	0.327	0.262
1996	0.315	0.317
1997	0.356	0.350
1998	0.564	0.469
1999	0.274	0.139
2000	0.430	0.345
2001	0.914	0.423
2002	0.503	0.528
2003	0.974	0.974
2004	5.671	4.914
2005	0.586	0.557
2006	0.708	0.735
2007	0.943	0.514
2008	1.453	1.540
2009	0.352	0.362
2010	1.070	0.863
2011	0.765	0.613
2012	0.775	0.664
2013	0.501	0.539
2014	0.398	0.086
2015	1.573	1.223
2016	0.870	0.789
2017	1.931	1.531
2018	0.351	0.345
2019	1.027	0.726
2020	0.422	0.390
2021	0.663	0.491
2022	0.777	0.655

Ranked Annual Peaks

Ranked Annual Peaks for Pre-Project and Mitigated. POC #1

Rank	Pre-Project	Mitigated
1	5.6706	4.9138
2	1.9311	1.5402
3	1.5732	1.5310
4	1.4526	1.2230
5	1.0697	0.9738

6	1.0271	0.8630
7	0.9743	0.7886
8	0.9433	0.7746
9	0.9141	0.7347
10	0.8704	0.7261
11	0.8165	0.6787
12	0.7769	0.6639
13	0.7747	0.6551
14	0.7653	0.6134
15	0.7180	0.5902
16	0.7082	0.5567
17	0.6629	0.5391
18	0.6074	0.5284
19	0.5856	0.5138
20	0.5829	0.5025
21	0.5639	0.4982
22	0.5535	0.4915
23	0.5183	0.4793
24	0.5172	0.4690
25	0.5149	0.4603
26	0.5044	0.4591
27	0.5030	0.4530
28	0.5007	0.4419
29	0.4917	0.4340
30	0.4762	0.4228
31	0.4719	0.3901
32	0.4635	0.3621
33	0.4302	0.3501
34	0.4262	0.3449
35	0.4241	0.3448
36	0.4215	0.3435
37	0.4021	0.3282
38	0.3978	0.3165
39	0.3943	0.3063
40	0.3906	0.2891
41	0.3866	0.2870
42	0.3851	0.2831
43	0.3746	0.2699
44	0.3726	0.2687
45	0.3618	0.2648
46	0.3557	0.2617
47	0.3516	0.2593
48	0.3507	0.2514
49	0.3445	0.1961
50	0.3274	0.1956
51	0.3152	0.1909
52	0.3143	0.1730
53	0.3096	0.1673
54	0.3049	0.1602
55	0.2864	0.1535
56	0.2841	0.1471
57	0.2740	0.1385
58	0.2631	0.1268
59	0.2449	0.1035
60	0.2223	0.1022
61	0.2203	0.0859
62	0.2181	0.0418
63	0.1380	0.0371

Duration Flows

The Facility PASSED

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
0.0464	5257	1452	27	Pass
0.0560	4414	1279	28	Pass
0.0657	3840	1177	30	Pass
0.0754	3313	1082	32	Pass
0.0850	2867	1006	35	Pass
0.0947	2566	930	36	Pass
0.1044	2235	864	38	Pass
0.1141	1983	795	40	Pass
0.1237	1774	743	41	Pass
0.1334	1574	700	44	Pass
0.1431	1416	634	44	Pass
0.1528	1271	584	45	Pass
0.1624	1146	541	47	Pass
0.1721	1028	494	48	Pass
0.1818	934	452	48	Pass
0.1915	844	428	50	Pass
0.2011	763	400	52	Pass
0.2108	701	374	53	Pass
0.2205	642	347	54	Pass
0.2301	598	322	53	Pass
0.2398	555	303	54	Pass
0.2495	497	276	55	Pass
0.2592	452	255	56	Pass
0.2688	413	229	55	Pass
0.2785	379	208	54	Pass
0.2882	353	195	55	Pass
0.2979	328	183	55	Pass
0.3075	303	176	58	Pass
0.3172	275	164	59	Pass
0.3269	260	158	60	Pass
0.3366	239	146	61	Pass
0.3462	217	138	63	Pass
0.3559	205	130	63	Pass
0.3656	186	125	67	Pass
0.3752	178	121	67	Pass
0.3849	169	117	69	Pass
0.3946	159	110	69	Pass
0.4043	153	103	67	Pass
0.4139	146	102	69	Pass
0.4236	136	98	72	Pass
0.4333	124	96	77	Pass
0.4430	120	88	73	Pass
0.4526	113	86	76	Pass
0.4623	103	79	76	Pass
0.4720	97	74	76	Pass
0.4817	91	66	72	Pass
0.4913	86	65	75	Pass
0.5010	84	60	71	Pass
0.5107	79	55	69	Pass
0.5204	75	50	66	Pass
0.5300	70	49	70	Pass
0.5397	67	45	67	Pass
0.5494	67	43	64	Pass

0.5590	65	40	61	Pass
0.5687	61	37	60	Pass
0.5784	59	36	61	Pass
0.5881	55	35	63	Pass
0.5977	53	32	60	Pass
0.6074	51	31	60	Pass
0.6171	48	29	60	Pass
0.6268	46	29	63	Pass
0.6364	44	27	61	Pass
0.6461	43	26	60	Pass
0.6558	38	25	65	Pass
0.6655	36	23	63	Pass
0.6751	34	22	64	Pass
0.6848	33	19	57	Pass
0.6945	32	18	56	Pass
0.7041	30	17	56	Pass
0.7138	28	17	60	Pass
0.7235	27	16	59	Pass
0.7332	26	15	57	Pass
0.7428	26	14	53	Pass
0.7525	25	14	56	Pass
0.7622	25	14	56	Pass
0.7719	22	14	63	Pass
0.7815	19	12	63	Pass
0.7912	19	10	52	Pass
0.8009	18	10	55	Pass
0.8106	18	10	55	Pass
0.8202	17	10	58	Pass
0.8299	15	9	60	Pass
0.8396	15	9	60	Pass
0.8492	14	9	64	Pass
0.8589	14	8	57	Pass
0.8686	14	6	42	Pass
0.8783	13	5	38	Pass
0.8879	13	5	38	Pass
0.8976	13	5	38	Pass
0.9073	13	5	38	Pass
0.9170	12	5	41	Pass
0.9266	11	5	45	Pass
0.9363	11	5	45	Pass
0.9460	10	5	50	Pass
0.9557	10	5	50	Pass
0.9653	10	5	50	Pass
0.9750	9	4	44	Pass
0.9847	9	4	44	Pass
0.9943	9	4	44	Pass
1.0040	8	4	50	Pass

Water Quality

Model Default Modifications

Total of 0 changes have been made.

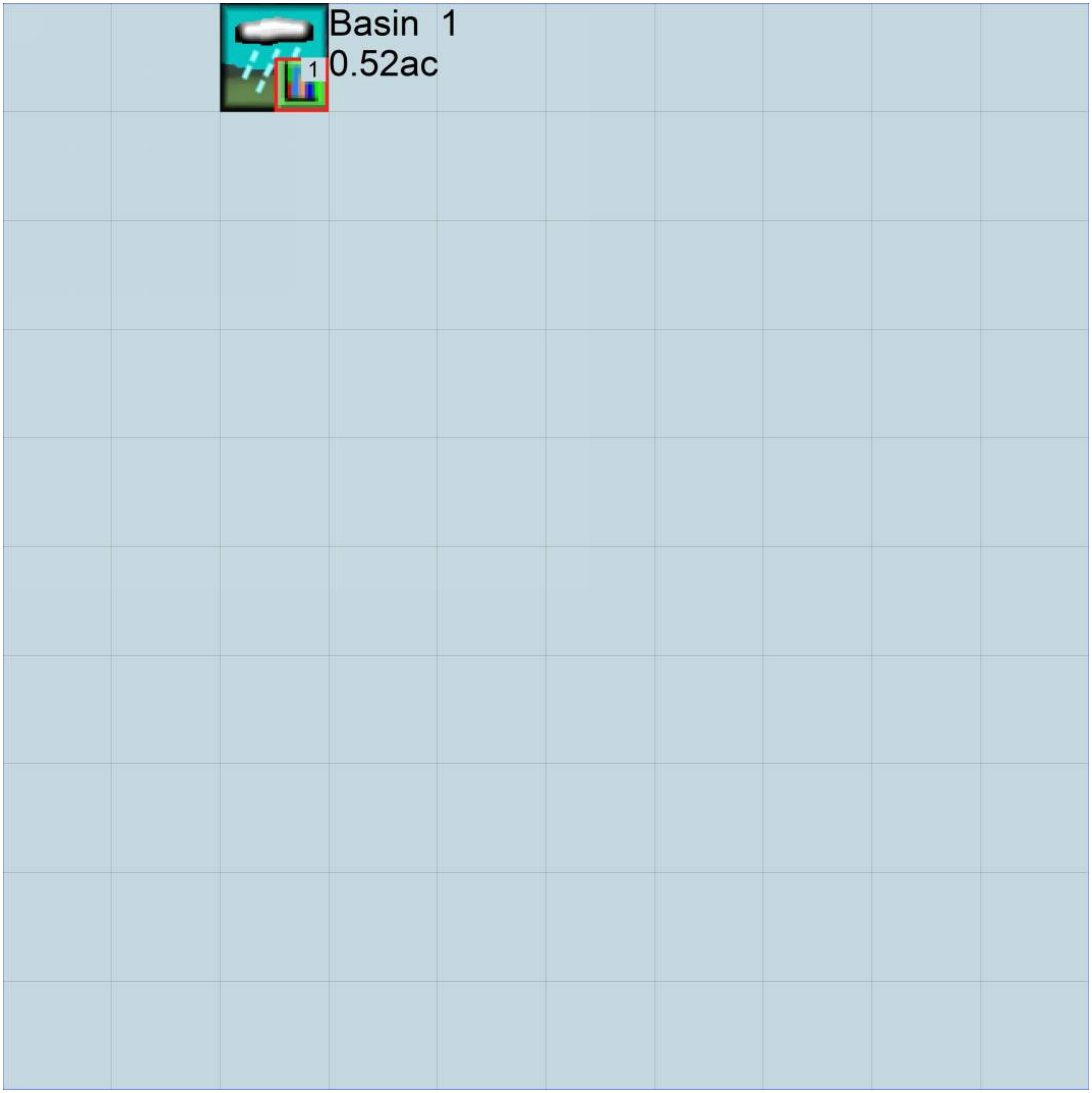
PERLND Changes

No PERLND changes have been made.

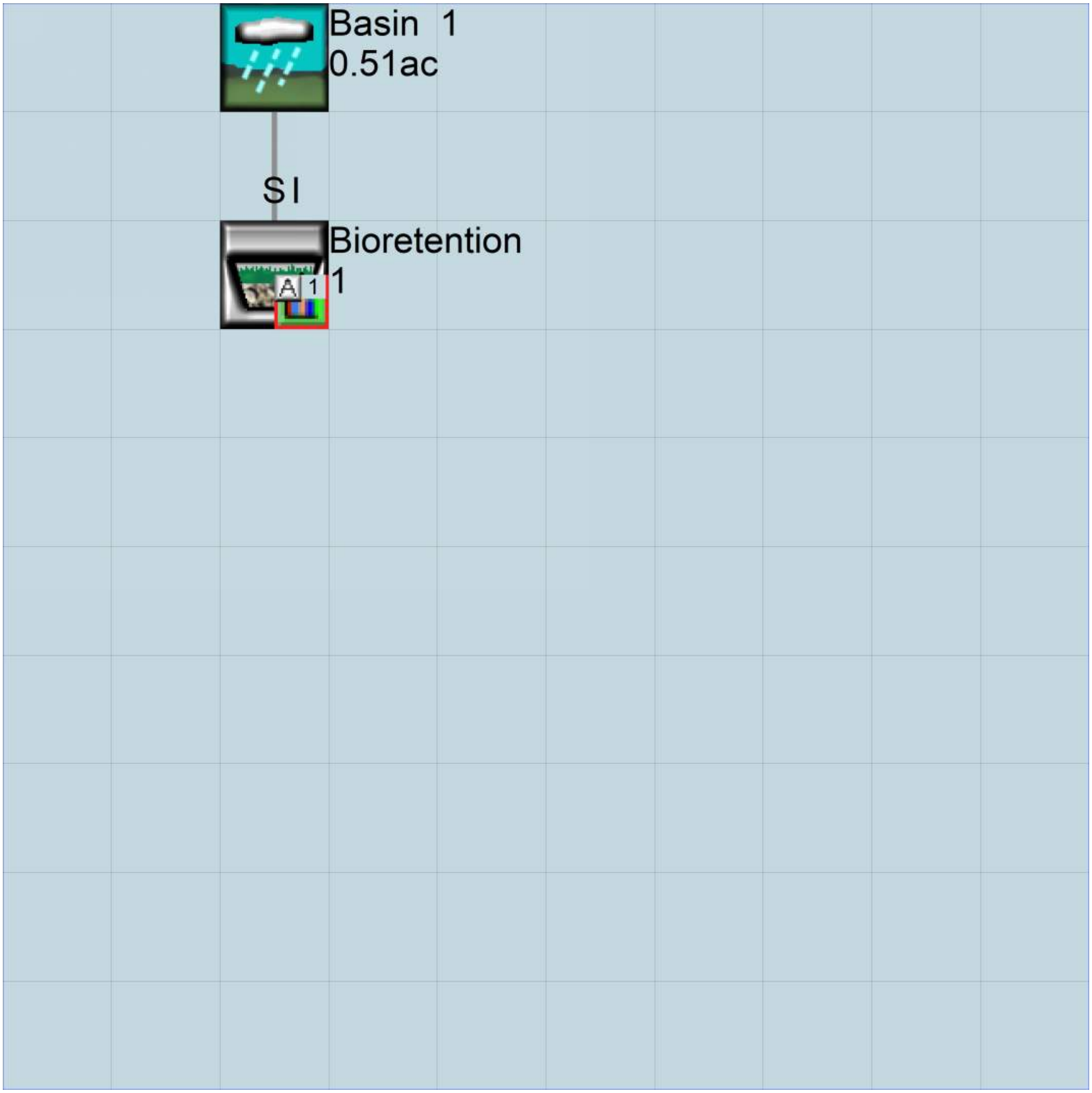
IMPLND Changes

No IMPLND changes have been made.

Appendix
Pre-Project Schematic



Mitigated Schematic



Disclaimer

Legal Notice

Clear Creek Solutions, Inc.
6200 Capitol Blvd. Ste F
Olympia, WA. 98501
Toll Free 1(866)943-0304
Local (360)943-0304

www.clearcreeksolutions.com

BAHM2023

PROJECT REPORT

General Model Information

BAHM2023 Project Name: P2 DMA3

Site Name:	Smith Field Park
Site Address:	400 Wavecrest Rd
City:	Half Moon Bay
Report Date:	5/31/2024
Gage:	San Francisco
Data Start:	1959/10/01
Data End:	2022/09/30
Timestep:	Hourly
Precip Scale:	2.000
Version Date:	2023/12/22

POC Thresholds

Low Flow Threshold for POC1:	10 Percent of the 2 Year
High Flow Threshold for POC1:	10 Year

Landuse Basin Data

Pre-Project Land Use

Basin 1

Bypass:	No
GroundWater:	No
Pervious Land Use	acre
C D,Grass,Flat(0-5%)	0.138
Pervious Total	0.138
Impervious Land Use	acre
Parking,Flat(0-5%)	0.056
Impervious Total	0.056
Basin Total	0.194

Element Flow Componants:

Surface	Interflow	Groundwater
Componant Flows To:		
POC 1	POC 1	

Mitigated Land Use

Basin 1

Bypass:	No
GroundWater:	No
Pervious Land Use	acre
C D,Grass,Flat(0-5%)	0.025
Pervious Total	0.025
Impervious Land Use	acre
Parking,Flat(0-5%)	0.162
Impervious Total	0.162
Basin Total	0.187

Element Flow Componants:

Surface	Interflow	Groundwater
Componant Flows To:		
Surface retention 1	Surface retention 1	

Mitigated Routing

Bioretention 1

Bottom Length:	16.00 ft.
Bottom Width:	16.00 ft.
Material thickness of first layer:	1.5
Material type for first layer:	BAHM 5
Material thickness of second layer:	1
Material type for second layer:	ASTM 9
Material thickness of third layer:	0
Material type for third layer:	GRAVEL
Underdrain used	
Underdrain Diameter (feet):	0.333333333333333
Orifice Diameter (in.):	0.75
Offset (in.):	0
Flow Through Underdrain (ac-ft.):	33.448
Total Outflow (ac-ft.):	38.821
Percent Through Underdrain:	86.16

Discharge Structure
Riser Height: 1 ft.
Riser Diameter: 12 in.
Element Outlets:
Outlet 1 Outlet 2
Outlet Flows To:

Bioretention Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.0221	0.0000	0.0000	0.0000
0.0440	0.0217	0.0001	0.0000	0.0000
0.0879	0.0214	0.0002	0.0000	0.0000
0.1319	0.0210	0.0003	0.0000	0.0000
0.1758	0.0206	0.0004	0.0000	0.0000
0.2198	0.0203	0.0005	0.0000	0.0000
0.2637	0.0199	0.0006	0.0000	0.0000
0.3077	0.0196	0.0008	0.0000	0.0000
0.3516	0.0192	0.0009	0.0000	0.0000
0.3956	0.0189	0.0010	0.0000	0.0000
0.4396	0.0185	0.0012	0.0000	0.0000
0.4835	0.0182	0.0013	0.0000	0.0000
0.5275	0.0178	0.0014	0.0012	0.0000
0.5714	0.0175	0.0016	0.0014	0.0000
0.6154	0.0172	0.0017	0.0016	0.0000
0.6593	0.0168	0.0019	0.0018	0.0000
0.7033	0.0165	0.0020	0.0020	0.0000
0.7473	0.0162	0.0022	0.0023	0.0000
0.7912	0.0159	0.0023	0.0025	0.0000
0.8352	0.0155	0.0025	0.0027	0.0000
0.8791	0.0152	0.0027	0.0032	0.0000
0.9231	0.0149	0.0029	0.0035	0.0000
0.9670	0.0146	0.0030	0.0038	0.0000
1.0110	0.0143	0.0032	0.0044	0.0000
1.0549	0.0140	0.0034	0.0047	0.0000
1.0989	0.0137	0.0036	0.0050	0.0000
1.1429	0.0134	0.0038	0.0057	0.0000
1.1868	0.0131	0.0040	0.0061	0.0000

1.2308	0.0128	0.0042	0.0065	0.0000
1.2747	0.0126	0.0044	0.0074	0.0000
1.3187	0.0123	0.0046	0.0077	0.0000
1.3626	0.0120	0.0049	0.0083	0.0000
1.4066	0.0117	0.0051	0.0093	0.0000
1.4505	0.0114	0.0053	0.0096	0.0000
1.4945	0.0112	0.0056	0.0104	0.0000
1.5385	0.0109	0.0058	0.0106	0.0000
1.5824	0.0106	0.0061	0.0109	0.0000
1.6264	0.0104	0.0064	0.0111	0.0000
1.6703	0.0101	0.0067	0.0114	0.0000
1.7143	0.0099	0.0070	0.0116	0.0000
1.7582	0.0096	0.0073	0.0118	0.0000
1.8022	0.0094	0.0076	0.0121	0.0000
1.8462	0.0091	0.0079	0.0123	0.0000
1.8901	0.0089	0.0082	0.0125	0.0000
1.9341	0.0087	0.0085	0.0127	0.0000
1.9780	0.0084	0.0089	0.0129	0.0000
2.0220	0.0082	0.0092	0.0132	0.0000
2.0659	0.0080	0.0095	0.0134	0.0000
2.1099	0.0078	0.0099	0.0136	0.0000
2.1538	0.0075	0.0102	0.0138	0.0000
2.1978	0.0073	0.0106	0.0140	0.0000
2.2418	0.0071	0.0110	0.0142	0.0000
2.2857	0.0069	0.0113	0.0144	0.0000
2.3297	0.0067	0.0117	0.0146	0.0000
2.3736	0.0065	0.0121	0.0147	0.0000
2.4176	0.0063	0.0125	0.0149	0.0000
2.4615	0.0061	0.0129	0.0151	0.0000
2.5000	0.0059	0.0133	0.0154	0.0000

Bioretention Surface Hydraulic Table

Stage(feet)	**Area(ac.)**	**Volume(ac-ft.)**	**Discharge(cfs)**	**To Amended(cfs)**	**Infilt(cfs)**
2.5000	0.0221	0.0133	0.0000	0.0154	0.0000
2.5440	0.0224	0.0142	0.0000	0.0154	0.0000
2.5879	0.0228	0.0152	0.0000	0.0154	0.0000
2.6319	0.0232	0.0163	0.0000	0.0154	0.0000
2.6758	0.0236	0.0173	0.0000	0.0154	0.0000
2.7198	0.0240	0.0183	0.0000	0.0154	0.0000
2.7637	0.0244	0.0194	0.0000	0.0154	0.0000
2.8077	0.0248	0.0205	0.0000	0.0154	0.0000
2.8516	0.0252	0.0216	0.0000	0.0154	0.0000
2.8956	0.0256	0.0227	0.0000	0.0154	0.0000
2.9396	0.0260	0.0238	0.0000	0.0154	0.0000
2.9835	0.0264	0.0250	0.0000	0.0154	0.0000
3.0275	0.0268	0.0261	0.0000	0.0154	0.0000
3.0714	0.0272	0.0273	0.0000	0.0154	0.0000
3.1154	0.0276	0.0285	0.0000	0.0154	0.0000
3.1593	0.0281	0.0297	0.0000	0.0154	0.0000
3.2033	0.0285	0.0310	0.0000	0.0154	0.0000
3.2473	0.0289	0.0323	0.0000	0.0154	0.0000
3.2912	0.0293	0.0335	0.0000	0.0154	0.0000
3.3352	0.0298	0.0348	0.0000	0.0154	0.0000
3.3791	0.0302	0.0362	0.0000	0.0154	0.0000
3.4231	0.0306	0.0375	0.0000	0.0154	0.0000
3.4670	0.0311	0.0388	0.0000	0.0154	0.0000
3.5110	0.0315	0.0402	0.0122	0.0154	0.0000
3.5549	0.0320	0.0416	0.1365	0.0154	0.0000

3.5989	0.0324	0.0430	0.3281	0.0154	0.0000
3.6429	0.0329	0.0445	0.5635	0.0154	0.0000
3.6868	0.0334	0.0459	0.8261	0.0154	0.0000
3.7308	0.0338	0.0474	1.0991	0.0154	0.0000
3.7747	0.0343	0.0489	1.3657	0.0154	0.0000
3.8187	0.0348	0.0504	1.6096	0.0154	0.0000
3.8626	0.0352	0.0520	1.8176	0.0154	0.0000
3.9066	0.0357	0.0535	1.9818	0.0154	0.0000
3.9505	0.0362	0.0551	2.1028	0.0154	0.0000
3.9945	0.0367	0.0567	2.1930	0.0154	0.0000
4.0000	0.0367	0.0569	2.3112	0.0154	0.0000

Discharge Structure
Riser Height: 1 ft.
Riser Diameter: 12 in.
Element Flow Outlets:
Outlet 1 Outlet 2
Outlets Flow To:

Bioretention Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.0221	0.0000	0.0000	0.0000
0.0440	0.0217	0.0001	0.0000	0.0000
0.0879	0.0214	0.0002	0.0000	0.0000
0.1319	0.0210	0.0003	0.0000	0.0000
0.1758	0.0206	0.0004	0.0000	0.0000
0.2198	0.0203	0.0005	0.0000	0.0000
0.2637	0.0199	0.0006	0.0000	0.0000
0.3077	0.0196	0.0008	0.0000	0.0000
0.3516	0.0192	0.0009	0.0000	0.0000
0.3956	0.0189	0.0010	0.0000	0.0000
0.4396	0.0185	0.0012	0.0000	0.0000
0.4835	0.0182	0.0013	0.0000	0.0000
0.5275	0.0178	0.0014	0.0012	0.0000
0.5714	0.0175	0.0016	0.0014	0.0000
0.6154	0.0172	0.0017	0.0016	0.0000
0.6593	0.0168	0.0019	0.0018	0.0000
0.7033	0.0165	0.0020	0.0020	0.0000
0.7473	0.0162	0.0022	0.0023	0.0000
0.7912	0.0159	0.0023	0.0025	0.0000
0.8352	0.0155	0.0025	0.0027	0.0000
0.8791	0.0152	0.0027	0.0032	0.0000
0.9231	0.0149	0.0029	0.0035	0.0000
0.9670	0.0146	0.0030	0.0038	0.0000
1.0110	0.0143	0.0032	0.0044	0.0000
1.0549	0.0140	0.0034	0.0047	0.0000
1.0989	0.0137	0.0036	0.0050	0.0000
1.1429	0.0134	0.0038	0.0057	0.0000
1.1868	0.0131	0.0040	0.0061	0.0000
1.2308	0.0128	0.0042	0.0065	0.0000
1.2747	0.0126	0.0044	0.0074	0.0000
1.3187	0.0123	0.0046	0.0077	0.0000
1.3626	0.0120	0.0049	0.0083	0.0000
1.4066	0.0117	0.0051	0.0093	0.0000
1.4505	0.0114	0.0053	0.0096	0.0000
1.4945	0.0112	0.0056	0.0104	0.0000

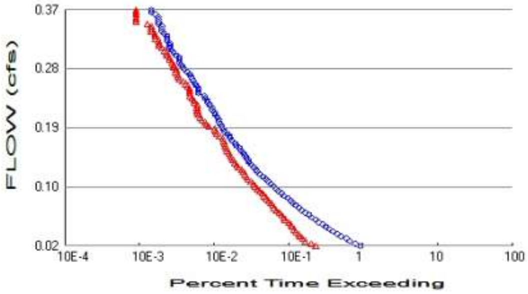
1.5385	0.0109	0.0058	0.0106	0.0000
1.5824	0.0106	0.0061	0.0109	0.0000
1.6264	0.0104	0.0064	0.0111	0.0000
1.6703	0.0101	0.0067	0.0114	0.0000
1.7143	0.0099	0.0070	0.0116	0.0000
1.7582	0.0096	0.0073	0.0118	0.0000
1.8022	0.0094	0.0076	0.0121	0.0000
1.8462	0.0091	0.0079	0.0123	0.0000
1.8901	0.0089	0.0082	0.0125	0.0000
1.9341	0.0087	0.0085	0.0127	0.0000
1.9780	0.0084	0.0089	0.0129	0.0000
2.0220	0.0082	0.0092	0.0132	0.0000
2.0659	0.0080	0.0095	0.0134	0.0000
2.1099	0.0078	0.0099	0.0136	0.0000
2.1538	0.0075	0.0102	0.0138	0.0000
2.1978	0.0073	0.0106	0.0140	0.0000
2.2418	0.0071	0.0110	0.0142	0.0000
2.2857	0.0069	0.0113	0.0144	0.0000
2.3297	0.0067	0.0117	0.0146	0.0000
2.3736	0.0065	0.0121	0.0147	0.0000
2.4176	0.0063	0.0125	0.0149	0.0000
2.4615	0.0061	0.0129	0.0151	0.0000
2.5000	0.0059	0.0133	0.0154	0.0000

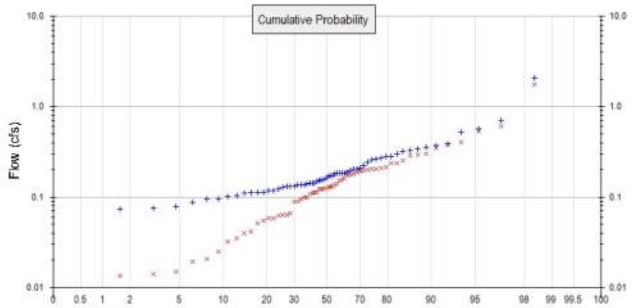
Bioretention Surface Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	To Amended(cfs)	Infilt(cfs)
2.5000	0.0221	0.0133	0.0000	0.0154	0.0000
2.5440	0.0224	0.0142	0.0000	0.0154	0.0000
2.5879	0.0228	0.0152	0.0000	0.0154	0.0000
2.6319	0.0232	0.0163	0.0000	0.0154	0.0000
2.6758	0.0236	0.0173	0.0000	0.0154	0.0000
2.7198	0.0240	0.0183	0.0000	0.0154	0.0000
2.7637	0.0244	0.0194	0.0000	0.0154	0.0000
2.8077	0.0248	0.0205	0.0000	0.0154	0.0000
2.8516	0.0252	0.0216	0.0000	0.0154	0.0000
2.8956	0.0256	0.0227	0.0000	0.0154	0.0000
2.9396	0.0260	0.0238	0.0000	0.0154	0.0000
2.9835	0.0264	0.0250	0.0000	0.0154	0.0000
3.0275	0.0268	0.0261	0.0000	0.0154	0.0000
3.0714	0.0272	0.0273	0.0000	0.0154	0.0000
3.1154	0.0276	0.0285	0.0000	0.0154	0.0000
3.1593	0.0281	0.0297	0.0000	0.0154	0.0000
3.2033	0.0285	0.0310	0.0000	0.0154	0.0000
3.2473	0.0289	0.0323	0.0000	0.0154	0.0000
3.2912	0.0293	0.0335	0.0000	0.0154	0.0000
3.3352	0.0298	0.0348	0.0000	0.0154	0.0000
3.3791	0.0302	0.0362	0.0000	0.0154	0.0000
3.4231	0.0306	0.0375	0.0000	0.0154	0.0000
3.4670	0.0311	0.0388	0.0000	0.0154	0.0000
3.5110	0.0315	0.0402	0.0122	0.0154	0.0000
3.5549	0.0320	0.0416	0.1365	0.0154	0.0000
3.5989	0.0324	0.0430	0.3281	0.0154	0.0000
3.6429	0.0329	0.0445	0.5635	0.0154	0.0000
3.6868	0.0334	0.0459	0.8261	0.0154	0.0000
3.7308	0.0338	0.0474	1.0991	0.0154	0.0000
3.7747	0.0343	0.0489	1.3657	0.0154	0.0000
3.8187	0.0348	0.0504	1.6096	0.0154	0.0000
3.8626	0.0352	0.0520	1.8176	0.0154	0.0000

3.9066	0.0357	0.0535	1.9818	0.0154	0.0000
3.9505	0.0362	0.0551	2.1028	0.0154	0.0000
3.9945	0.0367	0.0567	2.1930	0.0154	0.0000
4.0000	0.0367	0.0569	2.3112	0.0154	0.0000

Analysis Results
POC 1





+ Pre-Project x Mitigated

Pre-Project Landuse Totals for POC #1
Total Pervious Area: 0.138
Total Impervious Area: 0.056

Mitigated Landuse Totals for POC #1
Total Pervious Area: 0.025
Total Impervious Area: 0.162

Flow Frequency Method: Weibull

Flow Frequency Return Periods for Pre-Project. POC #1

Return Period	**Flow(cfs)**
2 year	0.161102
5 year	0.280094
10 year	0.365318
25 year	0.616996

Flow Frequency Return Periods for Mitigated. POC #1

Return Period	**Flow(cfs)**
2 year	0.124365
5 year	0.216611
10 year	0.326694
25 year	0.556911

Annual Peaks

Annual Peaks for Pre-Project and Mitigated. POC #1

Year	**Pre-Project**	**Mitigated**
1960	0.088	0.041
1961	0.186	0.059
1962	0.142	0.110
1963	0.172	0.236
1964	0.297	0.192
1965	0.138	0.035
1966	0.184	0.153
1967	0.173	0.201
1968	0.161	0.161
1969	0.137	0.128
1970	0.078	0.019
1971	0.119	0.015
1972	0.047	0.013
1973	0.113	0.063

1974	0.132	0.064
1975	0.204	0.131
1976	0.075	0.025
1977	0.178	0.066
1978	0.197	0.062
1979	0.143	0.090
1980	0.220	0.154
1981	0.074	0.058
1982	0.265	0.301
1983	0.169	0.188
1984	0.132	0.100
1985	0.104	0.112
1986	0.184	0.196
1987	0.112	0.130
1988	0.136	0.039
1989	0.110	0.014
1990	0.144	0.054
1991	0.101	0.032
1992	0.152	0.098
1993	0.156	0.172
1994	0.096	0.051
1995	0.118	0.109
1996	0.114	0.124
1997	0.130	0.095
1998	0.203	0.176
1999	0.095	0.021
2000	0.156	0.122
2001	0.328	0.088
2002	0.182	0.208
2003	0.356	0.347
2004	2.070	1.737
2005	0.210	0.182
2006	0.257	0.295
2007	0.340	0.121
2008	0.522	0.609
2009	0.127	0.138
2010	0.388	0.380
2011	0.271	0.205
2012	0.279	0.206
2013	0.184	0.212
2014	0.136	0.013
2015	0.572	0.400
2016	0.318	0.235
2017	0.703	0.530
2018	0.124	0.137
2019	0.372	0.290
2020	0.148	0.114
2021	0.240	0.122
2022	0.283	0.255

Ranked Annual Peaks

Ranked Annual Peaks for Pre-Project and Mitigated. POC #1

Rank	Pre-Project	Mitigated
1	2.0700	1.7368
2	0.7028	0.6089
3	0.5721	0.5297
4	0.5224	0.4003
5	0.3876	0.3798

6	0.3725	0.3467
7	0.3561	0.3010
8	0.3402	0.2945
9	0.3281	0.2896
10	0.3178	0.2553
11	0.2973	0.2359
12	0.2828	0.2350
13	0.2795	0.2124
14	0.2710	0.2077
15	0.2651	0.2061
16	0.2569	0.2052
17	0.2402	0.2009
18	0.2203	0.1955
19	0.2097	0.1919
20	0.2038	0.1877
21	0.2029	0.1819
22	0.1969	0.1758
23	0.1860	0.1720
24	0.1844	0.1610
25	0.1842	0.1539
26	0.1838	0.1529
27	0.1819	0.1380
28	0.1785	0.1367
29	0.1728	0.1306
30	0.1725	0.1299
31	0.1690	0.1280
32	0.1611	0.1244
33	0.1563	0.1224
34	0.1557	0.1217
35	0.1524	0.1214
36	0.1477	0.1136
37	0.1438	0.1119
38	0.1431	0.1096
39	0.1418	0.1089
40	0.1384	0.1001
41	0.1372	0.0982
42	0.1364	0.0948
43	0.1362	0.0896
44	0.1321	0.0884
45	0.1320	0.0660
46	0.1300	0.0637
47	0.1269	0.0629
48	0.1236	0.0623
49	0.1186	0.0586
50	0.1176	0.0580
51	0.1137	0.0544
52	0.1133	0.0513
53	0.1125	0.0414
54	0.1102	0.0394
55	0.1041	0.0347
56	0.1014	0.0320
57	0.0959	0.0248
58	0.0955	0.0205
59	0.0876	0.0193
60	0.0779	0.0149
61	0.0750	0.0139
62	0.0736	0.0133
63	0.0472	0.0130

Duration Flows
The Facility PASSED

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
0.0161	5067	1286	25	Pass
0.0196	4401	1116	25	Pass
0.0232	3673	930	25	Pass
0.0267	3277	855	26	Pass
0.0302	2797	785	28	Pass
0.0337	2511	752	29	Pass
0.0373	2166	698	32	Pass
0.0408	1975	658	33	Pass
0.0443	1747	610	34	Pass
0.0479	1584	590	37	Pass
0.0514	1398	552	39	Pass
0.0549	1277	503	39	Pass
0.0584	1135	475	41	Pass
0.0620	1044	445	42	Pass
0.0655	932	412	44	Pass
0.0690	834	379	45	Pass
0.0725	761	357	46	Pass
0.0761	685	337	49	Pass
0.0796	635	320	50	Pass
0.0831	586	298	50	Pass
0.0867	544	278	51	Pass
0.0902	481	261	54	Pass
0.0937	444	247	55	Pass
0.0972	406	226	55	Pass
0.1008	373	210	56	Pass
0.1043	347	196	56	Pass
0.1078	323	187	57	Pass
0.1113	295	172	58	Pass
0.1149	276	158	57	Pass
0.1184	251	152	60	Pass
0.1219	228	143	62	Pass
0.1255	211	135	63	Pass
0.1290	203	130	64	Pass
0.1325	188	117	62	Pass
0.1360	174	111	63	Pass
0.1396	165	104	63	Pass
0.1431	157	99	63	Pass
0.1466	150	95	63	Pass
0.1501	144	92	63	Pass
0.1537	137	88	64	Pass
0.1572	127	83	65	Pass
0.1607	122	81	66	Pass
0.1643	110	77	70	Pass
0.1678	107	76	71	Pass
0.1713	96	75	78	Pass
0.1748	92	72	78	Pass
0.1784	90	66	73	Pass
0.1819	84	60	71	Pass
0.1854	77	58	75	Pass
0.1890	74	57	77	Pass
0.1925	70	47	67	Pass
0.1960	67	44	65	Pass
0.1995	65	42	64	Pass

0.2031	64	38	59	Pass
0.2066	61	36	59	Pass
0.2101	57	34	59	Pass
0.2136	56	33	58	Pass
0.2172	53	33	62	Pass
0.2207	52	33	63	Pass
0.2242	48	33	68	Pass
0.2278	46	30	65	Pass
0.2313	45	30	66	Pass
0.2348	42	28	66	Pass
0.2383	41	26	63	Pass
0.2419	34	26	76	Pass
0.2454	34	26	76	Pass
0.2489	34	26	76	Pass
0.2524	32	25	78	Pass
0.2560	31	23	74	Pass
0.2595	29	21	72	Pass
0.2630	28	19	67	Pass
0.2666	27	18	66	Pass
0.2701	26	18	69	Pass
0.2736	24	17	70	Pass
0.2771	22	17	77	Pass
0.2807	21	16	76	Pass
0.2842	20	16	80	Pass
0.2877	19	15	78	Pass
0.2912	19	14	73	Pass
0.2948	19	14	73	Pass
0.2983	17	13	76	Pass
0.3018	16	13	81	Pass
0.3054	15	12	80	Pass
0.3089	14	11	78	Pass
0.3124	14	10	71	Pass
0.3159	14	10	71	Pass
0.3195	13	10	76	Pass
0.3230	13	9	69	Pass
0.3265	13	9	69	Pass
0.3300	12	9	75	Pass
0.3336	11	8	72	Pass
0.3371	11	8	72	Pass
0.3406	11	8	72	Pass
0.3442	10	7	70	Pass
0.3477	10	5	50	Pass
0.3512	10	5	50	Pass
0.3547	10	5	50	Pass
0.3583	9	5	55	Pass
0.3618	8	5	62	Pass
0.3653	8	5	62	Pass

Water Quality

Model Default Modifications

Total of 0 changes have been made.

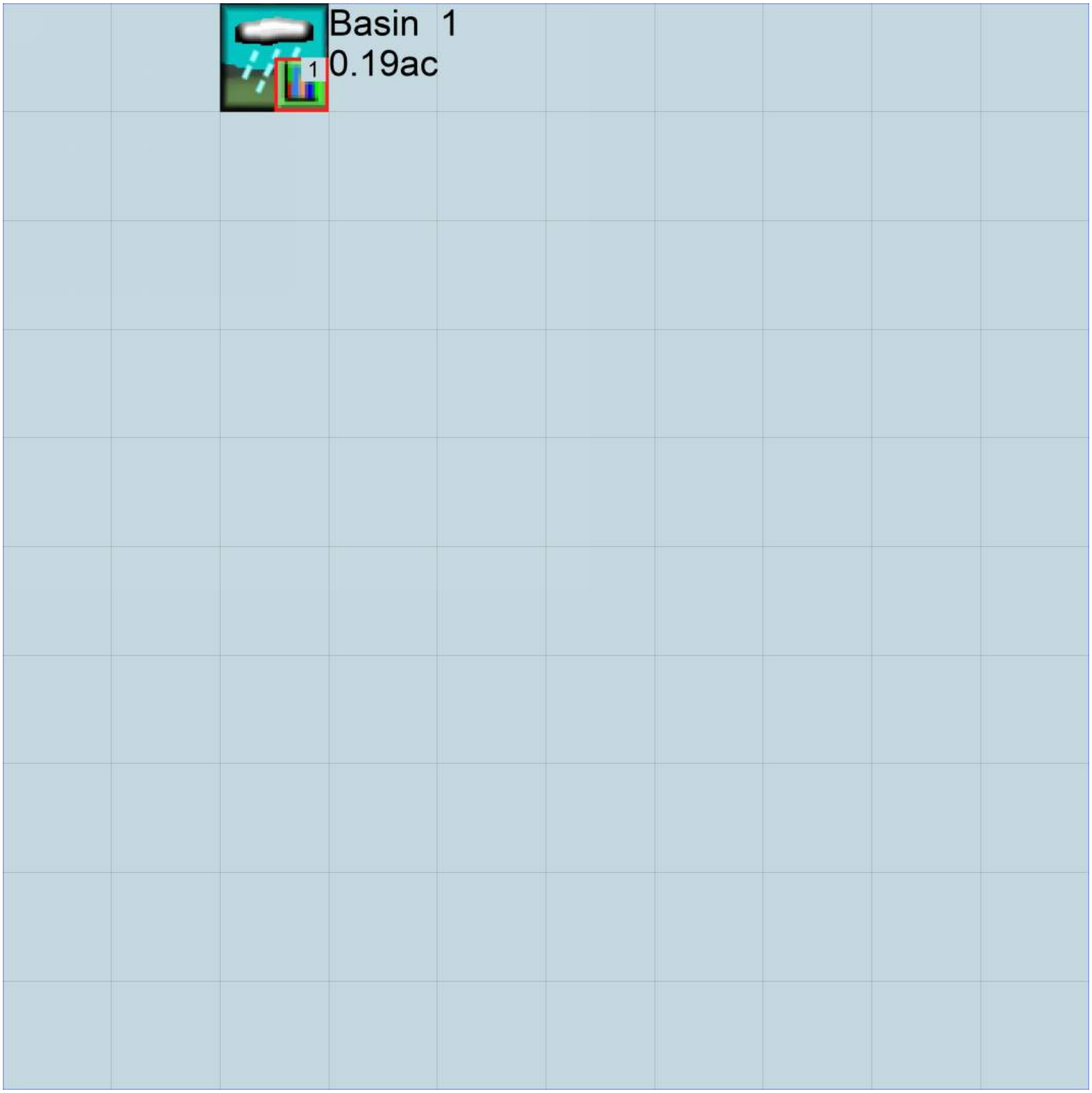
PERLND Changes

No PERLND changes have been made.

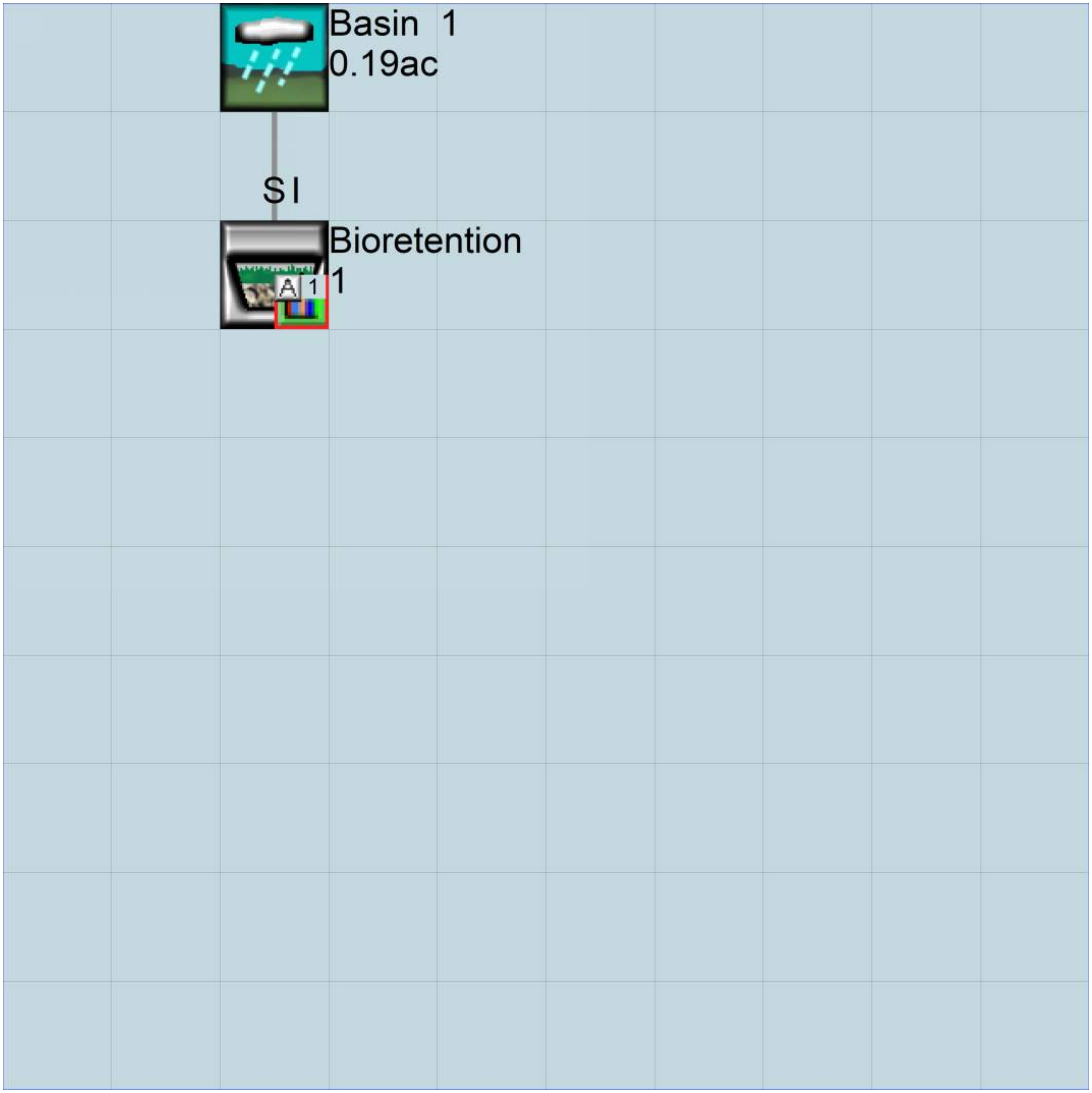
IMPLND Changes

No IMPLND changes have been made.

Appendix
Pre-Project Schematic



Mitigated Schematic



Disclaimer

Legal Notice

Clear Creek Solutions, Inc.
6200 Capitol Blvd. Ste F
Olympia, WA. 98501
Toll Free 1(866)943-0304
Local (360)943-0304

www.clearcreeksolutions.com