Appendix I 2016 Hydrology Report

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PRELIMINARY HYDROLOGY

ARMSTRONG RANCH SPECIFIC PLAN
A PORTION OF THE ONTARIO RANCH

City of Ontario
County of San Bernardino

Prepared Date: November 2015

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Preliminary Hydrology
Armstrong Ranch Specific Plan
The Ontario Ranch
City of Ontario, County of San Bernardino

JN 803-50
November 2015

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Armstrong Ranch
Preliminary Hydrology

A. Discussion

PROJECT DESCRIPTION

The Armstrong Ranch Specific Plan (ARSP) project site is an approximately 199-acre parcel bounded by Riverside Drive on the north, Chino Avenue on the south, Vineyard Avenue on the west and Cucamonga Creek Channel on the east. The ARSP is a part of the western portion of the Ontario Ranch (formerly known as the New Model Colony). The ARSP proposes to develop the site for residential housing with trails, parks and an elementary school parcel. The project site was named after its former owners, the Armstrong family who farmed the land as a commercial nursery, a forerunner of the Armstrong Garden Centers who still exist as retail purveyors of nursery plants and gardening supplies. See ARSP Exhibit.

EXISTING SITE CONDITIONS

The project site consists of undeveloped land formerly used for agricultural purposes and now generally laying fallow and unused. The site has been leveled and graded for various agricultural purposes in the past. The topography is very flat in the interiors due to the agricultural grading but generally slopes very gently from north to south from elevation 780 at Riverside Drive to 746 at Chino Avenue. Due to the berming of soil at the southern boundary of the ARSP and the agricultural grading, there are many internal sumps and other low spots that create shallow ponds that ultimately outlet to Chino Avenue. Riverside Drive and Chino Avenue are partially improved streets that function to carry east and west traffic around the ARSP. Carpenter Avenue exists as a paper street only while Hellman Avenue is a poorly paved road that serves as a minor north south connection between Riverside Drive and Chino Avenue. There are abandoned cow feeding bins and related milking buildings and other types of fenced areas. See Orthophoto Exhibit.

EXISTING STORM DRAIN FACILITIES

San Bernardino County Flood Control District (SBCFCD) constructed the Riverside Drive Storm Drain Segment No. 2, Phase II (RDSD2) in the early part of this century. The RDSD2 storm drain system consists of a storm drain pipe in the west 700+/- feet of Riverside Drive (72" RCP), a storm drain pipe in Vineyard Avenue from Riverside Drive to Chino Avenue (120" RCP), and a storm drain pipe in Chino Avenue to just east of Hellman Avenue (144" RCP). The RDSD2 storm drain system outlets the storm waters into the Lower Cucamonga Spreading Grounds. The ARSP was hydrologically tabled to drain into the RDSD2 system. See Existing Storm Drain Exhibit.

PROPOSED STORM DRAIN SYSTEM

The New Model Colony (now the Ontario Ranch) Master Plan of Drainage proposes two additional storm drain segments to be constructed to complete the master plan of drainage for the ARSP. A 60" storm drain (CHIN-XI-2) will be constructed from the existing 144" storm drain in Chino Drive northerly in Hellman Avenue to the southwest corner of the northerly planning area (PA 6). In the Master Plan of Drainage the CHIN-XI-2 called for a 42" storm drain; however the more detailed hydrologic calculations contained in this report requires a larger 60" storm drain pipe. A 72" storm drain will be constructed in Riverside Drive beginning at the east end of the existing 72" storm drain (RVSD-IV-1) westerly to Carpenter Drive. This extension will convey storm waters from the north side of Riverside Drive into the RDSD2 system. See Proposed Storm Drain Exhibit.

The interior storm drain systems will be designed to intercept and convey a 100-year storm frequency storm in accordance with the City of Ontario's drainage policies.

EXISTING HYDROLOGY

The existing undeveloped 100-year peak storm flows exiting the ARSP total 313 cfs. It is difficult to determine exactly where the storm flows would ultimately leave the ARSP due to the agricultural grading that has occurred in the past but ultimately, the storm waters would drain to the south across Chino Avenue. See Existing Hydrology Map.

PROPOSED HYDROLOGY

The proposed developed 100-year storm flows leaving the ARSP total 431 cfs. All of the Ontario Ranch is not subject to hydromodification according to the San Bernardino County Flood Control Facilities in Zones 1, 2, and 3 Hydromodification Map. Hydromodification requires that the difference between the pre- and post-development storm flows be mitigated to be equal to or less than the pre-development storm flows. Since hydromodification is not required, the ARSP post-development storm flows can enter the adjacent SBCFCD storm drain facilities and proposed master plan storm drain systems. Although there will be an increase in the storm flow runoff with the development of the ARSP project, through construction of the ARSP in-tract storm drain facilities and the installation of the master plan storm drain systems, the ARSP project will not have significant unavoidable storm drain impacts. See Proposed Hydrology Map.

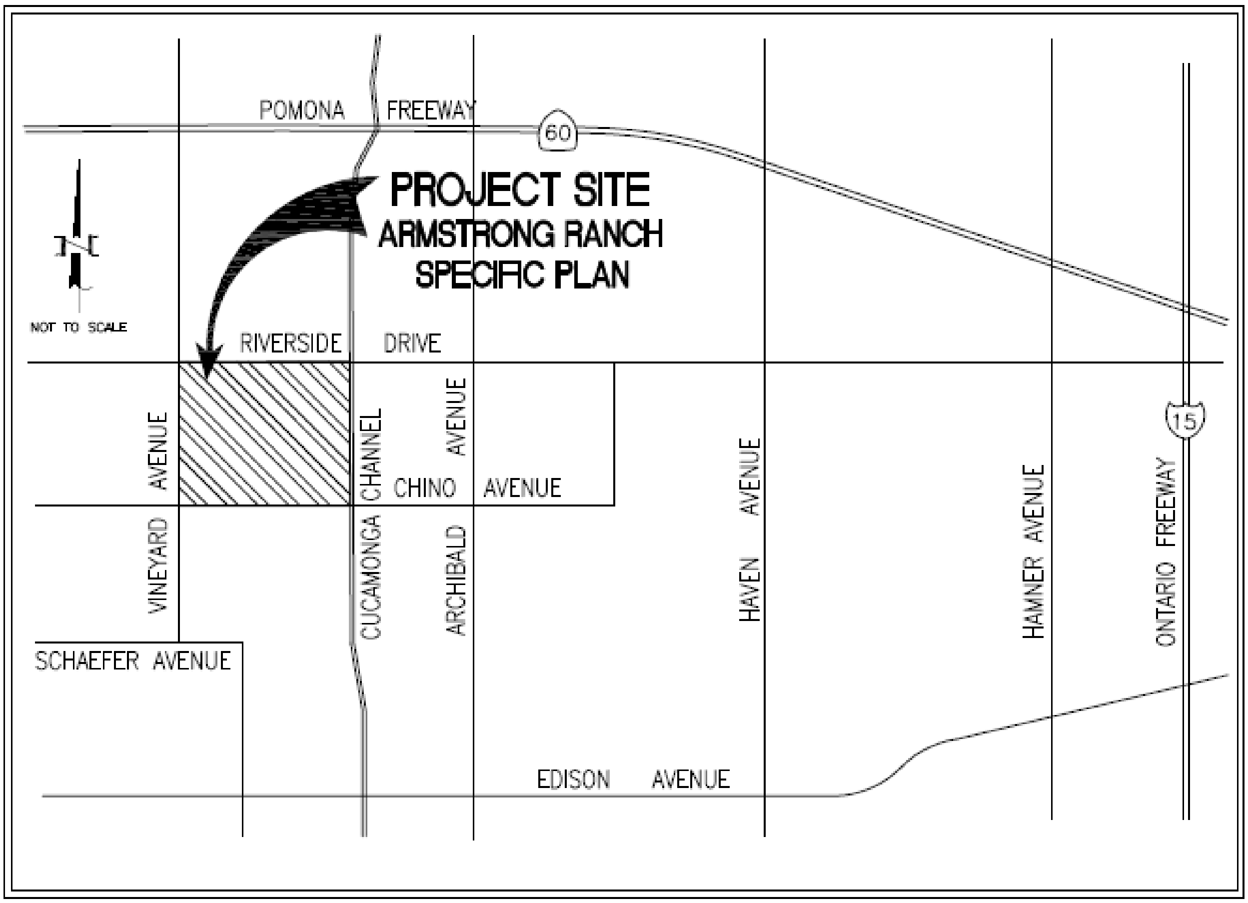
WATER QUALITY AND NPDES

Each storm drain outfall from the ARSP is located adjacent to a park, a parklet, or a greenbelt paseo. These parks, parklets, and paseos will have underground infiltration chambers to infiltrate a portion of the storm waters into the substrata. A diversion weir will be constructed at each outfall to direct the first flush flows (Design Capture Volumes) to a structural BMP (a baffle box or equivalent) that will intercept trash and other pollutants partially cleansing the first flush flows before they enter the underground infiltration chambers for ultimate infiltration into the sub strata. The ARSP soils have excellent infiltration rates according to the on-site infiltration tests. See WQMP Exhibit.

PROJECT LOCATION

The project site lies northeast quadrant of Vineyard Avenue and Chino Avenue, in the city of Ontario, county of San Bernardino.

Latitude: 34.013
Longitude: -117.605
Thomas Brothers Page: 642
Flood Control District Facility: Zone 1



B. Existing Condition Rational Method Hydrology Calculations

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*
              RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
           (Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
          (c) Copyright 1983-2003 Advanced Engineering Software (aes)
              Ver. 8.0  Release Date: 01/01/2003  License ID 1269

                            Analysis prepared by:

                               MDS Consulting
                      17320 Redhill Avenue, Suite 350
                             Irvine, CA 92614
                               949-721-8821



  ************************** DESCRIPTION OF STUDY
**************************
 * Existing Condition Hydrology Calculation
*
 * 10-year storm
*
 *
*

***************************************************************************

   FILE NAME: EXIST.DAT
   TIME/DATE OF STUDY: 14:02 11/04/2015

============================================================================
=
   USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

============================================================================
=
                     --*TIME-OF-CONCENTRATION MODEL*--

   USER SPECIFIED STORM EVENT(YEAR) =   10.00
   SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
   SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
   *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*

   SLOPE OF INTENSITY DURATION CURVE(LOG(I;IN/HR) vs. LOG(Tc;MIN)) = 0.6000
   USER SPECIFIED 1-HOUR INTENSITY(INCH/HOUR) = 0.9060

   *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

   *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
      HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:
MANNING
      WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE
FACTOR
 NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
 ===  =====  =========  ================  ======  ===== ====== =====
=======
   1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167
```

```
0.0150

   GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
     1. Relative Flow-Depth =  0.00 FEET
        as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
     2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
   *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
    OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
   *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED


***************************************************************************
*
   FLOW PROCESS FROM NODE      1.00 TO NODE      2.00 IS CODE =  21

---------------------------------------------------------------------------
-
   >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
   >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

===========================================================================
=
   INITIAL SUBAREA FLOW-LENGTH(FEET) =   800.00
   ELEVATION DATA: UPSTREAM(FEET) =    774.00  DOWNSTREAM(FEET) =    762.00

   Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
   SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   17.627
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.889
   SUBAREA Tc AND LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
(MIN.)
   NATURAL POOR COVER
   "BARREN"                  A        1.70      0.42      1.00    78
17.63
   NATURAL POOR COVER
   "BARREN"                  C        2.20      0.18      1.00    91
17.63
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.28
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
   SUBAREA RUNOFF(CFS) =      5.64
   TOTAL AREA(ACRES) =      3.90   PEAK FLOW RATE(CFS) =      5.64


***************************************************************************
*
   FLOW PROCESS FROM NODE      2.00 TO NODE      5.00 IS CODE =  52

---------------------------------------------------------------------------
-
   >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
   >>>>>TRAVELTIME THRU SUBAREA<<<<<

===========================================================================
=
   ELEVATION DATA: UPSTREAM(FEET) =    762.00  DOWNSTREAM(FEET) =    748.40
   CHANNEL LENGTH THRU SUBAREA(FEET) =  2250.00   CHANNEL SLOPE =  0.0060
   CHANNEL FLOW THRU SUBAREA(CFS) =      5.64
   FLOW VELOCITY(FEET/SEC) =   1.69 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
   TRAVEL TIME(MIN.) =  22.22   Tc(MIN.) =  39.85
   LONGEST FLOWPATH FROM NODE      1.00 TO NODE      5.00 =  3050.00 FEET.
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***************************************************************************
*
   FLOW PROCESS FROM NODE      5.00 TO NODE      5.00 IS CODE =  81

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-
   >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

===========================================================================
=
   MAINLINE Tc(MIN) =  39.85
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.158
   SUBAREA LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
   NATURAL POOR COVER
   "BARREN"                  A       22.30      0.42      1.00    78
   NATURAL POOR COVER
   "BARREN"                  C       41.80      0.18      1.00    91
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.26
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
   SUBAREA AREA(ACRES) =   64.10      SUBAREA RUNOFF(CFS) =   51.69
   EFFECTIVE AREA(ACRES) =     68.00   AREA-AVERAGED Fm(INCH/HR) =  0.26
   AREA-AVERAGED Fp(INCH/HR) =  0.26  AREA-AVERAGED Ap =  1.00
   TOTAL AREA(ACRES) =     68.00       PEAK FLOW RATE(CFS) =      54.77


***************************************************************************
*
   FLOW PROCESS FROM NODE     10.00 TO NODE     13.00 IS CODE =  21

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-
   >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
   >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

===========================================================================
=
   INITIAL SUBAREA FLOW-LENGTH(FEET) =  1000.00
   ELEVATION DATA: UPSTREAM(FEET) =    774.00  DOWNSTREAM(FEET) =    761.00

   Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
   SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   19.832
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.760
   SUBAREA Tc AND LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
(MIN.)
   NATURAL POOR COVER
   "BARREN"                  A        6.40      0.42      1.00    78
19.83
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.42
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
   SUBAREA RUNOFF(CFS) =      7.74
   TOTAL AREA(ACRES) =      6.40   PEAK FLOW RATE(CFS) =      7.74


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*
   FLOW PROCESS FROM NODE     13.00 TO NODE     19.00 IS CODE =  52
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----------------------------------------------------------------------------
-
   >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
   >>>>>TRAVELTIME THRU SUBAREA<<<<<

============================================================================
=
   ELEVATION DATA: UPSTREAM(FEET) =    761.00  DOWNSTREAM(FEET) =    751.00
   CHANNEL LENGTH THRU SUBAREA(FEET) =  1950.00   CHANNEL SLOPE =  0.0051
   CHANNEL FLOW THRU SUBAREA(CFS) =      7.74
   FLOW VELOCITY(FEET/SEC) =   1.68 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
   TRAVEL TIME(MIN.) =  19.36   Tc(MIN.) =  39.19
   LONGEST FLOWPATH FROM NODE     10.00 TO NODE     19.00 =  2950.00 FEET.


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*
   FLOW PROCESS FROM NODE     19.00 TO NODE     19.00 IS CODE =  81

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-
   >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

============================================================================
=
   MAINLINE Tc(MIN) =  39.19
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.170
   SUBAREA LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
   NATURAL POOR COVER
   "BARREN"                  A       26.30      0.42      1.00    78
   NATURAL POOR COVER
   "BARREN"                  C        7.10      0.18      1.00    91
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.37
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
   SUBAREA AREA(ACRES) =   33.40      SUBAREA RUNOFF(CFS) =   24.17
   EFFECTIVE AREA(ACRES) =     39.80   AREA-AVERAGED Fm(INCH/HR) =  0.37
   AREA-AVERAGED Fp(INCH/HR) =  0.37  AREA-AVERAGED Ap =  1.00
   TOTAL AREA(ACRES) =     39.80       PEAK FLOW RATE(CFS) =      28.51


****************************************************************************
*
   FLOW PROCESS FROM NODE     19.00 TO NODE     19.00 IS CODE =   1

----------------------------------------------------------------------------
-
   >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<

============================================================================
=
   TOTAL NUMBER OF STREAMS =  2
   CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
   TIME OF CONCENTRATION(MIN.) =  39.19
   RAINFALL INTENSITY(INCH/HR) =   1.17
   AREA-AVERAGED Fm(INCH/HR) =  0.37
   AREA-AVERAGED Fp(INCH/HR) =  0.37
   AREA-AVERAGED Ap =  1.00
   EFFECTIVE STREAM AREA(ACRES) =    39.80
   TOTAL STREAM AREA(ACRES) =    39.80
   PEAK FLOW RATE(CFS) AT CONFLUENCE =     28.51
```

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****************************************************************************
*
   FLOW PROCESS FROM NODE     15.00 TO NODE     17.00 IS CODE =  21

----------------------------------------------------------------------------
-
   >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
   >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

============================================================================
=
   INITIAL SUBAREA FLOW-LENGTH(FEET) =   900.00
   ELEVATION DATA: UPSTREAM(FEET) =    779.50  DOWNSTREAM(FEET) =    765.00

   Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
   SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   18.215
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.853
   SUBAREA Tc AND LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
(MIN.)
   NATURAL POOR COVER
   "BARREN"                  A        5.20      0.42      1.00    78
18.22
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.42
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
   SUBAREA RUNOFF(CFS) =      6.72
   TOTAL AREA(ACRES) =      5.20   PEAK FLOW RATE(CFS) =      6.72


****************************************************************************
*
   FLOW PROCESS FROM NODE     17.00 TO NODE     19.00 IS CODE =  52

----------------------------------------------------------------------------
-
   >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
   >>>>>TRAVELTIME THRU SUBAREA<<<<<

============================================================================
=
   ELEVATION DATA: UPSTREAM(FEET) =    765.00  DOWNSTREAM(FEET) =    751.00
   CHANNEL LENGTH THRU SUBAREA(FEET) =  2350.00   CHANNEL SLOPE =  0.0060
   CHANNEL FLOW THRU SUBAREA(CFS) =      6.72
   FLOW VELOCITY(FEET/SEC) =   1.75 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
   TRAVEL TIME(MIN.) =  22.41   Tc(MIN.) =  40.62
   LONGEST FLOWPATH FROM NODE     15.00 TO NODE     19.00 =  3250.00 FEET.


****************************************************************************
*
   FLOW PROCESS FROM NODE     19.00 TO NODE     19.00 IS CODE =  81

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-
   >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

============================================================================
=
   MAINLINE Tc(MIN) =  40.62
```

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* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 1.145
SUBAREA LOSS RATE DATA(AMC II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp        Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
NATURAL POOR COVER
"BARREN"                    A       34.20      0.42      1.00    78
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.42
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
SUBAREA AREA(ACRES) =   34.20      SUBAREA RUNOFF(CFS) =   22.43
EFFECTIVE AREA(ACRES) =     39.40   AREA-AVERAGED Fm(INCH/HR) =  0.42
AREA-AVERAGED Fp(INCH/HR) =  0.42  AREA-AVERAGED Ap =  1.00
TOTAL AREA(ACRES) =     39.40       PEAK FLOW RATE(CFS) =      25.85


***************************************************************************
*
FLOW PROCESS FROM NODE     19.00 TO NODE     19.00 IS CODE =   1

---------------------------------------------------------------------------
-
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<

===========================================================================
=
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
TIME OF CONCENTRATION(MIN.) =  40.62
RAINFALL INTENSITY(INCH/HR) =   1.14
AREA-AVERAGED Fm(INCH/HR) =  0.42
AREA-AVERAGED Fp(INCH/HR) =  0.42
AREA-AVERAGED Ap =  1.00
EFFECTIVE STREAM AREA(ACRES) =    39.40
TOTAL STREAM AREA(ACRES) =    39.40
PEAK FLOW RATE(CFS) AT CONFLUENCE =     25.85

** CONFLUENCE DATA **
 STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
 NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
    1     28.51  39.19    1.170  0.37( 0.37) 1.00    39.8      10.00
    2     25.85  40.62    1.145  0.42( 0.42) 1.00    39.4      15.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  2 STREAMS.

** PEAK FLOW RATE TABLE **
 STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
 NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
    1     54.30  39.19    1.170  0.39( 0.39) 1.00    77.8      10.00
    2     53.46  40.62    1.145  0.39( 0.39) 1.00    79.2      15.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =     54.30    Tc(MIN.) =    39.19
EFFECTIVE AREA(ACRES) =    77.81   AREA-AVERAGED Fm(INCH/HR) =  0.39
AREA-AVERAGED Fp(INCH/HR) =  0.39  AREA-AVERAGED Ap =  1.00
TOTAL AREA(ACRES) =     79.20
LONGEST FLOWPATH FROM NODE     15.00 TO NODE     19.00 =  3250.00 FEET.


***************************************************************************
*
FLOW PROCESS FROM NODE     20.00 TO NODE     22.00 IS CODE =  21
```

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------------------------------------------------------------------------------
-
   >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
   >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

==============================================================================
=
   INITIAL SUBAREA FLOW-LENGTH(FEET) =   850.00
   ELEVATION DATA: UPSTREAM(FEET) =    783.20  DOWNSTREAM(FEET) =    772.70

   Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
   SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   18.775
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.819
   SUBAREA Tc AND LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
(MIN.)
   NATURAL POOR COVER
   "BARREN"                  A       5.00      0.42      1.00    78
18.77
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.42
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
   SUBAREA RUNOFF(CFS) =      6.31
   TOTAL AREA(ACRES) =      5.00   PEAK FLOW RATE(CFS) =      6.31


******************************************************************************
*
   FLOW PROCESS FROM NODE     22.00 TO NODE     22.00 IS CODE =   1

------------------------------------------------------------------------------
-
   >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<

==============================================================================
=
   TOTAL NUMBER OF STREAMS =  2
   CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
   TIME OF CONCENTRATION(MIN.) =  18.77
   RAINFALL INTENSITY(INCH/HR) =   1.82
   AREA-AVERAGED Fm(INCH/HR) =  0.42
   AREA-AVERAGED Fp(INCH/HR) =  0.42
   AREA-AVERAGED Ap =  1.00
   EFFECTIVE STREAM AREA(ACRES) =     5.00
   TOTAL STREAM AREA(ACRES) =     5.00
   PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.31


******************************************************************************
*
   FLOW PROCESS FROM NODE     21.00 TO NODE     22.00 IS CODE =  21

------------------------------------------------------------------------------
-
   >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
   >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

==============================================================================
=
   INITIAL SUBAREA FLOW-LENGTH(FEET) =   850.00
   ELEVATION DATA: UPSTREAM(FEET) =    779.50  DOWNSTREAM(FEET) =    772.70
```

```
   Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
   SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   20.479
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.727
   SUBAREA Tc AND LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp        Ap     SCS   Tc
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
(MIN.)
   NATURAL POOR COVER
   "BARREN"                  C        4.80      0.18      1.00    91
20.48
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.18
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
   SUBAREA RUNOFF(CFS) =      6.68
   TOTAL AREA(ACRES) =      4.80   PEAK FLOW RATE(CFS) =      6.68


****************************************************************************
*
   FLOW PROCESS FROM NODE     22.00 TO NODE     22.00 IS CODE =   1

----------------------------------------------------------------------------
-
   >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
   >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<

============================================================================
=
   TOTAL NUMBER OF STREAMS =  2
   CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
   TIME OF CONCENTRATION(MIN.) =  20.48
   RAINFALL INTENSITY(INCH/HR) =   1.73
   AREA-AVERAGED Fm(INCH/HR) =  0.18
   AREA-AVERAGED Fp(INCH/HR) =  0.18
   AREA-AVERAGED Ap =  1.00
   EFFECTIVE STREAM AREA(ACRES) =     4.80
   TOTAL STREAM AREA(ACRES) =     4.80
   PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.68

   ** CONFLUENCE DATA **
    STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
    NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
       1      6.31  18.77    1.819  0.42( 0.42) 1.00     5.0      20.00
       2      6.68  20.48    1.727  0.18( 0.18) 1.00     4.8      21.00

   RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
   CONFLUENCE FORMULA USED FOR  2 STREAMS.

   ** PEAK FLOW RATE TABLE **
    STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
    NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
       1     12.81  18.77    1.819  0.31( 0.31) 1.00     9.4      20.00
       2     12.58  20.48    1.727  0.30( 0.30) 1.00     9.8      21.00

   COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
   PEAK FLOW RATE(CFS) =     12.81    Tc(MIN.) =    18.77
   EFFECTIVE AREA(ACRES) =     9.40   AREA-AVERAGED Fm(INCH/HR) =  0.31
   AREA-AVERAGED Fp(INCH/HR) =  0.31  AREA-AVERAGED Ap =  1.00
   TOTAL AREA(ACRES) =      9.80
   LONGEST FLOWPATH FROM NODE     20.00 TO NODE     22.00 =   850.00 FEET.
```

```
****************************************************************************
*
   FLOW PROCESS FROM NODE     22.00 TO NODE     25.00 IS CODE =  52

----------------------------------------------------------------------------
-
   >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
   >>>>>TRAVELTIME THRU SUBAREA<<<<<

============================================================================
=
   ELEVATION DATA: UPSTREAM(FEET) =    772.70  DOWNSTREAM(FEET) =    754.50
   CHANNEL LENGTH THRU SUBAREA(FEET) =  1800.00   CHANNEL SLOPE =  0.0101
   CHANNEL FLOW THRU SUBAREA(CFS) =     12.81
   FLOW VELOCITY(FEET/SEC) =   2.68 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
   TRAVEL TIME(MIN.) =  11.20   Tc(MIN.) =  29.98
   LONGEST FLOWPATH FROM NODE     20.00 TO NODE     25.00 =  2650.00 FEET.

****************************************************************************
*
   FLOW PROCESS FROM NODE     25.00 TO NODE     25.00 IS CODE =  81

----------------------------------------------------------------------------
-
   >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

============================================================================
=
   MAINLINE Tc(MIN) =  29.98
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.374
   SUBAREA LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
   NATURAL POOR COVER
   "BARREN"                   A       26.70      0.42      1.00    78
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.42
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
   SUBAREA AREA(ACRES) =   26.70      SUBAREA RUNOFF(CFS) =   23.02
   EFFECTIVE AREA(ACRES) =     36.10   AREA-AVERAGED Fm(INCH/HR) =  0.39
   AREA-AVERAGED Fp(INCH/HR) =  0.39  AREA-AVERAGED Ap =  1.00
   TOTAL AREA(ACRES) =     36.50       PEAK FLOW RATE(CFS) =      32.06

****************************************************************************
*
   FLOW PROCESS FROM NODE     30.00 TO NODE     32.00 IS CODE =  21

----------------------------------------------------------------------------
-
   >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
   >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

============================================================================
=
   INITIAL SUBAREA FLOW-LENGTH(FEET) =  1000.00
   ELEVATION DATA: UPSTREAM(FEET) =    774.00  DOWNSTREAM(FEET) =    765.00

   Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
   SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.360
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.338
   SUBAREA Tc AND LOSS RATE DATA(AMC  II):
```

```
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
(MIN.)
   COMMERCIAL                 A        0.30      0.98      0.10    32
12.36
   NATURAL POOR COVER
   "BARREN"                   A        0.20      0.42      1.00    78
21.35
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.49
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.46
   SUBAREA RUNOFF(CFS) =      0.95
   TOTAL AREA(ACRES) =      0.50   PEAK FLOW RATE(CFS) =      0.95


****************************************************************************
*
   FLOW PROCESS FROM NODE     32.00 TO NODE     34.00 IS CODE =  52

----------------------------------------------------------------------------
-
   >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
   >>>>>TRAVELTIME THRU SUBAREA<<<<<

============================================================================
=
   ELEVATION DATA: UPSTREAM(FEET) =    765.00  DOWNSTREAM(FEET) =    755.00
   CHANNEL LENGTH THRU SUBAREA(FEET) =  1100.00   CHANNEL SLOPE =  0.0091
   NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
   CHANNEL FLOW THRU SUBAREA(CFS) =      0.95
   FLOW VELOCITY(FEET/SEC) =   1.43 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
   TRAVEL TIME(MIN.) =  12.82   Tc(MIN.) =  25.18
   LONGEST FLOWPATH FROM NODE     30.00 TO NODE     34.00 =  2100.00 FEET.


****************************************************************************
*
   FLOW PROCESS FROM NODE     34.00 TO NODE     34.00 IS CODE =  81

----------------------------------------------------------------------------
-
   >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

============================================================================
=
   MAINLINE Tc(MIN) =  25.18
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.525
   SUBAREA LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
   COMMERCIAL                 A        0.40      0.98      0.10    32
   NATURAL POOR COVER
   "BARREN"                   A        0.60      0.42      1.00    78
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.45
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.64
   SUBAREA AREA(ACRES) =    1.00      SUBAREA RUNOFF(CFS) =    1.11
   EFFECTIVE AREA(ACRES) =      1.50   AREA-AVERAGED Fm(INCH/HR) =  0.27
   AREA-AVERAGED Fp(INCH/HR) =  0.46  AREA-AVERAGED Ap =  0.58
   TOTAL AREA(ACRES) =      1.50       PEAK FLOW RATE(CFS) =      1.70


****************************************************************************
*
```

```
   FLOW PROCESS FROM NODE     34.00 TO NODE     36.00 IS CODE =  52

----------------------------------------------------------------------------
-
   >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
   >>>>>TRAVELTIME THRU SUBAREA<<<<<

============================================================================
=
   ELEVATION DATA: UPSTREAM(FEET) =    755.00  DOWNSTREAM(FEET) =    749.40
   CHANNEL LENGTH THRU SUBAREA(FEET) =  1400.00   CHANNEL SLOPE =  0.0040
   CHANNEL FLOW THRU SUBAREA(CFS) =      1.70
   FLOW VELOCITY(FEET/SEC) =   1.05 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
   TRAVEL TIME(MIN.) =  22.17   Tc(MIN.) =  47.35
   LONGEST FLOWPATH FROM NODE     30.00 TO NODE     36.00 =  3500.00 FEET.

****************************************************************************
*
   FLOW PROCESS FROM NODE     36.00 TO NODE     36.00 IS CODE =  81

----------------------------------------------------------------------------
-
   >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

============================================================================
=
   MAINLINE Tc(MIN) =  47.35
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.044
   SUBAREA LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
   COMMERCIAL                 A        0.50      0.98      0.10    32
   NATURAL POOR COVER
   "BARREN"                   A        3.50      0.42      1.00    78
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.42
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.89
   SUBAREA AREA(ACRES) =    4.00      SUBAREA RUNOFF(CFS) =    2.41
   EFFECTIVE AREA(ACRES) =      5.50   AREA-AVERAGED Fm(INCH/HR) =  0.35
   AREA-AVERAGED Fp(INCH/HR) =  0.43  AREA-AVERAGED Ap =  0.80
   TOTAL AREA(ACRES) =      5.50       PEAK FLOW RATE(CFS) =       3.45

****************************************************************************
*
   FLOW PROCESS FROM NODE     36.00 TO NODE     49.00 IS CODE =  52

----------------------------------------------------------------------------
-
   >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
   >>>>>TRAVELTIME THRU SUBAREA<<<<<

============================================================================
=
   ELEVATION DATA: UPSTREAM(FEET) =    749.40  DOWNSTREAM(FEET) =    746.10
   CHANNEL LENGTH THRU SUBAREA(FEET) =  1200.00   CHANNEL SLOPE =  0.0028
   CHANNEL FLOW THRU SUBAREA(CFS) =      3.45
   FLOW VELOCITY(FEET/SEC) =   1.02 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
   TRAVEL TIME(MIN.) =  19.68   Tc(MIN.) =  67.03
   LONGEST FLOWPATH FROM NODE     30.00 TO NODE     49.00 =  4700.00 FEET.
```

```
****************************************************************************
*
   FLOW PROCESS FROM NODE     49.00 TO NODE     49.00 IS CODE =  81

----------------------------------------------------------------------------
-
   >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

============================================================================
=
   MAINLINE Tc(MIN) =  67.03
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.848
   SUBAREA LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
   COMMERCIAL                 A       0.36      0.98      0.10    32
   NATURAL POOR COVER
   "BARREN"                   A       3.64      0.42      1.00    78
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.42
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.92
   SUBAREA AREA(ACRES) =    4.00      SUBAREA RUNOFF(CFS) =    1.66
   EFFECTIVE AREA(ACRES) =      9.50   AREA-AVERAGED Fm(INCH/HR) =  0.36
   AREA-AVERAGED Fp(INCH/HR) =  0.43  AREA-AVERAGED Ap =  0.85
   TOTAL AREA(ACRES) =      9.50       PEAK FLOW RATE(CFS) =      4.14


****************************************************************************
*
   FLOW PROCESS FROM NODE     49.00 TO NODE     49.00 IS CODE =   1

----------------------------------------------------------------------------
-
   >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<

============================================================================
=
   TOTAL NUMBER OF STREAMS =  2
   CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
   TIME OF CONCENTRATION(MIN.) =  67.03
   RAINFALL INTENSITY(INCH/HR) =   0.85
   AREA-AVERAGED Fm(INCH/HR) =  0.36
   AREA-AVERAGED Fp(INCH/HR) =  0.43
   AREA-AVERAGED Ap =  0.85
   EFFECTIVE STREAM AREA(ACRES) =     9.50
   TOTAL STREAM AREA(ACRES) =     9.50
   PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.14


****************************************************************************
*
   FLOW PROCESS FROM NODE     40.00 TO NODE     42.00 IS CODE =  21

----------------------------------------------------------------------------
-
   >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
   >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

============================================================================
=
   INITIAL SUBAREA FLOW-LENGTH(FEET) =   740.00
   ELEVATION DATA: UPSTREAM(FEET) =    773.50  DOWNSTREAM(FEET) =    761.00
```

```
   Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
   SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   16.685
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.953
   SUBAREA Tc AND LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
(MIN.)
   NATURAL POOR COVER
   "BARREN"                  A        1.60      0.42      1.00    78
16.68
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.42
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
   SUBAREA RUNOFF(CFS) =      2.21
   TOTAL AREA(ACRES) =      1.60   PEAK FLOW RATE(CFS) =      2.21


***************************************************************************
*
   FLOW PROCESS FROM NODE     42.00 TO NODE     49.00 IS CODE =  52

---------------------------------------------------------------------------
-
   >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
   >>>>>TRAVELTIME THRU SUBAREA<<<<<

===========================================================================
=
   ELEVATION DATA: UPSTREAM(FEET) =    761.00  DOWNSTREAM(FEET) =    746.10
   CHANNEL LENGTH THRU SUBAREA(FEET) =  1930.00   CHANNEL SLOPE =  0.0077
   CHANNEL FLOW THRU SUBAREA(CFS) =      2.21
   FLOW VELOCITY(FEET/SEC) =   1.54 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
   TRAVEL TIME(MIN.) =  20.82   Tc(MIN.) =  37.51
   LONGEST FLOWPATH FROM NODE     40.00 TO NODE     49.00 =  2670.00 FEET.


***************************************************************************
*
   FLOW PROCESS FROM NODE     49.00 TO NODE     49.00 IS CODE =  81

---------------------------------------------------------------------------
-
   >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

===========================================================================
=
   MAINLINE Tc(MIN) =  37.51
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.201
   SUBAREA LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
   NATURAL POOR COVER
   "BARREN"                  A        0.50      0.42      1.00    78
   NATURAL POOR COVER
   "BARREN"                  C        1.80      0.18      1.00    91
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.23
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
   SUBAREA AREA(ACRES) =    2.30      SUBAREA RUNOFF(CFS) =    2.01
   EFFECTIVE AREA(ACRES) =      3.90   AREA-AVERAGED Fm(INCH/HR) =  0.31
   AREA-AVERAGED Fp(INCH/HR) =  0.31  AREA-AVERAGED Ap =  1.00
   TOTAL AREA(ACRES) =      3.90       PEAK FLOW RATE(CFS) =      3.14
```

```
****************************************************************************
*
   FLOW PROCESS FROM NODE     49.00 TO NODE     49.00 IS CODE =   1

----------------------------------------------------------------------------
-
   >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
   >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<

============================================================================
=
   TOTAL NUMBER OF STREAMS =  2
   CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
   TIME OF CONCENTRATION(MIN.) =  37.51
   RAINFALL INTENSITY(INCH/HR) =   1.20
   AREA-AVERAGED Fm(INCH/HR) =  0.31
   AREA-AVERAGED Fp(INCH/HR) =  0.31
   AREA-AVERAGED Ap =  1.00
   EFFECTIVE STREAM AREA(ACRES) =     3.90
   TOTAL STREAM AREA(ACRES) =     3.90
   PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.14

   ** CONFLUENCE DATA **
    STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
    NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
       1      4.14  67.03    0.848  0.43( 0.36) 0.85     9.5      30.00
       2      3.14  37.51    1.201  0.31( 0.31) 1.00     3.9      40.00

   RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
   CONFLUENCE FORMULA USED FOR  2 STREAMS.

   ** PEAK FLOW RATE TABLE **
    STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
    NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
       1      7.14  37.51    1.201  0.37( 0.34) 0.91     9.2      40.00
       2      6.04  67.03    0.848  0.39( 0.35) 0.90    13.4      30.00

   COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
   PEAK FLOW RATE(CFS) =      7.14    Tc(MIN.) =    37.51
   EFFECTIVE AREA(ACRES) =     9.22   AREA-AVERAGED Fm(INCH/HR) =  0.34
   AREA-AVERAGED Fp(INCH/HR) =  0.37  AREA-AVERAGED Ap =  0.91
   TOTAL AREA(ACRES) =     13.40
   LONGEST FLOWPATH FROM NODE     30.00 TO NODE     49.00 =  4700.00 FEET.


****************************************************************************
*
   FLOW PROCESS FROM NODE     50.00 TO NODE     53.00 IS CODE =  21

----------------------------------------------------------------------------
-
   >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
   >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

============================================================================
=
   INITIAL SUBAREA FLOW-LENGTH(FEET) =   432.00
   ELEVATION DATA: UPSTREAM(FEET) =    773.50  DOWNSTREAM(FEET) =    770.00

   Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
   SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.023
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.824
```

```
   SUBAREA Tc AND LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp        Ap     SCS   Tc
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
(MIN.)
   COMMERCIAL                 A        0.12      0.98      0.10    32
9.02
   NATURAL POOR COVER
   "BARREN"                   A        0.07      0.42      1.00    78
15.58
   COMMERCIAL                 C        0.06      0.57      0.10    69
9.02
   NATURAL POOR COVER
   "BARREN"                   C        0.05      0.18      1.00    91
15.58
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.39
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.46
   SUBAREA RUNOFF(CFS) =      0.71
   TOTAL AREA(ACRES) =      0.30   PEAK FLOW RATE(CFS) =      0.71


***************************************************************************
*
   FLOW PROCESS FROM NODE     53.00 TO NODE     53.00 IS CODE =   1

---------------------------------------------------------------------------
-
   >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<

===========================================================================
=
   TOTAL NUMBER OF STREAMS =  2
   CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
   TIME OF CONCENTRATION(MIN.) =   9.02
   RAINFALL INTENSITY(INCH/HR) =   2.82
   AREA-AVERAGED Fm(INCH/HR) =  0.18
   AREA-AVERAGED Fp(INCH/HR) =  0.39
   AREA-AVERAGED Ap =  0.46
   EFFECTIVE STREAM AREA(ACRES) =     0.30
   TOTAL STREAM AREA(ACRES) =     0.30
   PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.71


***************************************************************************
*
   FLOW PROCESS FROM NODE     51.00 TO NODE     53.00 IS CODE =  21

---------------------------------------------------------------------------
-
   >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
   >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

===========================================================================
=
   INITIAL SUBAREA FLOW-LENGTH(FEET) =   740.00
   ELEVATION DATA: UPSTREAM(FEET) =    774.00  DOWNSTREAM(FEET) =    770.00

   Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
   SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.134
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.364
   SUBAREA Tc AND LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp        Ap     SCS   Tc
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
```

```
(MIN.)
   COMMERCIAL                A        0.32      0.98      0.10    32
12.13
   COMMERCIAL                C        0.22      0.57      0.10    69
12.13
   NATURAL POOR COVER
   "BARREN"                  A        0.16      0.42      1.00    78
20.95
   NATURAL POOR COVER
   "BARREN"                  C        0.12      0.18      1.00    91
20.95
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.39
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.41
   SUBAREA RUNOFF(CFS) =      1.63
   TOTAL AREA(ACRES) =      0.82   PEAK FLOW RATE(CFS) =      1.63


***************************************************************************
*
   FLOW PROCESS FROM NODE     53.00 TO NODE     53.00 IS CODE =   1

---------------------------------------------------------------------------
-
   >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
   >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<

===========================================================================
=
   TOTAL NUMBER OF STREAMS =  2
   CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
   TIME OF CONCENTRATION(MIN.) =  12.13
   RAINFALL INTENSITY(INCH/HR) =   2.36
   AREA-AVERAGED Fm(INCH/HR) =  0.16
   AREA-AVERAGED Fp(INCH/HR) =  0.39
   AREA-AVERAGED Ap =  0.41
   EFFECTIVE STREAM AREA(ACRES) =     0.82
   TOTAL STREAM AREA(ACRES) =     0.82
   PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.63

   ** CONFLUENCE DATA **
    STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
    NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
       1      0.71   9.02    2.824  0.39( 0.18) 0.46     0.3      50.00
       2      1.63  12.13    2.364  0.39( 0.16) 0.41     0.8      51.00

   RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
   CONFLUENCE FORMULA USED FOR  2 STREAMS.

   ** PEAK FLOW RATE TABLE **
    STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
    NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
       1      2.18   9.02    2.824  0.39( 0.17) 0.42     0.9      50.00
       2      2.22  12.13    2.364  0.39( 0.17) 0.42     1.1      51.00

   COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
   PEAK FLOW RATE(CFS) =      2.22    Tc(MIN.) =    12.13
   EFFECTIVE AREA(ACRES) =     1.12   AREA-AVERAGED Fm(INCH/HR) =  0.17
   AREA-AVERAGED Fp(INCH/HR) =  0.39  AREA-AVERAGED Ap =  0.42
   TOTAL AREA(ACRES) =      1.12
   LONGEST FLOWPATH FROM NODE     51.00 TO NODE     53.00 =   740.00 FEET.

===========================================================================
```

```
=
   END OF STUDY SUMMARY:
   TOTAL AREA(ACRES)      =       1.12  TC(MIN.) =      12.13
   EFFECTIVE AREA(ACRES) =       1.12  AREA-AVERAGED Fm(INCH/HR)=  0.17
   AREA-AVERAGED Fp(INCH/HR) =  0.39  AREA-AVERAGED Ap =  0.42
   PEAK FLOW RATE(CFS)    =       2.22

   ** PEAK FLOW RATE TABLE **
    STREAM      Q      Tc    Intensity   Fp(Fm)     Ap   Ae      HEADWATER
    NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
       1      2.18   9.02    2.824  0.39( 0.17) 0.42     0.9      50.00
       2      2.22  12.13    2.364  0.39( 0.17) 0.42     1.1      51.00

============================================================================
=

============================================================================
=
   END OF RATIONAL METHOD ANALYSIS
```

```
_

*************************************************************************
*
              RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
           (Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
          (c) Copyright 1983-2003 Advanced Engineering Software (aes)
              Ver. 8.0  Release Date: 01/01/2003  License ID 1269

                           Analysis prepared by:

                             MDS Consulting
                       17320 Redhill Avenue, Suite 350
                             Irvine, CA 92614
                              949-721-8821



  ************************** DESCRIPTION OF STUDY
**************************
 * Existing Condition Hydrology Calculation
*
 * 100-year storm
*
 *
*

************************************************************************

   FILE NAME: EXIST.DAT
   TIME/DATE OF STUDY: 13:55 11/04/2015

============================================================================
=
   USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

============================================================================
=
                     --*TIME-OF-CONCENTRATION MODEL*--

   USER SPECIFIED STORM EVENT(YEAR) =  100.00
   SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
   SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
   *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*

   SLOPE OF INTENSITY DURATION CURVE(LOG(I;IN/HR) vs. LOG(Tc;MIN)) = 0.6000
   USER SPECIFIED 1-HOUR INTENSITY(INCH/HOUR) = 1.3700

   *ANTECEDENT MOISTURE CONDITION (AMC) III ASSUMED FOR RATIONAL METHOD*

   *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
      HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:
MANNING
      WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE
FACTOR
 NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
 ===  =====  =========  ================  ======  ===== ====== =====
=======
   1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167
```

```
0.0150

   GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
     1. Relative Flow-Depth =  0.00 FEET
        as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
     2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
   *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
    OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
   *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED


***************************************************************************
*
   FLOW PROCESS FROM NODE      1.00 TO NODE      2.00 IS CODE =  21

---------------------------------------------------------------------------
-
   >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
   >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

===========================================================================
=
   INITIAL SUBAREA FLOW-LENGTH(FEET) =   800.00
   ELEVATION DATA: UPSTREAM(FEET) =    774.00  DOWNSTREAM(FEET) =    762.00

   Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
   SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   17.627
   * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.857
   SUBAREA Tc AND LOSS RATE DATA(AMC III):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
(MIN.)
   NATURAL POOR COVER
   "BARREN"                  A        1.70      0.14      1.00    93
17.63
   NATURAL POOR COVER
   "BARREN"                  C        2.20      0.00      1.00    98
17.63
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.06
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
   SUBAREA RUNOFF(CFS) =      9.81
   TOTAL AREA(ACRES) =      3.90   PEAK FLOW RATE(CFS) =      9.81


***************************************************************************
*
   FLOW PROCESS FROM NODE      2.00 TO NODE      5.00 IS CODE =  52

---------------------------------------------------------------------------
-
   >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
   >>>>>TRAVELTIME THRU SUBAREA<<<<<

===========================================================================
=
   ELEVATION DATA: UPSTREAM(FEET) =    762.00  DOWNSTREAM(FEET) =    748.40
   CHANNEL LENGTH THRU SUBAREA(FEET) =  2250.00   CHANNEL SLOPE =  0.0060
   CHANNEL FLOW THRU SUBAREA(CFS) =      9.81
   FLOW VELOCITY(FEET/SEC) =   1.93 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
   TRAVEL TIME(MIN.) =  19.39   Tc(MIN.) =  37.02
   LONGEST FLOWPATH FROM NODE      1.00 TO NODE      5.00 =  3050.00 FEET.
```

```
**************************************************************************
*
   FLOW PROCESS FROM NODE      5.00 TO NODE      5.00 IS CODE =  81

--------------------------------------------------------------------------
-
   >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

==========================================================================
=
   MAINLINE Tc(MIN) =  37.02
   * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.830
   SUBAREA LOSS RATE DATA(AMC III):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
   NATURAL POOR COVER
   "BARREN"                   A       22.30      0.14      1.00    93
   NATURAL POOR COVER
   "BARREN"                   C       41.80      0.00      1.00    98
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.05
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
   SUBAREA AREA(ACRES) =   64.10      SUBAREA RUNOFF(CFS) =  102.79
   EFFECTIVE AREA(ACRES) =     68.00   AREA-AVERAGED Fm(INCH/HR) =  0.05
   AREA-AVERAGED Fp(INCH/HR) =  0.05  AREA-AVERAGED Ap =  1.00
   TOTAL AREA(ACRES) =     68.00       PEAK FLOW RATE(CFS) =     109.00


**************************************************************************
*
   FLOW PROCESS FROM NODE     10.00 TO NODE     13.00 IS CODE =  21

--------------------------------------------------------------------------
-
   >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
   >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

==========================================================================
=
   INITIAL SUBAREA FLOW-LENGTH(FEET) =  1000.00
   ELEVATION DATA: UPSTREAM(FEET) =    774.00  DOWNSTREAM(FEET) =    761.00

   Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
   SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   19.832
   * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.662
   SUBAREA Tc AND LOSS RATE DATA(AMC III):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
(MIN.)
   NATURAL POOR COVER
   "BARREN"                   A        6.40      0.14      1.00    93
19.83
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.14
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
   SUBAREA RUNOFF(CFS) =     14.53
   TOTAL AREA(ACRES) =      6.40   PEAK FLOW RATE(CFS) =     14.53


**************************************************************************
*
   FLOW PROCESS FROM NODE     13.00 TO NODE     19.00 IS CODE =  52
```

```
--------------------------------------------------------------------------
-
   >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
   >>>>>TRAVELTIME THRU SUBAREA<<<<<

==========================================================================
=
   ELEVATION DATA: UPSTREAM(FEET) =    761.00  DOWNSTREAM(FEET) =    751.00
   CHANNEL LENGTH THRU SUBAREA(FEET) =  1950.00   CHANNEL SLOPE =  0.0051
   CHANNEL FLOW THRU SUBAREA(CFS) =     14.53
   FLOW VELOCITY(FEET/SEC) =   1.97 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
   TRAVEL TIME(MIN.) =  16.49   Tc(MIN.) =  36.32
   LONGEST FLOWPATH FROM NODE     10.00 TO NODE     19.00 =  2950.00 FEET.


**************************************************************************
*
   FLOW PROCESS FROM NODE     19.00 TO NODE     19.00 IS CODE =  81

--------------------------------------------------------------------------
-
   >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

==========================================================================
=
   MAINLINE Tc(MIN) =  36.32
   * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.851
   SUBAREA LOSS RATE DATA(AMC III):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
   NATURAL POOR COVER
   "BARREN"                   A       26.30      0.14      1.00    93
   NATURAL POOR COVER
   "BARREN"                   C        7.10      0.00      1.00    98
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.11
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
   SUBAREA AREA(ACRES) =   33.40      SUBAREA RUNOFF(CFS) =   52.34
   EFFECTIVE AREA(ACRES) =     39.80   AREA-AVERAGED Fm(INCH/HR) =  0.12
   AREA-AVERAGED Fp(INCH/HR) =  0.12  AREA-AVERAGED Ap =  1.00
   TOTAL AREA(ACRES) =     39.80       PEAK FLOW RATE(CFS) =      62.20


**************************************************************************
*
   FLOW PROCESS FROM NODE     19.00 TO NODE     19.00 IS CODE =   1

--------------------------------------------------------------------------
-
   >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<

==========================================================================
=
   TOTAL NUMBER OF STREAMS =  2
   CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
   TIME OF CONCENTRATION(MIN.) =  36.32
   RAINFALL INTENSITY(INCH/HR) =   1.85
   AREA-AVERAGED Fm(INCH/HR) =  0.12
   AREA-AVERAGED Fp(INCH/HR) =  0.12
   AREA-AVERAGED Ap =  1.00
   EFFECTIVE STREAM AREA(ACRES) =    39.80
   TOTAL STREAM AREA(ACRES) =    39.80
   PEAK FLOW RATE(CFS) AT CONFLUENCE =     62.20
```

```
****************************************************************************
*
   FLOW PROCESS FROM NODE     15.00 TO NODE     17.00 IS CODE =  21

----------------------------------------------------------------------------
-
   >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
   >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

============================================================================
=
   INITIAL SUBAREA FLOW-LENGTH(FEET) =   900.00
   ELEVATION DATA: UPSTREAM(FEET) =    779.50  DOWNSTREAM(FEET) =    765.00

   Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
   SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   18.215
   * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.801
   SUBAREA Tc AND LOSS RATE DATA(AMC III):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
(MIN.)
   NATURAL POOR COVER
   "BARREN"                  A        5.20      0.14      1.00    93
18.22
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.14
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
   SUBAREA RUNOFF(CFS) =     12.45
   TOTAL AREA(ACRES) =      5.20   PEAK FLOW RATE(CFS) =     12.45


****************************************************************************
*
   FLOW PROCESS FROM NODE     17.00 TO NODE     19.00 IS CODE =  52

----------------------------------------------------------------------------
-
   >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
   >>>>>TRAVELTIME THRU SUBAREA<<<<<

============================================================================
=
   ELEVATION DATA: UPSTREAM(FEET) =    765.00  DOWNSTREAM(FEET) =    751.00
   CHANNEL LENGTH THRU SUBAREA(FEET) =  2350.00   CHANNEL SLOPE =  0.0060
   CHANNEL FLOW THRU SUBAREA(CFS) =     12.45
   FLOW VELOCITY(FEET/SEC) =   2.04 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
   TRAVEL TIME(MIN.) =  19.19   Tc(MIN.) =  37.41
   LONGEST FLOWPATH FROM NODE     15.00 TO NODE     19.00 =  3250.00 FEET.


****************************************************************************
*
   FLOW PROCESS FROM NODE     19.00 TO NODE     19.00 IS CODE =  81

----------------------------------------------------------------------------
-
   >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

============================================================================
=
   MAINLINE Tc(MIN) =  37.41
```

```
   * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.819
   SUBAREA LOSS RATE DATA(AMC III):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
   NATURAL POOR COVER
   "BARREN"                   A       34.20      0.14      1.00    93
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.14
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
   SUBAREA AREA(ACRES) =   34.20      SUBAREA RUNOFF(CFS) =   51.68
   EFFECTIVE AREA(ACRES) =     39.40   AREA-AVERAGED Fm(INCH/HR) =  0.14
   AREA-AVERAGED Fp(INCH/HR) =  0.14  AREA-AVERAGED Ap =  1.00
   TOTAL AREA(ACRES) =     39.40       PEAK FLOW RATE(CFS) =      59.54


****************************************************************************
*
   FLOW PROCESS FROM NODE     19.00 TO NODE     19.00 IS CODE =   1

----------------------------------------------------------------------------
-
   >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
   >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<

============================================================================
=
   TOTAL NUMBER OF STREAMS =  2
   CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
   TIME OF CONCENTRATION(MIN.) =  37.41
   RAINFALL INTENSITY(INCH/HR) =   1.82
   AREA-AVERAGED Fm(INCH/HR) =  0.14
   AREA-AVERAGED Fp(INCH/HR) =  0.14
   AREA-AVERAGED Ap =  1.00
   EFFECTIVE STREAM AREA(ACRES) =    39.40
   TOTAL STREAM AREA(ACRES) =    39.40
   PEAK FLOW RATE(CFS) AT CONFLUENCE =     59.54

   ** CONFLUENCE DATA **
    STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
    NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
       1     62.20  36.32    1.851  0.12( 0.12) 1.00    39.8      10.00
       2     59.54  37.41    1.819  0.14( 0.14) 1.00    39.4      15.00

   RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
   CONFLUENCE FORMULA USED FOR  2 STREAMS.

   ** PEAK FLOW RATE TABLE **
    STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
    NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
       1    121.12  36.32    1.851  0.13( 0.13) 1.00    78.1      10.00
       2    120.57  37.41    1.819  0.13( 0.13) 1.00    79.2      15.00

   COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
   PEAK FLOW RATE(CFS) =    121.12    Tc(MIN.) =    36.32
   EFFECTIVE AREA(ACRES) =    78.06   AREA-AVERAGED Fm(INCH/HR) =  0.13
   AREA-AVERAGED Fp(INCH/HR) =  0.13  AREA-AVERAGED Ap =  1.00
   TOTAL AREA(ACRES) =     79.20
   LONGEST FLOWPATH FROM NODE     15.00 TO NODE     19.00 =  3250.00 FEET.


****************************************************************************
*
   FLOW PROCESS FROM NODE     20.00 TO NODE     22.00 IS CODE =  21
```

```
----------------------------------------------------------------------------
-
   >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
   >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

============================================================================
=
   INITIAL SUBAREA FLOW-LENGTH(FEET) =   850.00
   ELEVATION DATA: UPSTREAM(FEET) =    783.20  DOWNSTREAM(FEET) =    772.70

   Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
   SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   18.775
   * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.751
   SUBAREA Tc AND LOSS RATE DATA(AMC III):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
(MIN.)
   NATURAL POOR COVER
   "BARREN"                  A        5.00      0.14      1.00    93
18.77
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.14
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
   SUBAREA RUNOFF(CFS) =     11.75
   TOTAL AREA(ACRES) =      5.00   PEAK FLOW RATE(CFS) =     11.75


****************************************************************************
*
   FLOW PROCESS FROM NODE     22.00 TO NODE     22.00 IS CODE =   1

----------------------------------------------------------------------------
-
   >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<

============================================================================
=
   TOTAL NUMBER OF STREAMS =  2
   CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
   TIME OF CONCENTRATION(MIN.) =  18.77
   RAINFALL INTENSITY(INCH/HR) =   2.75
   AREA-AVERAGED Fm(INCH/HR) =  0.14
   AREA-AVERAGED Fp(INCH/HR) =  0.14
   AREA-AVERAGED Ap =  1.00
   EFFECTIVE STREAM AREA(ACRES) =     5.00
   TOTAL STREAM AREA(ACRES) =     5.00
   PEAK FLOW RATE(CFS) AT CONFLUENCE =     11.75


****************************************************************************
*
   FLOW PROCESS FROM NODE     21.00 TO NODE     22.00 IS CODE =  21

----------------------------------------------------------------------------
-
   >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
   >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

============================================================================
=
   INITIAL SUBAREA FLOW-LENGTH(FEET) =   850.00
   ELEVATION DATA: UPSTREAM(FEET) =    779.50  DOWNSTREAM(FEET) =    772.70
```

```
   Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
   SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   20.479
   * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.611
   SUBAREA Tc AND LOSS RATE DATA(AMC III):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
(MIN.)
   NATURAL POOR COVER
   "BARREN"                   C        4.80      0.00      1.00    98
20.48
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.00
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
   SUBAREA RUNOFF(CFS) =     11.28
   TOTAL AREA(ACRES) =      4.80   PEAK FLOW RATE(CFS) =     11.28


***************************************************************************
*
   FLOW PROCESS FROM NODE     22.00 TO NODE     22.00 IS CODE =   1

---------------------------------------------------------------------------
-
   >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
   >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<

===========================================================================
=
   TOTAL NUMBER OF STREAMS =  2
   CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
   TIME OF CONCENTRATION(MIN.) =  20.48
   RAINFALL INTENSITY(INCH/HR) =   2.61
   AREA-AVERAGED Fm(INCH/HR) =  0.00
   AREA-AVERAGED Fp(INCH/HR) =  0.00
   AREA-AVERAGED Ap =  1.00
   EFFECTIVE STREAM AREA(ACRES) =     4.80
   TOTAL STREAM AREA(ACRES) =     4.80
   PEAK FLOW RATE(CFS) AT CONFLUENCE =     11.28

   ** CONFLUENCE DATA **
    STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
    NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
       1     11.75  18.77    2.751  0.14( 0.14) 1.00     5.0      20.00
       2     11.28  20.48    2.611  0.00( 0.00) 1.00     4.8      21.00

   RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
   CONFLUENCE FORMULA USED FOR  2 STREAMS.

   ** PEAK FLOW RATE TABLE **
    STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
    NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
       1     22.64  18.77    2.751  0.07( 0.07) 1.00     9.4      20.00
       2     22.40  20.48    2.611  0.07( 0.07) 1.00     9.8      21.00

   COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
   PEAK FLOW RATE(CFS) =     22.64    Tc(MIN.) =    18.77
   EFFECTIVE AREA(ACRES) =     9.40   AREA-AVERAGED Fm(INCH/HR) =  0.07
   AREA-AVERAGED Fp(INCH/HR) =  0.07  AREA-AVERAGED Ap =  1.00
   TOTAL AREA(ACRES) =      9.80
   LONGEST FLOWPATH FROM NODE     20.00 TO NODE     22.00 =   850.00 FEET.
```

```
****************************************************************************
*
   FLOW PROCESS FROM NODE     22.00 TO NODE     25.00 IS CODE =  52

----------------------------------------------------------------------------
-
   >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
   >>>>>TRAVELTIME THRU SUBAREA<<<<<

============================================================================
=
   ELEVATION DATA: UPSTREAM(FEET) =    772.70  DOWNSTREAM(FEET) =    754.50
   CHANNEL LENGTH THRU SUBAREA(FEET) =  1800.00   CHANNEL SLOPE =  0.0101
   CHANNEL FLOW THRU SUBAREA(CFS) =     22.64
   FLOW VELOCITY(FEET/SEC) =   3.12 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
   TRAVEL TIME(MIN.) =   9.63   Tc(MIN.) =  28.40
   LONGEST FLOWPATH FROM NODE     20.00 TO NODE     25.00 =  2650.00 FEET.


****************************************************************************
*
   FLOW PROCESS FROM NODE     25.00 TO NODE     25.00 IS CODE =  81

----------------------------------------------------------------------------
-
   >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

============================================================================
=
   MAINLINE Tc(MIN) =  28.40
   * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.146
   SUBAREA LOSS RATE DATA(AMC III):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap     SCS
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
   NATURAL POOR COVER
   "BARREN"                   A       26.70      0.14      1.00    93
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.14
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
   SUBAREA AREA(ACRES) =   26.70      SUBAREA RUNOFF(CFS) =   48.20
   EFFECTIVE AREA(ACRES) =     36.10   AREA-AVERAGED Fm(INCH/HR) =  0.12
   AREA-AVERAGED Fp(INCH/HR) =  0.12  AREA-AVERAGED Ap =  1.00
   TOTAL AREA(ACRES) =     36.50       PEAK FLOW RATE(CFS) =      65.73


****************************************************************************
*
   FLOW PROCESS FROM NODE     30.00 TO NODE     32.00 IS CODE =  21

----------------------------------------------------------------------------
-
   >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
   >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

============================================================================
=
   INITIAL SUBAREA FLOW-LENGTH(FEET) =  1000.00
   ELEVATION DATA: UPSTREAM(FEET) =    774.00  DOWNSTREAM(FEET) =    765.00

   Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
   SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.360
   * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.535
   SUBAREA Tc AND LOSS RATE DATA(AMC III):
```

```
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
        LAND USE           GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
(MIN.)
   COMMERCIAL                A       0.30      0.80      0.10    52
12.36
   NATURAL POOR COVER
   "BARREN"                  A       0.20      0.14      1.00    93
21.35
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.23
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.46
   SUBAREA RUNOFF(CFS) =      1.54
   TOTAL AREA(ACRES) =      0.50   PEAK FLOW RATE(CFS) =      1.54


****************************************************************************
*
   FLOW PROCESS FROM NODE     32.00 TO NODE     34.00 IS CODE =  52

----------------------------------------------------------------------------
-
   >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
   >>>>>TRAVELTIME THRU SUBAREA<<<<<

============================================================================
=
   ELEVATION DATA: UPSTREAM(FEET) =    765.00  DOWNSTREAM(FEET) =    755.00
   CHANNEL LENGTH THRU SUBAREA(FEET) =  1100.00   CHANNEL SLOPE =  0.0091
   CHANNEL FLOW THRU SUBAREA(CFS) =      1.54
   FLOW VELOCITY(FEET/SEC) =   1.56 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
   TRAVEL TIME(MIN.) =  11.78   Tc(MIN.) =  24.14
   LONGEST FLOWPATH FROM NODE     30.00 TO NODE     34.00 =  2100.00 FEET.


****************************************************************************
*
   FLOW PROCESS FROM NODE     34.00 TO NODE     34.00 IS CODE =  81

----------------------------------------------------------------------------
-
   >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

============================================================================
=
   MAINLINE Tc(MIN) =  24.14
   * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.366
   SUBAREA LOSS RATE DATA(AMC III):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
        LAND USE           GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
   COMMERCIAL                A       0.40      0.80      0.10    52
   NATURAL POOR COVER
   "BARREN"                  A       0.60      0.14      1.00    93
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.18
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.64
   SUBAREA AREA(ACRES) =    1.00      SUBAREA RUNOFF(CFS) =    2.02
   EFFECTIVE AREA(ACRES) =      1.50   AREA-AVERAGED Fm(INCH/HR) =  0.11
   AREA-AVERAGED Fp(INCH/HR) =  0.19  AREA-AVERAGED Ap =  0.58
   TOTAL AREA(ACRES) =      1.50       PEAK FLOW RATE(CFS) =      3.04


****************************************************************************
*
   FLOW PROCESS FROM NODE     34.00 TO NODE     36.00 IS CODE =  52
```

```
----------------------------------------------------------------------------
-
   >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
   >>>>>TRAVELTIME THRU SUBAREA<<<<<

============================================================================
=
   ELEVATION DATA: UPSTREAM(FEET) =    755.00  DOWNSTREAM(FEET) =    749.40
   CHANNEL LENGTH THRU SUBAREA(FEET) =  1400.00   CHANNEL SLOPE =  0.0040
   CHANNEL FLOW THRU SUBAREA(CFS) =      3.04
   FLOW VELOCITY(FEET/SEC) =   1.19 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
   TRAVEL TIME(MIN.) =  19.59   Tc(MIN.) =  43.73
   LONGEST FLOWPATH FROM NODE     30.00 TO NODE     36.00 =  3500.00 FEET.


****************************************************************************
*
   FLOW PROCESS FROM NODE     36.00 TO NODE     36.00 IS CODE =  81

----------------------------------------------------------------------------
-
   >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

============================================================================
=
   MAINLINE Tc(MIN) =  43.73
   * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.656
   SUBAREA LOSS RATE DATA(AMC III):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
   COMMERCIAL                 A        0.50      0.80      0.10    52
   NATURAL POOR COVER
   "BARREN"                   A        3.50      0.14      1.00    93
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.15
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.89
   SUBAREA AREA(ACRES) =    4.00      SUBAREA RUNOFF(CFS) =    5.49
   EFFECTIVE AREA(ACRES) =      5.50   AREA-AVERAGED Fm(INCH/HR) =  0.13
   AREA-AVERAGED Fp(INCH/HR) =  0.16  AREA-AVERAGED Ap =  0.80
   TOTAL AREA(ACRES) =      5.50       PEAK FLOW RATE(CFS) =       7.57


****************************************************************************
*
   FLOW PROCESS FROM NODE     36.00 TO NODE     49.00 IS CODE =  52

----------------------------------------------------------------------------
-
   >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
   >>>>>TRAVELTIME THRU SUBAREA<<<<<

============================================================================
=
   ELEVATION DATA: UPSTREAM(FEET) =    749.40  DOWNSTREAM(FEET) =    746.10
   CHANNEL LENGTH THRU SUBAREA(FEET) =  1200.00   CHANNEL SLOPE =  0.0028
   CHANNEL FLOW THRU SUBAREA(CFS) =      7.57
   FLOW VELOCITY(FEET/SEC) =   1.22 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
   TRAVEL TIME(MIN.) =  16.36   Tc(MIN.) =  60.09
   LONGEST FLOWPATH FROM NODE     30.00 TO NODE     49.00 =  4700.00 FEET.


****************************************************************************
```

```
*
   FLOW PROCESS FROM NODE     49.00 TO NODE     49.00 IS CODE =  81

----------------------------------------------------------------------------
-
   >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

============================================================================
=
   MAINLINE Tc(MIN) =  60.09
   * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.369
   SUBAREA LOSS RATE DATA(AMC III):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
   COMMERCIAL                 A        0.36      0.80      0.10    52
   NATURAL POOR COVER
   "BARREN"                   A        3.64      0.14      1.00    93
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.15
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.92
   SUBAREA AREA(ACRES) =    4.00      SUBAREA RUNOFF(CFS) =    4.44
   EFFECTIVE AREA(ACRES) =      9.50   AREA-AVERAGED Fm(INCH/HR) =  0.13
   AREA-AVERAGED Fp(INCH/HR) =  0.15  AREA-AVERAGED Ap =  0.85
   TOTAL AREA(ACRES) =      9.50       PEAK FLOW RATE(CFS) =      10.59


****************************************************************************
*
   FLOW PROCESS FROM NODE     49.00 TO NODE     49.00 IS CODE =   1

----------------------------------------------------------------------------
-
   >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<

============================================================================
=
   TOTAL NUMBER OF STREAMS =  2
   CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
   TIME OF CONCENTRATION(MIN.) =  60.09
   RAINFALL INTENSITY(INCH/HR) =   1.37
   AREA-AVERAGED Fm(INCH/HR) =  0.13
   AREA-AVERAGED Fp(INCH/HR) =  0.15
   AREA-AVERAGED Ap =  0.85
   EFFECTIVE STREAM AREA(ACRES) =     9.50
   TOTAL STREAM AREA(ACRES) =     9.50
   PEAK FLOW RATE(CFS) AT CONFLUENCE =     10.59


****************************************************************************
*
   FLOW PROCESS FROM NODE     40.00 TO NODE     42.00 IS CODE =  21

----------------------------------------------------------------------------
-
   >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
   >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

============================================================================
=
   INITIAL SUBAREA FLOW-LENGTH(FEET) =   740.00
   ELEVATION DATA: UPSTREAM(FEET) =    773.50  DOWNSTREAM(FEET) =    761.00

   Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
```

```
   SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   16.685
   * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.953
   SUBAREA Tc AND LOSS RATE DATA(AMC III):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp        Ap     SCS   Tc
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
(MIN.)
   NATURAL POOR COVER
   "BARREN"                  A        1.60      0.14      1.00    93
16.68
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.14
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
   SUBAREA RUNOFF(CFS) =      4.05
   TOTAL AREA(ACRES) =      1.60   PEAK FLOW RATE(CFS) =      4.05


****************************************************************************
*
   FLOW PROCESS FROM NODE     42.00 TO NODE     49.00 IS CODE =  52

----------------------------------------------------------------------------
-
   >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
   >>>>>TRAVELTIME THRU SUBAREA<<<<<

============================================================================
=
   ELEVATION DATA: UPSTREAM(FEET) =    761.00  DOWNSTREAM(FEET) =    746.10
   CHANNEL LENGTH THRU SUBAREA(FEET) =  1930.00   CHANNEL SLOPE =  0.0077
   CHANNEL FLOW THRU SUBAREA(CFS) =      4.05
   FLOW VELOCITY(FEET/SEC) =   1.77 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
   TRAVEL TIME(MIN.) =  18.22   Tc(MIN.) =  34.91
   LONGEST FLOWPATH FROM NODE     40.00 TO NODE     49.00 =  2670.00 FEET.


****************************************************************************
*
   FLOW PROCESS FROM NODE     49.00 TO NODE     49.00 IS CODE =  81

----------------------------------------------------------------------------
-
   >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

============================================================================
=
   MAINLINE Tc(MIN) =  34.91
   * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.896
   SUBAREA LOSS RATE DATA(AMC III):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp        Ap     SCS
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
   NATURAL POOR COVER
   "BARREN"                  A        0.50      0.14      1.00    93
   NATURAL POOR COVER
   "BARREN"                  C        1.80      0.00      1.00    98
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.03
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
   SUBAREA AREA(ACRES) =    2.30      SUBAREA RUNOFF(CFS) =    3.86
   EFFECTIVE AREA(ACRES) =      3.90   AREA-AVERAGED Fm(INCH/HR) =  0.08
   AREA-AVERAGED Fp(INCH/HR) =  0.08  AREA-AVERAGED Ap =  1.00
   TOTAL AREA(ACRES) =      3.90       PEAK FLOW RATE(CFS) =      6.39


****************************************************************************
```

```
*
   FLOW PROCESS FROM NODE     49.00 TO NODE     49.00 IS CODE =   1

---------------------------------------------------------------------------
-
   >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
   >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<

===========================================================================
=
   TOTAL NUMBER OF STREAMS =  2
   CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
   TIME OF CONCENTRATION(MIN.) =  34.91
   RAINFALL INTENSITY(INCH/HR) =   1.90
   AREA-AVERAGED Fm(INCH/HR) =  0.08
   AREA-AVERAGED Fp(INCH/HR) =  0.08
   AREA-AVERAGED Ap =  1.00
   EFFECTIVE STREAM AREA(ACRES) =     3.90
   TOTAL STREAM AREA(ACRES) =     3.90
   PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.39

   ** CONFLUENCE DATA **
    STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
    NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
       1     10.59  60.09    1.369  0.15( 0.13) 0.85     9.5      30.00
       2      6.39  34.91    1.896  0.08( 0.08) 1.00     3.9      40.00

   RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
   CONFLUENCE FORMULA USED FOR  2 STREAMS.

   ** PEAK FLOW RATE TABLE **
    STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
    NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
       1     15.16  34.91    1.896  0.12( 0.11) 0.91     9.4      40.00
       2     15.13  60.09    1.369  0.13( 0.11) 0.90    13.4      30.00

   COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
   PEAK FLOW RATE(CFS) =     15.16    Tc(MIN.) =    34.91
   EFFECTIVE AREA(ACRES) =     9.42   AREA-AVERAGED Fm(INCH/HR) =  0.11
   AREA-AVERAGED Fp(INCH/HR) =  0.12  AREA-AVERAGED Ap =  0.91
   TOTAL AREA(ACRES) =     13.40
   LONGEST FLOWPATH FROM NODE     30.00 TO NODE     49.00 =  4700.00 FEET.


***************************************************************************
*
   FLOW PROCESS FROM NODE     50.00 TO NODE     53.00 IS CODE =  21

---------------------------------------------------------------------------
-
   >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
   >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

===========================================================================
=
   INITIAL SUBAREA FLOW-LENGTH(FEET) =   432.00
   ELEVATION DATA: UPSTREAM(FEET) =    773.50  DOWNSTREAM(FEET) =    770.00

   Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
   SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.023
   * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.270
   SUBAREA Tc AND LOSS RATE DATA(AMC III):
```

```
    DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS   Tc
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
(MIN.)
   COMMERCIAL                 A        0.12      0.80      0.10    52
9.02
   NATURAL POOR COVER
   "BARREN"                   A        0.07      0.14      1.00    93
15.58
   COMMERCIAL                 C        0.06      0.27      0.10    86
9.02
   NATURAL POOR COVER
   "BARREN"                   C        0.05      0.00      1.00    98
15.58
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.15
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.46
   SUBAREA RUNOFF(CFS) =      1.13
   TOTAL AREA(ACRES) =      0.30   PEAK FLOW RATE(CFS) =      1.13


***************************************************************************
*
   FLOW PROCESS FROM NODE     53.00 TO NODE     53.00 IS CODE =   1

---------------------------------------------------------------------------
-
   >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<

===========================================================================
=
   TOTAL NUMBER OF STREAMS =  2
   CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
   TIME OF CONCENTRATION(MIN.) =   9.02
   RAINFALL INTENSITY(INCH/HR) =   4.27
   AREA-AVERAGED Fm(INCH/HR) =  0.07
   AREA-AVERAGED Fp(INCH/HR) =  0.15
   AREA-AVERAGED Ap =  0.46
   EFFECTIVE STREAM AREA(ACRES) =     0.30
   TOTAL STREAM AREA(ACRES) =     0.30
   PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.13


***************************************************************************
*
   FLOW PROCESS FROM NODE     51.00 TO NODE     53.00 IS CODE =  21

---------------------------------------------------------------------------
-
   >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
   >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

===========================================================================
=
   INITIAL SUBAREA FLOW-LENGTH(FEET) =   740.00
   ELEVATION DATA: UPSTREAM(FEET) =    774.00  DOWNSTREAM(FEET) =    770.00

   Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
   SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.134
   * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.574
   SUBAREA Tc AND LOSS RATE DATA(AMC III):
    DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS   Tc
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
(MIN.)
```

```
   COMMERCIAL                A        0.32     0.80     0.10    52
12.13
   COMMERCIAL                C        0.22     0.27     0.10    86
12.13
   NATURAL POOR COVER
   "BARREN"                  A        0.16     0.14     1.00    93
20.95
   NATURAL POOR COVER
   "BARREN"                  C        0.12     0.00     1.00    98
20.95
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.16
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.41
   SUBAREA RUNOFF(CFS) =      2.59
   TOTAL AREA(ACRES) =      0.82   PEAK FLOW RATE(CFS) =      2.59


***************************************************************************
*
   FLOW PROCESS FROM NODE     53.00 TO NODE     53.00 IS CODE =   1

---------------------------------------------------------------------------
-
   >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
   >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<

===========================================================================
=
   TOTAL NUMBER OF STREAMS =  2
   CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
   TIME OF CONCENTRATION(MIN.) =  12.13
   RAINFALL INTENSITY(INCH/HR) =   3.57
   AREA-AVERAGED Fm(INCH/HR) =  0.07
   AREA-AVERAGED Fp(INCH/HR) =  0.16
   AREA-AVERAGED Ap =  0.41
   EFFECTIVE STREAM AREA(ACRES) =     0.82
   TOTAL STREAM AREA(ACRES) =     0.82
   PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.59

   ** CONFLUENCE DATA **
    STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
    NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
       1      1.13   9.02    4.270  0.15( 0.07) 0.46     0.3      50.00
       2      2.59  12.13    3.574  0.16( 0.07) 0.41     0.8      51.00

   RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
   CONFLUENCE FORMULA USED FOR  2 STREAMS.

   ** PEAK FLOW RATE TABLE **
    STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
    NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
       1      3.44   9.02    4.270  0.16( 0.07) 0.42     0.9      50.00
       2      3.54  12.13    3.574  0.16( 0.07) 0.42     1.1      51.00

   COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
   PEAK FLOW RATE(CFS) =      3.54    Tc(MIN.) =    12.13
   EFFECTIVE AREA(ACRES) =     1.12   AREA-AVERAGED Fm(INCH/HR) =  0.07
   AREA-AVERAGED Fp(INCH/HR) =  0.16  AREA-AVERAGED Ap =  0.42
   TOTAL AREA(ACRES) =      1.12
   LONGEST FLOWPATH FROM NODE     51.00 TO NODE     53.00 =   740.00 FEET.

===========================================================================
=
```

```
END OF STUDY SUMMARY:
TOTAL AREA(ACRES)     =      1.12  TC(MIN.) =     12.13
EFFECTIVE AREA(ACRES) =      1.12  AREA-AVERAGED Fm(INCH/HR)=  0.07
AREA-AVERAGED Fp(INCH/HR) =  0.16  AREA-AVERAGED Ap =  0.42
PEAK FLOW RATE(CFS)   =      3.54

** PEAK FLOW RATE TABLE **
 STREAM     Q      Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
 NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)      (ACRES)    NODE
    1      3.44   9.02    4.270  0.16( 0.07) 0.42     0.9      50.00
    2      3.54  12.13    3.574  0.16( 0.07) 0.42     1.1      51.00

============================================================================
=

============================================================================
=
END OF RATIONAL METHOD ANALYSIS
```

C. Developed Condition Rational Method Hydrology Calculations

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_

****************************************************************************
*
              RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
           (Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
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              Ver. 8.0  Release Date: 01/01/2003  License ID 1269

                            Analysis prepared by:

                               MDS Consulting
                       17320 Redhill Avenue, Suite 350
                              Irvine, CA 92614
                               949-721-8821



  ************************** DESCRIPTION OF STUDY
**************************
 * Armstrong Ranch, City of Ontario
*
 * Preliminary Hydrology
*
 * 10-year storm

***************************************************************************

   FILE NAME: 80350.DAT
   TIME/DATE OF STUDY: 12:20 11/04/2015

============================================================================
=
   USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

============================================================================
=
                     --*TIME-OF-CONCENTRATION MODEL*--

   USER SPECIFIED STORM EVENT(YEAR) =   10.00
   SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
   SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
   *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*
   10-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  0.906
   100-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  1.370
   COMPUTED RAINFALL INTENSITY DATA:
   STORM EVENT =   10.00   1-HOUR INTENSITY(INCH/HOUR) = 0.9151
   SLOPE OF INTENSITY DURATION CURVE = 0.6000

   *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

   *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
      HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:
MANNING
      WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE
FACTOR
 NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
 ===  =====  =========  ================  ======  ===== ====== =====
=======
```

```
   1   18.0     13.0    0.020/0.020/ ---    0.50    2.00 0.0313 0.167
0.0150
   2   32.0     27.0    0.020/0.020/ ---    0.67    2.00 0.0313 0.167
0.0150

   GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
     1. Relative Flow-Depth =  0.50 FEET
        as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
     2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
   *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
    OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
   *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED


***************************************************************************
*
   FLOW PROCESS FROM NODE      1.00 TO NODE      3.00 IS CODE =  21

---------------------------------------------------------------------------
-
   >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
   >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

===========================================================================
=
   INITIAL SUBAREA FLOW-LENGTH(FEET) =   860.00
   ELEVATION DATA: UPSTREAM(FEET) =    779.70  DOWNSTREAM(FEET) =    775.20

   Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
   SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.970
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.294
   SUBAREA Tc AND LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
(MIN.)
   COMMERCIAL                 A        1.06      0.98      0.10    32
12.97
   PUBLIC PARK                A        0.44      0.98      0.85    32
20.61
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.32
   SUBAREA RUNOFF(CFS) =      2.68
   TOTAL AREA(ACRES) =      1.50   PEAK FLOW RATE(CFS) =      2.68


***************************************************************************
*
   FLOW PROCESS FROM NODE      3.00 TO NODE      5.00 IS CODE =  62

---------------------------------------------------------------------------
-
   >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
   >>>>>(STREET TABLE SECTION #  1 USED)<<<<<

===========================================================================
=
   UPSTREAM ELEVATION(FEET) =  775.20  DOWNSTREAM ELEVATION(FEET) =  767.50
   STREET LENGTH(FEET) =   960.00   CURB HEIGHT(INCHES) =  6.0
   STREET HALFWIDTH(FEET) = 18.00

   DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
   INSIDE STREET CROSSFALL(DECIMAL) =  0.020
```

```
   OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

   SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
   Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =
0.0150

     **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.94
     STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
     STREET FLOW DEPTH(FEET) =  0.40
     HALFSTREET FLOOD WIDTH(FEET) =   12.28
     AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.32
     PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.94
   STREET FLOW TRAVEL TIME(MIN.) =   6.89   Tc(MIN.) =  19.86
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.776
   SUBAREA LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
   COMMERCIAL                 A       1.50      0.98      0.10    32
   PUBLIC PARK                A       0.30      0.98      0.85    32
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.23
   SUBAREA AREA(ACRES) =    1.80      SUBAREA RUNOFF(CFS) =    2.52
   EFFECTIVE AREA(ACRES) =      3.30    AREA-AVERAGED Fm(INCH/HR) =  0.26
   AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.27
   TOTAL AREA(ACRES) =      3.30        PEAK FLOW RATE(CFS) =       4.50

   END OF SUBAREA STREET FLOW HYDRAULICS:
   DEPTH(FEET) = 0.42   HALFSTREET FLOOD WIDTH(FEET) =  13.03
   FLOW VELOCITY(FEET/SEC.) =  2.38   DEPTH*VELOCITY(FT*FT/SEC.) =   1.00
   LONGEST FLOWPATH FROM NODE      1.00 TO NODE      5.00 =  1820.00 FEET.


****************************************************************************
*
   FLOW PROCESS FROM NODE      5.00 TO NODE     10.00 IS CODE =  31

----------------------------------------------------------------------------
-
   >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
   >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

============================================================================
=
   ELEVATION DATA: UPSTREAM(FEET) =   760.50  DOWNSTREAM(FEET) =   754.60
   FLOW LENGTH(FEET) =    50.00   MANNING'S N =  0.013
   ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
   DEPTH OF FLOW IN  18.0 INCH PIPE IS   4.3 INCHES
   PIPE-FLOW VELOCITY(FEET/SEC.) =  13.67
   ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
   PIPE-FLOW(CFS) =      4.50
   PIPE TRAVEL TIME(MIN.) =   0.06    Tc(MIN.) =  19.92
   LONGEST FLOWPATH FROM NODE      1.00 TO NODE     10.00 =  1870.00 FEET.


****************************************************************************
*
   FLOW PROCESS FROM NODE     10.00 TO NODE     10.00 IS CODE =   1

----------------------------------------------------------------------------
-
   >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
```

```
============================================================================
=
   TOTAL NUMBER OF STREAMS =  2
   CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
   TIME OF CONCENTRATION(MIN.) =  19.92
   RAINFALL INTENSITY(INCH/HR) =   1.77
   AREA-AVERAGED Fm(INCH/HR) =  0.26
   AREA-AVERAGED Fp(INCH/HR) =  0.98
   AREA-AVERAGED Ap =  0.27
   EFFECTIVE STREAM AREA(ACRES) =     3.30
   TOTAL STREAM AREA(ACRES) =     3.30
   PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.50


****************************************************************************
*
   FLOW PROCESS FROM NODE      7.00 TO NODE      9.00 IS CODE =  21

----------------------------------------------------------------------------
-
   >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
   >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

============================================================================
=
   INITIAL SUBAREA FLOW-LENGTH(FEET) =   850.00
   ELEVATION DATA: UPSTREAM(FEET) =    773.30  DOWNSTREAM(FEET) =    762.30

   Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
   SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   13.782
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.212
   SUBAREA Tc AND LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
(MIN.)
   RESIDENTIAL
   "5-7 DWELLINGS/ACRE"       A        4.18      0.98      0.50    32
13.78
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
   SUBAREA RUNOFF(CFS) =      6.49
   TOTAL AREA(ACRES) =      4.18   PEAK FLOW RATE(CFS) =      6.49


****************************************************************************
*
   FLOW PROCESS FROM NODE      9.00 TO NODE     10.00 IS CODE =  31

----------------------------------------------------------------------------
-
   >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
   >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

============================================================================
=
   ELEVATION DATA: UPSTREAM(FEET) =   755.30  DOWNSTREAM(FEET) =   754.60
   FLOW LENGTH(FEET) =   190.00   MANNING'S N =  0.013
   DEPTH OF FLOW IN  21.0 INCH PIPE IS  12.9 INCHES
   PIPE-FLOW VELOCITY(FEET/SEC.) =   4.20
   ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
   PIPE-FLOW(CFS) =      6.49
   PIPE TRAVEL TIME(MIN.) =   0.75    Tc(MIN.) =  14.54
```

```
   LONGEST FLOWPATH FROM NODE      7.00 TO NODE     10.00 =  1040.00 FEET.

***************************************************************************
*
   FLOW PROCESS FROM NODE     10.00 TO NODE     10.00 IS CODE =   1

---------------------------------------------------------------------------
-
   >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
   >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<

===========================================================================
=
   TOTAL NUMBER OF STREAMS =  2
   CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
   TIME OF CONCENTRATION(MIN.) =  14.54
   RAINFALL INTENSITY(INCH/HR) =   2.14
   AREA-AVERAGED Fm(INCH/HR) =  0.49
   AREA-AVERAGED Fp(INCH/HR) =  0.98
   AREA-AVERAGED Ap =  0.50
   EFFECTIVE STREAM AREA(ACRES) =     4.18
   TOTAL STREAM AREA(ACRES) =     4.18
   PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.49

   ** CONFLUENCE DATA **
    STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
    NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
       1      4.50  19.92    1.773  0.98( 0.26) 0.27     3.3       1.00
       2      6.49  14.54    2.142  0.98( 0.49) 0.50     4.2       7.00

   RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
   CONFLUENCE FORMULA USED FOR  2 STREAMS.

   ** PEAK FLOW RATE TABLE **
    STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
    NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
       1     10.57  14.54    2.142  0.98( 0.40) 0.42     6.6       7.00
       2      9.54  19.92    1.773  0.98( 0.39) 0.40     7.5       1.00

   COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
   PEAK FLOW RATE(CFS) =     10.57    Tc(MIN.) =    14.54
   EFFECTIVE AREA(ACRES) =     6.59   AREA-AVERAGED Fm(INCH/HR) =  0.40
   AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.42
   TOTAL AREA(ACRES) =      7.48
   LONGEST FLOWPATH FROM NODE      1.00 TO NODE     10.00 =  1870.00 FEET.


***************************************************************************
*
   FLOW PROCESS FROM NODE     10.00 TO NODE     10.10 IS CODE =  31

---------------------------------------------------------------------------
-
   >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
   >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

===========================================================================
=
   ELEVATION DATA: UPSTREAM(FEET) =   754.60  DOWNSTREAM(FEET) =   752.10
   FLOW LENGTH(FEET) =   690.00   MANNING'S N =  0.013
   DEPTH OF FLOW IN  24.0 INCH PIPE IS  16.2 INCHES
```

```
   PIPE-FLOW VELOCITY(FEET/SEC.) =   4.69
   ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
   PIPE-FLOW(CFS) =     10.57
   PIPE TRAVEL TIME(MIN.) =   2.45    Tc(MIN.) =  16.99
   LONGEST FLOWPATH FROM NODE      1.00 TO NODE     10.10 =  2560.00 FEET.

***************************************************************************
*
   FLOW PROCESS FROM NODE     10.10 TO NODE     10.10 IS CODE =   1

---------------------------------------------------------------------------
-
   >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<

===========================================================================
=
   TOTAL NUMBER OF STREAMS =  2
   CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
   TIME OF CONCENTRATION(MIN.) =  16.99
   RAINFALL INTENSITY(INCH/HR) =   1.95
   AREA-AVERAGED Fm(INCH/HR) =  0.40
   AREA-AVERAGED Fp(INCH/HR) =  0.98
   AREA-AVERAGED Ap =  0.42
   EFFECTIVE STREAM AREA(ACRES) =     6.59
   TOTAL STREAM AREA(ACRES) =     7.48
   PEAK FLOW RATE(CFS) AT CONFLUENCE =     10.57

***************************************************************************
*
   FLOW PROCESS FROM NODE     10.30 TO NODE     10.20 IS CODE =  21

---------------------------------------------------------------------------
-
   >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
   >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

===========================================================================
=
   INITIAL SUBAREA FLOW-LENGTH(FEET) =   900.00
   ELEVATION DATA: UPSTREAM(FEET) =    765.20  DOWNSTREAM(FEET) =    760.00

   Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
   SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   16.569
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.980
   SUBAREA Tc AND LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
(MIN.)
   RESIDENTIAL
   "5-7 DWELLINGS/ACRE"       A        2.52      0.98      0.50    32
16.57
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
   SUBAREA RUNOFF(CFS) =      3.39
   TOTAL AREA(ACRES) =      2.52   PEAK FLOW RATE(CFS) =      3.39

***************************************************************************
*
   FLOW PROCESS FROM NODE     10.20 TO NODE     10.10 IS CODE =  31
```

```
--------------------------------------------------------------------------
-
   >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
   >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

==========================================================================
=
   ELEVATION DATA: UPSTREAM(FEET) =   753.00  DOWNSTREAM(FEET) =   752.10
   FLOW LENGTH(FEET) =    70.00   MANNING'S N =  0.013
   ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
   DEPTH OF FLOW IN  18.0 INCH PIPE IS   6.7 INCHES
   PIPE-FLOW VELOCITY(FEET/SEC.) =   5.69
   ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
   PIPE-FLOW(CFS) =      3.39
   PIPE TRAVEL TIME(MIN.) =   0.20    Tc(MIN.) =  16.77
   LONGEST FLOWPATH FROM NODE     10.30 TO NODE     10.10 =   970.00 FEET.


**************************************************************************
*
   FLOW PROCESS FROM NODE     10.10 TO NODE     10.10 IS CODE =   1

--------------------------------------------------------------------------
-
   >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
   >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<

==========================================================================
=
   TOTAL NUMBER OF STREAMS =  2
   CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
   TIME OF CONCENTRATION(MIN.) =  16.77
   RAINFALL INTENSITY(INCH/HR) =   1.97
   AREA-AVERAGED Fm(INCH/HR) =  0.49
   AREA-AVERAGED Fp(INCH/HR) =  0.98
   AREA-AVERAGED Ap =  0.50
   EFFECTIVE STREAM AREA(ACRES) =     2.52
   TOTAL STREAM AREA(ACRES) =     2.52
   PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.39

   ** CONFLUENCE DATA **
    STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
    NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
       1     10.57  16.99    1.951  0.98( 0.40) 0.42     6.6       7.00
       1      9.54  22.42    1.652  0.98( 0.39) 0.40     7.5       1.00
       2      3.39  16.77    1.966  0.98( 0.49) 0.50     2.5      10.30

   RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
   CONFLUENCE FORMULA USED FOR  2 STREAMS.

   ** PEAK FLOW RATE TABLE **
    STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
    NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
       1     13.93  16.77    1.966  0.98( 0.43) 0.44     9.0      10.30
       2     13.92  16.99    1.951  0.98( 0.43) 0.44     9.1       7.00
       3     12.21  22.42    1.652  0.97( 0.41) 0.42    10.0       1.00

   COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
   PEAK FLOW RATE(CFS) =     13.93    Tc(MIN.) =    16.77
   EFFECTIVE AREA(ACRES) =     9.03   AREA-AVERAGED Fm(INCH/HR) =  0.43
   AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.44
```

```
   TOTAL AREA(ACRES) =     10.00
   LONGEST FLOWPATH FROM NODE      1.00 TO NODE     10.10 =  2560.00 FEET.

****************************************************************************
*
   FLOW PROCESS FROM NODE     10.10 TO NODE     12.00 IS CODE =  31

----------------------------------------------------------------------------
-
   >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
   >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

============================================================================
=
   ELEVATION DATA: UPSTREAM(FEET) =   752.10  DOWNSTREAM(FEET) =   751.90
   FLOW LENGTH(FEET) =    74.00   MANNING'S N =  0.013
   DEPTH OF FLOW IN  27.0 INCH PIPE IS  19.8 INCHES
   PIPE-FLOW VELOCITY(FEET/SEC.) =   4.46
   ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
   PIPE-FLOW(CFS) =     13.93
   PIPE TRAVEL TIME(MIN.) =   0.28    Tc(MIN.) =  17.05
   LONGEST FLOWPATH FROM NODE      1.00 TO NODE     12.00 =  2634.00 FEET.

****************************************************************************
*
   FLOW PROCESS FROM NODE     12.00 TO NODE     12.00 IS CODE =  81

----------------------------------------------------------------------------
-
   >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

============================================================================
=
   MAINLINE Tc(MIN) =  17.05
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.947
   SUBAREA LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
   COMMERCIAL                 A       1.39      0.98      0.10    32
   COMMERCIAL                 C       1.26      0.57      0.10    69
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.78
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.10
   SUBAREA AREA(ACRES) =    2.65      SUBAREA RUNOFF(CFS) =    4.46
   EFFECTIVE AREA(ACRES) =     11.68   AREA-AVERAGED Fm(INCH/HR) =  0.35
   AREA-AVERAGED Fp(INCH/HR) =  0.96  AREA-AVERAGED Ap =  0.36
   TOTAL AREA(ACRES) =     12.65       PEAK FLOW RATE(CFS) =      16.79

****************************************************************************
*
   FLOW PROCESS FROM NODE     12.00 TO NODE     12.00 IS CODE =  81

----------------------------------------------------------------------------
-
   >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

============================================================================
=
   MAINLINE Tc(MIN) =  17.05
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.947
```

```
   SUBAREA LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp        Ap     SCS
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
   PUBLIC PARK               C        0.75      0.57      0.85    69
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.57
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.85
   SUBAREA AREA(ACRES) =    0.75      SUBAREA RUNOFF(CFS) =    0.99
   EFFECTIVE AREA(ACRES) =     12.43   AREA-AVERAGED Fm(INCH/HR) =  0.36
   AREA-AVERAGED Fp(INCH/HR) =  0.91  AREA-AVERAGED Ap =  0.39
   TOTAL AREA(ACRES) =     13.40       PEAK FLOW RATE(CFS) =      17.78


***************************************************************************
*
   FLOW PROCESS FROM NODE     12.00 TO NODE     69.00 IS CODE =  31

---------------------------------------------------------------------------
-
   >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
   >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

===========================================================================
=
   ELEVATION DATA: UPSTREAM(FEET) =   751.90  DOWNSTREAM(FEET) =   746.50
   FLOW LENGTH(FEET) =   550.00   MANNING'S N =  0.013
   DEPTH OF FLOW IN  24.0 INCH PIPE IS  16.4 INCHES
   PIPE-FLOW VELOCITY(FEET/SEC.) =   7.75
   ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
   PIPE-FLOW(CFS) =     17.78
   PIPE TRAVEL TIME(MIN.) =   1.18    Tc(MIN.) =  18.23
   LONGEST FLOWPATH FROM NODE      1.00 TO NODE     69.00 =  3184.00 FEET.


***************************************************************************
*
   FLOW PROCESS FROM NODE     69.00 TO NODE     69.00 IS CODE =  10

---------------------------------------------------------------------------
-
   >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<

===========================================================================
=


***************************************************************************
*
   FLOW PROCESS FROM NODE     40.00 TO NODE     42.00 IS CODE =  21

---------------------------------------------------------------------------
-
   >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
   >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

===========================================================================
=
   INITIAL SUBAREA FLOW-LENGTH(FEET) =   770.00
   ELEVATION DATA: UPSTREAM(FEET) =    768.80  DOWNSTREAM(FEET) =    760.90

   Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
   SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   13.878
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.203
```

```
   SUBAREA Tc AND LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
(MIN.)
   RESIDENTIAL
   "5-7 DWELLINGS/ACRE"       A        4.05      0.98      0.50    32
13.88
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
   SUBAREA RUNOFF(CFS) =      6.25
   TOTAL AREA(ACRES) =      4.05   PEAK FLOW RATE(CFS) =      6.25

***************************************************************************
*
   FLOW PROCESS FROM NODE     42.00 TO NODE     42.00 IS CODE =  81

---------------------------------------------------------------------------
-
   >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

===========================================================================
=
   MAINLINE Tc(MIN) =  13.88
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.203
   SUBAREA LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
   RESIDENTIAL
   "5-7 DWELLINGS/ACRE"       A        0.88      0.98      0.50    32
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
   SUBAREA AREA(ACRES) =    0.88      SUBAREA RUNOFF(CFS) =    1.36
   EFFECTIVE AREA(ACRES) =      4.93   AREA-AVERAGED Fm(INCH/HR) =  0.49
   AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.50
   TOTAL AREA(ACRES) =      4.93       PEAK FLOW RATE(CFS) =       7.61

***************************************************************************
*
   FLOW PROCESS FROM NODE     42.00 TO NODE     42.10 IS CODE =  31

---------------------------------------------------------------------------
-
   >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
   >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

===========================================================================
=
   ELEVATION DATA: UPSTREAM(FEET) =   753.90  DOWNSTREAM(FEET) =   752.80
   FLOW LENGTH(FEET) =   270.00   MANNING'S N =  0.013
   DEPTH OF FLOW IN  21.0 INCH PIPE IS  13.8 INCHES
   PIPE-FLOW VELOCITY(FEET/SEC.) =   4.52
   ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
   PIPE-FLOW(CFS) =      7.61
   PIPE TRAVEL TIME(MIN.) =   0.99    Tc(MIN.) =  14.87
   LONGEST FLOWPATH FROM NODE     40.00 TO NODE     42.10 =  1040.00 FEET.

***************************************************************************
*
   FLOW PROCESS FROM NODE     42.10 TO NODE     42.10 IS CODE =  81
```

```
---------------------------------------------------------------------------
-
   >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

===========================================================================
=
   MAINLINE Tc(MIN) =  14.87
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.113
   SUBAREA LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
   RESIDENTIAL
   "5-7 DWELLINGS/ACRE"       A        1.45      0.98      0.50    32
   RESIDENTIAL
   "5-7 DWELLINGS/ACRE"       C        0.17      0.57      0.50    69
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.93
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
   SUBAREA AREA(ACRES) =    1.62      SUBAREA RUNOFF(CFS) =    2.40
   EFFECTIVE AREA(ACRES) =      6.55   AREA-AVERAGED Fm(INCH/HR) =  0.48
   AREA-AVERAGED Fp(INCH/HR) =  0.96  AREA-AVERAGED Ap =  0.50
   TOTAL AREA(ACRES) =      6.55       PEAK FLOW RATE(CFS) =      9.61


***************************************************************************
*
   FLOW PROCESS FROM NODE     42.10 TO NODE     42.20 IS CODE =  31

---------------------------------------------------------------------------
-
   >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
   >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

===========================================================================
=
   ELEVATION DATA: UPSTREAM(FEET) =   752.80  DOWNSTREAM(FEET) =   751.40
   FLOW LENGTH(FEET) =    35.00   MANNING'S N =  0.013
   ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
   DEPTH OF FLOW IN  18.0 INCH PIPE IS   8.7 INCHES
   PIPE-FLOW VELOCITY(FEET/SEC.) =  11.41
   ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
   PIPE-FLOW(CFS) =      9.61
   PIPE TRAVEL TIME(MIN.) =   0.05    Tc(MIN.) =  14.92
   LONGEST FLOWPATH FROM NODE     40.00 TO NODE     42.20 =  1075.00 FEET.


***************************************************************************
*
   FLOW PROCESS FROM NODE     42.10 TO NODE     42.10 IS CODE =   1

---------------------------------------------------------------------------
-
   >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<

===========================================================================
=
   TOTAL NUMBER OF STREAMS =  2
   CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
   TIME OF CONCENTRATION(MIN.) =  14.92
   RAINFALL INTENSITY(INCH/HR) =   2.11
   AREA-AVERAGED Fm(INCH/HR) =  0.48
   AREA-AVERAGED Fp(INCH/HR) =  0.96
```

```
   AREA-AVERAGED Ap =  0.50
   EFFECTIVE STREAM AREA(ACRES) =     6.55
   TOTAL STREAM AREA(ACRES) =     6.55
   PEAK FLOW RATE(CFS) AT CONFLUENCE =      9.61


****************************************************************************
*
   FLOW PROCESS FROM NODE     43.00 TO NODE     43.10 IS CODE =  21

----------------------------------------------------------------------------
-
   >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
   >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

============================================================================
=
   INITIAL SUBAREA FLOW-LENGTH(FEET) =   630.00
   ELEVATION DATA: UPSTREAM(FEET) =    770.20  DOWNSTREAM(FEET) =    763.90

   Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
   SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.873
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.304
   SUBAREA Tc AND LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
(MIN.)
   RESIDENTIAL
   "5-7 DWELLINGS/ACRE"       A        4.00      0.98      0.50    32
12.87
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
   SUBAREA RUNOFF(CFS) =      6.54
   TOTAL AREA(ACRES) =      4.00   PEAK FLOW RATE(CFS) =      6.54


****************************************************************************
*
   FLOW PROCESS FROM NODE     43.10 TO NODE     43.20 IS CODE =  62

----------------------------------------------------------------------------
-
   >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
   >>>>>(STREET TABLE SECTION #  1 USED)<<<<<

============================================================================
=
   UPSTREAM ELEVATION(FEET) =  763.90  DOWNSTREAM ELEVATION(FEET) =  762.80
   STREET LENGTH(FEET) =   240.00   CURB HEIGHT(INCHES) =  6.0
   STREET HALFWIDTH(FEET) = 18.00

   DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
   INSIDE STREET CROSSFALL(DECIMAL) =  0.020
   OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

   SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
   Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =
0.0150

     **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      7.14
     STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
     STREET FLOW DEPTH(FEET) =  0.42
```

```
    HALFSTREET FLOOD WIDTH(FEET) =   13.28
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.83
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.77
  STREET FLOW TRAVEL TIME(MIN.) =   2.19   Tc(MIN.) =  15.06
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.097
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A        0.83      0.98      0.50    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
  SUBAREA AREA(ACRES) =    0.83      SUBAREA RUNOFF(CFS) =    1.20
  EFFECTIVE AREA(ACRES) =      4.83    AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.50
  TOTAL AREA(ACRES) =      4.83        PEAK FLOW RATE(CFS) =       7.00

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.42   HALFSTREET FLOOD WIDTH(FEET) =  13.16
  FLOW VELOCITY(FEET/SEC.) =  1.82   DEPTH*VELOCITY(FT*FT/SEC.) =   0.77
  LONGEST FLOWPATH FROM NODE     43.00 TO NODE     43.20 =   870.00 FEET.


***************************************************************************
*
  FLOW PROCESS FROM NODE     42.30 TO NODE     42.30 IS CODE =   1

---------------------------------------------------------------------------
-
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<

===========================================================================
=
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  15.06
  RAINFALL INTENSITY(INCH/HR) =   2.10
  AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.98
  AREA-AVERAGED Ap =  0.50
  EFFECTIVE STREAM AREA(ACRES) =     4.83
  TOTAL STREAM AREA(ACRES) =     4.83
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      7.00

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1      9.61  14.92    2.109  0.96( 0.48) 0.50     6.6      40.00
      2      7.00  15.06    2.097  0.98( 0.49) 0.50     4.8      43.00

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     16.60  14.92    2.109  0.97( 0.48) 0.50    11.3      40.00
      2     16.54  15.06    2.097  0.97( 0.48) 0.50    11.4      43.00

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     16.60    Tc(MIN.) =    14.92
```

```
   EFFECTIVE AREA(ACRES) =    11.34   AREA-AVERAGED Fm(INCH/HR) =  0.48
   AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.50
   TOTAL AREA(ACRES) =     11.38
   LONGEST FLOWPATH FROM NODE     40.00 TO NODE     42.30 =  1075.00 FEET.


****************************************************************************
*
   FLOW PROCESS FROM NODE     43.20 TO NODE     43.20 IS CODE =  81

----------------------------------------------------------------------------
-
   >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

============================================================================
=
   MAINLINE Tc(MIN) =  14.92
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.109
   SUBAREA LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
   RESIDENTIAL
   "5-7 DWELLINGS/ACRE"       A        1.77      0.98      0.50    32
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
   SUBAREA AREA(ACRES) =    1.77      SUBAREA RUNOFF(CFS) =    2.58
   EFFECTIVE AREA(ACRES) =     13.11   AREA-AVERAGED Fm(INCH/HR) =  0.48
   AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.50
   TOTAL AREA(ACRES) =     13.15       PEAK FLOW RATE(CFS) =      19.15


****************************************************************************
*
   FLOW PROCESS FROM NODE     43.20 TO NODE     43.30 IS CODE =  62

----------------------------------------------------------------------------
-
   >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
   >>>>>(STREET TABLE SECTION #  1 USED)<<<<<

============================================================================
=
   UPSTREAM ELEVATION(FEET) =  762.80  DOWNSTREAM ELEVATION(FEET) =  761.10
   STREET LENGTH(FEET) =   238.00   CURB HEIGHT(INCHES) =  6.0
   STREET HALFWIDTH(FEET) = 18.00

   DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
   INSIDE STREET CROSSFALL(DECIMAL) =  0.020
   OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

   SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
   Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =
0.0150

     **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      20.14
     ***STREET FLOWING FULL***
     STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
          NOTE: STREET FLOW EXCEEDS TOP OF CURB.
          THE FOLLOWING STREET FLOW RESULTS ARE BASED ON THE ASSUMPTION
          THAT NEGLIBLE FLOW OCCURS OUTSIDE OF THE STREET CHANNEL.
          THAT IS, ALL FLOW ALONG THE PARKWAY, ETC., IS NEGLECTED.
     STREET FLOW DEPTH(FEET) =  0.53
```

```
     HALFSTREET FLOOD WIDTH(FEET) =   18.00
     AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.80
     PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.48
   STREET FLOW TRAVEL TIME(MIN.) =   1.42   Tc(MIN.) =  16.34
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.997
   SUBAREA LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
   RESIDENTIAL
   "5-7 DWELLINGS/ACRE"       A        1.45      0.98      0.50    32
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
   SUBAREA AREA(ACRES) =    1.45      SUBAREA RUNOFF(CFS) =    1.97
   EFFECTIVE AREA(ACRES) =     14.56    AREA-AVERAGED Fm(INCH/HR) =  0.49
   AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.50
   TOTAL AREA(ACRES) =     14.60        PEAK FLOW RATE(CFS) =      19.81

   END OF SUBAREA STREET FLOW HYDRAULICS:
   DEPTH(FEET) = 0.52   HALFSTREET FLOOD WIDTH(FEET) =  18.00
   FLOW VELOCITY(FEET/SEC.) =  2.79   DEPTH*VELOCITY(FT*FT/SEC.) =   1.46
   LONGEST FLOWPATH FROM NODE     40.00 TO NODE     43.30 =  1313.00 FEET.


****************************************************************************
*
   FLOW PROCESS FROM NODE     43.30 TO NODE     42.20 IS CODE =  31

----------------------------------------------------------------------------
-
   >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
   >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

============================================================================
=
   ELEVATION DATA: UPSTREAM(FEET) =   754.10  DOWNSTREAM(FEET) =   751.40
   FLOW LENGTH(FEET) =   270.00   MANNING'S N =  0.013
   DEPTH OF FLOW IN  24.0 INCH PIPE IS  17.8 INCHES
   PIPE-FLOW VELOCITY(FEET/SEC.) =   7.94
   ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
   PIPE-FLOW(CFS) =     19.81
   PIPE TRAVEL TIME(MIN.) =   0.57    Tc(MIN.) =  16.91
   LONGEST FLOWPATH FROM NODE     40.00 TO NODE     42.20 =  1583.00 FEET.


****************************************************************************
*
   FLOW PROCESS FROM NODE     42.20 TO NODE     42.30 IS CODE =  31

----------------------------------------------------------------------------
-
   >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
   >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

============================================================================
=
   ELEVATION DATA: UPSTREAM(FEET) =   751.40  DOWNSTREAM(FEET) =   750.40
   FLOW LENGTH(FEET) =   250.00   MANNING'S N =  0.013
   DEPTH OF FLOW IN  30.0 INCH PIPE IS  20.0 INCHES
   PIPE-FLOW VELOCITY(FEET/SEC.) =   5.70
   ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
   PIPE-FLOW(CFS) =     19.81
   PIPE TRAVEL TIME(MIN.) =   0.73    Tc(MIN.) =  17.64
```

```
   LONGEST FLOWPATH FROM NODE     40.00 TO NODE     42.30 =  1833.00 FEET.

****************************************************************************
*
   FLOW PROCESS FROM NODE     42.30 TO NODE     42.30 IS CODE =  81

----------------------------------------------------------------------------
-
   >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

============================================================================
=
   MAINLINE Tc(MIN) =  17.64
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.908
   SUBAREA LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
   RESIDENTIAL
   "5-7 DWELLINGS/ACRE"       A        1.09      0.98      0.50    32
   RESIDENTIAL
   "5-7 DWELLINGS/ACRE"       C        0.49      0.57      0.50    69
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.85
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
   SUBAREA AREA(ACRES) =    1.58      SUBAREA RUNOFF(CFS) =    2.11
   EFFECTIVE AREA(ACRES) =     16.14   AREA-AVERAGED Fm(INCH/HR) =  0.48
   AREA-AVERAGED Fp(INCH/HR) =  0.96  AREA-AVERAGED Ap =  0.50
   TOTAL AREA(ACRES) =     16.18       PEAK FLOW RATE(CFS) =      20.74


****************************************************************************
*
   FLOW PROCESS FROM NODE     42.30 TO NODE     56.00 IS CODE =  31

----------------------------------------------------------------------------
-
   >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
   >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

============================================================================
=
   ELEVATION DATA: UPSTREAM(FEET) =   750.40  DOWNSTREAM(FEET) =   749.50
   FLOW LENGTH(FEET) =   210.00   MANNING'S N =  0.013
   DEPTH OF FLOW IN  30.0 INCH PIPE IS  20.2 INCHES
   PIPE-FLOW VELOCITY(FEET/SEC.) =   5.91
   ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
   PIPE-FLOW(CFS) =     20.74
   PIPE TRAVEL TIME(MIN.) =   0.59    Tc(MIN.) =  18.23
   LONGEST FLOWPATH FROM NODE     40.00 TO NODE     56.00 =  2043.00 FEET.


****************************************************************************
*
   FLOW PROCESS FROM NODE     56.00 TO NODE     56.00 IS CODE =  81

----------------------------------------------------------------------------
-
   >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

============================================================================
=
   MAINLINE Tc(MIN) =  18.23
```

```
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.870
   SUBAREA LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
        LAND USE           GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
   RESIDENTIAL
   "5-7 DWELLINGS/ACRE"       C        3.62      0.57      0.50    69
   PUBLIC PARK                C        1.30      0.57      0.85    69
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.57
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.59
   SUBAREA AREA(ACRES) =    4.92      SUBAREA RUNOFF(CFS) =    6.80
   EFFECTIVE AREA(ACRES) =     21.06   AREA-AVERAGED Fm(INCH/HR) =  0.45
   AREA-AVERAGED Fp(INCH/HR) =  0.85  AREA-AVERAGED Ap =  0.52
   TOTAL AREA(ACRES) =     21.10       PEAK FLOW RATE(CFS) =      27.00


****************************************************************************
*
   FLOW PROCESS FROM NODE     56.00 TO NODE     59.00 IS CODE =  31

----------------------------------------------------------------------------
-
   >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
   >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

============================================================================
=
   ELEVATION DATA: UPSTREAM(FEET) =   749.50  DOWNSTREAM(FEET) =   747.10
   FLOW LENGTH(FEET) =   620.00   MANNING'S N =  0.013
   DEPTH OF FLOW IN  33.0 INCH PIPE IS  23.2 INCHES
   PIPE-FLOW VELOCITY(FEET/SEC.) =   6.05
   ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
   PIPE-FLOW(CFS) =     27.00
   PIPE TRAVEL TIME(MIN.) =   1.71    Tc(MIN.) =  19.94
   LONGEST FLOWPATH FROM NODE     40.00 TO NODE     59.00 =  2663.00 FEET.


****************************************************************************
*
   FLOW PROCESS FROM NODE     59.00 TO NODE     59.00 IS CODE =   1

----------------------------------------------------------------------------
-
   >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<

============================================================================
=
   TOTAL NUMBER OF STREAMS =  2
   CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
   TIME OF CONCENTRATION(MIN.) =  19.94
   RAINFALL INTENSITY(INCH/HR) =   1.77
   AREA-AVERAGED Fm(INCH/HR) =  0.45
   AREA-AVERAGED Fp(INCH/HR) =  0.85
   AREA-AVERAGED Ap =  0.52
   EFFECTIVE STREAM AREA(ACRES) =    21.06
   TOTAL STREAM AREA(ACRES) =    21.10
   PEAK FLOW RATE(CFS) AT CONFLUENCE =     27.00


****************************************************************************
*
   FLOW PROCESS FROM NODE     58.00 TO NODE     59.00 IS CODE =  21
```

```
----------------------------------------------------------------------------
-
   >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
   >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

============================================================================
=
   INITIAL SUBAREA FLOW-LENGTH(FEET) =   620.00
   ELEVATION DATA: UPSTREAM(FEET) =    761.50  DOWNSTREAM(FEET) =    759.60

   Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
   SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   17.162
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.939
   SUBAREA Tc AND LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
(MIN.)
   RESIDENTIAL
   "3-4 DWELLINGS/ACRE"       C        3.49      0.57      0.60    69
17.16
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.57
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
   SUBAREA RUNOFF(CFS) =      5.02
   TOTAL AREA(ACRES) =      3.49   PEAK FLOW RATE(CFS) =      5.02


****************************************************************************
*
   FLOW PROCESS FROM NODE     59.00 TO NODE     59.00 IS CODE =   1

----------------------------------------------------------------------------
-
   >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
   >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<

============================================================================
=
   TOTAL NUMBER OF STREAMS =  2
   CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
   TIME OF CONCENTRATION(MIN.) =  17.16
   RAINFALL INTENSITY(INCH/HR) =   1.94
   AREA-AVERAGED Fm(INCH/HR) =  0.34
   AREA-AVERAGED Fp(INCH/HR) =  0.57
   AREA-AVERAGED Ap =  0.60
   EFFECTIVE STREAM AREA(ACRES) =     3.49
   TOTAL STREAM AREA(ACRES) =     3.49
   PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.02

   ** CONFLUENCE DATA **
    STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
    NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
       1     27.00  19.94    1.772  0.85( 0.45) 0.52    21.1      40.00
       1     26.88  20.08    1.765  0.85( 0.45) 0.52    21.1      43.00
       2      5.02  17.16    1.939  0.57( 0.34) 0.60     3.5      58.00

   RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
   CONFLUENCE FORMULA USED FOR  2 STREAMS.

   ** PEAK FLOW RATE TABLE **
    STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
    NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
       1     31.18  17.16    1.939  0.80( 0.43) 0.53    21.6      58.00
```

```
       2     31.50  19.94    1.772  0.81( 0.43) 0.53    24.5      40.00
       3     31.36  20.08    1.765  0.81( 0.43) 0.53    24.6      43.00

   COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
   PEAK FLOW RATE(CFS) =     31.50    Tc(MIN.) =    19.94
   EFFECTIVE AREA(ACRES) =    24.55   AREA-AVERAGED Fm(INCH/HR) =  0.43
   AREA-AVERAGED Fp(INCH/HR) =  0.81  AREA-AVERAGED Ap =  0.53
   TOTAL AREA(ACRES) =     24.59
   LONGEST FLOWPATH FROM NODE     40.00 TO NODE     59.00 =  2663.00 FEET.


***************************************************************************
*
   FLOW PROCESS FROM NODE     59.00 TO NODE     67.00 IS CODE =  31

---------------------------------------------------------------------------
-
   >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
   >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

===========================================================================
=
   ELEVATION DATA: UPSTREAM(FEET) =   747.70  DOWNSTREAM(FEET) =   747.00
   FLOW LENGTH(FEET) =    45.00   MANNING'S N =  0.013
   DEPTH OF FLOW IN  27.0 INCH PIPE IS  18.9 INCHES
   PIPE-FLOW VELOCITY(FEET/SEC.) =  10.60
   ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
   PIPE-FLOW(CFS) =     31.50
   PIPE TRAVEL TIME(MIN.) =   0.07    Tc(MIN.) =  20.01
   LONGEST FLOWPATH FROM NODE     40.00 TO NODE     67.00 =  2708.00 FEET.


***************************************************************************
*
   FLOW PROCESS FROM NODE     67.00 TO NODE     67.00 IS CODE =  10

---------------------------------------------------------------------------
-
   >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<

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=


***************************************************************************
*
   FLOW PROCESS FROM NODE     60.00 TO NODE     62.00 IS CODE =  21

---------------------------------------------------------------------------
-
   >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
   >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

===========================================================================
=
   INITIAL SUBAREA FLOW-LENGTH(FEET) =   300.00
   ELEVATION DATA: UPSTREAM(FEET) =    764.00  DOWNSTREAM(FEET) =    759.70

   Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
   SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.429
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.778
   SUBAREA Tc AND LOSS RATE DATA(AMC  II):
```

```
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp        Ap     SCS   Tc
        LAND USE           GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
(MIN.)
   RESIDENTIAL
   "3-4 DWELLINGS/ACRE"       C        2.25      0.57      0.60    69
9.43
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.57
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
   SUBAREA RUNOFF(CFS) =      4.94
   TOTAL AREA(ACRES) =      2.25   PEAK FLOW RATE(CFS) =      4.94


***************************************************************************
*
   FLOW PROCESS FROM NODE     62.00 TO NODE     66.00 IS CODE =  31

---------------------------------------------------------------------------
-
   >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
   >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

===========================================================================
=
   ELEVATION DATA: UPSTREAM(FEET) =   752.70  DOWNSTREAM(FEET) =   752.10
   FLOW LENGTH(FEET) =   165.00   MANNING'S N =  0.013
   DEPTH OF FLOW IN  18.0 INCH PIPE IS  12.2 INCHES
   PIPE-FLOW VELOCITY(FEET/SEC.) =   3.88
   ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
   PIPE-FLOW(CFS) =      4.94
   PIPE TRAVEL TIME(MIN.) =   0.71    Tc(MIN.) =  10.14
   LONGEST FLOWPATH FROM NODE     60.00 TO NODE     66.00 =   465.00 FEET.


***************************************************************************
*
   FLOW PROCESS FROM NODE     66.00 TO NODE     66.00 IS CODE =   1

---------------------------------------------------------------------------
-
   >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<

===========================================================================
=
   TOTAL NUMBER OF STREAMS =  2
   CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
   TIME OF CONCENTRATION(MIN.) =  10.14
   RAINFALL INTENSITY(INCH/HR) =   2.66
   AREA-AVERAGED Fm(INCH/HR) =  0.34
   AREA-AVERAGED Fp(INCH/HR) =  0.57
   AREA-AVERAGED Ap =  0.60
   EFFECTIVE STREAM AREA(ACRES) =     2.25
   TOTAL STREAM AREA(ACRES) =     2.25
   PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.94


***************************************************************************
*
   FLOW PROCESS FROM NODE     63.00 TO NODE     65.00 IS CODE =  21

---------------------------------------------------------------------------
-
   >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
```

```
   >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

===========================================================================
=
   INITIAL SUBAREA FLOW-LENGTH(FEET) =   270.00
   ELEVATION DATA: UPSTREAM(FEET) =    763.60  DOWNSTREAM(FEET) =    760.30

   Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
   SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    8.812
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.893
   SUBAREA Tc AND LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
(MIN.)
   RESIDENTIAL
   "5-7 DWELLINGS/ACRE"       C        1.38      0.57      0.50    69
8.81
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.57
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
   SUBAREA RUNOFF(CFS) =      3.24
   TOTAL AREA(ACRES) =      1.38   PEAK FLOW RATE(CFS) =      3.24


***************************************************************************
*
   FLOW PROCESS FROM NODE     65.00 TO NODE     66.00 IS CODE =  31

---------------------------------------------------------------------------
-
   >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
   >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

===========================================================================
=
   ELEVATION DATA: UPSTREAM(FEET) =   753.30  DOWNSTREAM(FEET) =   752.10
   FLOW LENGTH(FEET) =   300.00   MANNING'S N =  0.013
   ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
   DEPTH OF FLOW IN  18.0 INCH PIPE IS   9.0 INCHES
   PIPE-FLOW VELOCITY(FEET/SEC.) =   3.66
   ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
   PIPE-FLOW(CFS) =      3.24
   PIPE TRAVEL TIME(MIN.) =   1.37    Tc(MIN.) =  10.18
   LONGEST FLOWPATH FROM NODE     63.00 TO NODE     66.00 =   570.00 FEET.


***************************************************************************
*
   FLOW PROCESS FROM NODE     66.00 TO NODE     66.00 IS CODE =   1

---------------------------------------------------------------------------
-
   >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
   >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<

===========================================================================
=
   TOTAL NUMBER OF STREAMS =  2
   CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
   TIME OF CONCENTRATION(MIN.) =  10.18
   RAINFALL INTENSITY(INCH/HR) =   2.65
   AREA-AVERAGED Fm(INCH/HR) =  0.28
   AREA-AVERAGED Fp(INCH/HR) =  0.57
```

```
   AREA-AVERAGED Ap =  0.50
   EFFECTIVE STREAM AREA(ACRES) =     1.38
   TOTAL STREAM AREA(ACRES) =     1.38
   PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.24

   ** CONFLUENCE DATA **
    STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
    NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
       1      4.94  10.14    2.659  0.57( 0.34) 0.60     2.2      60.00
       2      3.24  10.18    2.653  0.57( 0.28) 0.50     1.4      63.00

   RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
   CONFLUENCE FORMULA USED FOR  2 STREAMS.

   ** PEAK FLOW RATE TABLE **
    STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
    NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
       1      8.17  10.14    2.659  0.57( 0.32) 0.56     3.6      60.00
       2      8.16  10.18    2.653  0.57( 0.32) 0.56     3.6      63.00

   COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
   PEAK FLOW RATE(CFS) =      8.17    Tc(MIN.) =    10.14
   EFFECTIVE AREA(ACRES) =     3.62   AREA-AVERAGED Fm(INCH/HR) =  0.32
   AREA-AVERAGED Fp(INCH/HR) =  0.57  AREA-AVERAGED Ap =  0.56
   TOTAL AREA(ACRES) =      3.63
   LONGEST FLOWPATH FROM NODE     63.00 TO NODE     66.00 =   570.00 FEET.


****************************************************************************
*
   FLOW PROCESS FROM NODE     66.00 TO NODE     67.00 IS CODE =  31

----------------------------------------------------------------------------
-
   >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
   >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

============================================================================
=
   ELEVATION DATA: UPSTREAM(FEET) =   752.10  DOWNSTREAM(FEET) =   747.00
   FLOW LENGTH(FEET) =   140.00   MANNING'S N =  0.013
   ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
   DEPTH OF FLOW IN  18.0 INCH PIPE IS   8.1 INCHES
   PIPE-FLOW VELOCITY(FEET/SEC.) =  10.57
   ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
   PIPE-FLOW(CFS) =      8.17
   PIPE TRAVEL TIME(MIN.) =   0.22    Tc(MIN.) =  10.36
   LONGEST FLOWPATH FROM NODE     63.00 TO NODE     67.00 =   710.00 FEET.


****************************************************************************
*
   FLOW PROCESS FROM NODE     67.00 TO NODE     67.00 IS CODE =  11

----------------------------------------------------------------------------
-
   >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<

============================================================================
=

   ** MAIN STREAM CONFLUENCE DATA **
```

```
  STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
     1      8.17  10.36    2.625  0.57( 0.32) 0.56     3.6      60.00
     2      8.16  10.40    2.619  0.57( 0.32) 0.56     3.6      63.00
 LONGEST FLOWPATH FROM NODE     63.00 TO NODE     67.00 =   710.00 FEET.

 ** MEMORY BANK #  2 CONFLUENCE DATA **
  STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
     1     31.18  17.23    1.934  0.80( 0.43) 0.53    21.6      58.00
     2     31.50  20.01    1.769  0.81( 0.43) 0.53    24.5      40.00
     3     31.36  20.15    1.761  0.81( 0.43) 0.53    24.6      43.00
 LONGEST FLOWPATH FROM NODE     40.00 TO NODE     67.00 =  2708.00 FEET.

 ** PEAK FLOW RATE TABLE **
  STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
     1     35.52  10.36    2.625  0.75( 0.40) 0.54    16.6      60.00
     2     35.54  10.40    2.619  0.75( 0.40) 0.54    16.7      63.00
     3     36.92  17.23    1.934  0.77( 0.41) 0.54    25.2      58.00
     4     36.64  20.01    1.769  0.78( 0.42) 0.54    28.2      40.00
     5     36.48  20.15    1.761  0.78( 0.42) 0.54    28.2      43.00
   TOTAL AREA(ACRES) =     28.22

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =       36.92  Tc(MIN.) =   17.233
 EFFECTIVE AREA(ACRES) =     25.25  AREA-AVERAGED Fm(INCH/HR) =  0.41
 AREA-AVERAGED Fp(INCH/HR) =  0.77  AREA-AVERAGED Ap =  0.54
 TOTAL AREA(ACRES) =     28.22
 LONGEST FLOWPATH FROM NODE     40.00 TO NODE     67.00 =  2708.00 FEET.


****************************************************************************
*
 FLOW PROCESS FROM NODE     67.00 TO NODE     69.00 IS CODE =  31

----------------------------------------------------------------------------
-
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

============================================================================
=
 ELEVATION DATA: UPSTREAM(FEET) =   747.00  DOWNSTREAM(FEET) =   746.50
 FLOW LENGTH(FEET) =   150.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  36.0 INCH PIPE IS  29.0 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   6.05
 ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     36.92
 PIPE TRAVEL TIME(MIN.) =   0.41    Tc(MIN.) =  17.65
 LONGEST FLOWPATH FROM NODE     40.00 TO NODE     69.00 =  2858.00 FEET.


****************************************************************************
*
 FLOW PROCESS FROM NODE     69.00 TO NODE     69.00 IS CODE =  11

----------------------------------------------------------------------------
-
 >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<

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```
   ** MAIN STREAM CONFLUENCE DATA **
    STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
    NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
       1     35.52  10.77    2.564  0.75( 0.40) 0.54    16.6      60.00
       2     35.54  10.81    2.559  0.75( 0.40) 0.54    16.7      63.00
       3     36.92  17.65    1.907  0.77( 0.41) 0.54    25.2      58.00
       4     36.64  20.42    1.747  0.78( 0.42) 0.54    28.2      40.00
       5     36.48  20.57    1.740  0.78( 0.42) 0.54    28.2      43.00
   LONGEST FLOWPATH FROM NODE     40.00 TO NODE     69.00 =  2858.00 FEET.

   ** MEMORY BANK #  1 CONFLUENCE DATA **
    STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
    NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
       1     17.78  18.23    1.870  0.91( 0.36) 0.39    12.4      10.30
       2     17.73  18.45    1.857  0.91( 0.36) 0.39    12.5       7.00
       3     15.54  23.92    1.589  0.91( 0.35) 0.38    13.4       1.00
   LONGEST FLOWPATH FROM NODE      1.00 TO NODE     69.00 =  3184.00 FEET.

   ** PEAK FLOW RATE TABLE **
    STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
    NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
       1     50.84  10.77    2.564  0.79( 0.39) 0.49    24.0      60.00
       2     50.88  10.81    2.559  0.79( 0.39) 0.49    24.0      63.00
       3     54.55  17.65    1.907  0.80( 0.39) 0.49    37.3      58.00
       4     54.64  18.23    1.870  0.81( 0.39) 0.49    38.3      10.30
       5     54.57  18.45    1.857  0.81( 0.40) 0.49    38.6       7.00
       6     53.59  20.42    1.747  0.81( 0.40) 0.49    41.0      40.00
       7     53.37  20.57    1.740  0.81( 0.40) 0.49    41.1      43.00
       8     47.87  23.92    1.589  0.81( 0.39) 0.49    41.6       1.00
     TOTAL AREA(ACRES) =     41.62

   COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
   PEAK FLOW RATE(CFS) =       54.64  Tc(MIN.) =   18.233
   EFFECTIVE AREA(ACRES) =     38.29  AREA-AVERAGED Fm(INCH/HR) =  0.39
   AREA-AVERAGED Fp(INCH/HR) =  0.81  AREA-AVERAGED Ap =  0.49
   TOTAL AREA(ACRES) =     41.62
   LONGEST FLOWPATH FROM NODE      1.00 TO NODE     69.00 =  3184.00 FEET.


***************************************************************************
*
   FLOW PROCESS FROM NODE     69.00 TO NODE     69.00 IS CODE =  10

---------------------------------------------------------------------------
-
   >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 3 <<<<<

===========================================================================
=


***************************************************************************
*
   FLOW PROCESS FROM NODE     24.00 TO NODE     25.00 IS CODE =  21

---------------------------------------------------------------------------
-
   >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
   >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
```

```
============================================================================
=
   INITIAL SUBAREA FLOW-LENGTH(FEET) =   950.00
   ELEVATION DATA: UPSTREAM(FEET) =    771.70  DOWNSTREAM(FEET) =    765.00

   Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
   SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   16.269
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.002
   SUBAREA Tc AND LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
(MIN.)
   RESIDENTIAL
   "5-7 DWELLINGS/ACRE"       C        3.84      0.57      0.50    69
16.27
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.57
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
   SUBAREA RUNOFF(CFS) =      5.94
   TOTAL AREA(ACRES) =      3.84   PEAK FLOW RATE(CFS) =      5.94


****************************************************************************
*
   FLOW PROCESS FROM NODE     25.00 TO NODE     25.10 IS CODE =  31

----------------------------------------------------------------------------
-
   >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
   >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

============================================================================
=
   ELEVATION DATA: UPSTREAM(FEET) =   758.00  DOWNSTREAM(FEET) =   756.90
   FLOW LENGTH(FEET) =   245.00   MANNING'S N =  0.013
   DEPTH OF FLOW IN  18.0 INCH PIPE IS  12.9 INCHES
   PIPE-FLOW VELOCITY(FEET/SEC.) =   4.37
   ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
   PIPE-FLOW(CFS) =      5.94
   PIPE TRAVEL TIME(MIN.) =   0.93    Tc(MIN.) =  17.20
   LONGEST FLOWPATH FROM NODE     24.00 TO NODE     25.10 =  1195.00 FEET.


****************************************************************************
*
   FLOW PROCESS FROM NODE     25.10 TO NODE     25.10 IS CODE =  81

----------------------------------------------------------------------------
-
   >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

============================================================================
=
   MAINLINE Tc(MIN) =  17.20
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.936
   SUBAREA LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
   RESIDENTIAL
   "5-7 DWELLINGS/ACRE"       C        3.18      0.57      0.50    69
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.57
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
   SUBAREA AREA(ACRES) =    3.18      SUBAREA RUNOFF(CFS) =    4.73
```

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   EFFECTIVE AREA(ACRES) =      7.02   AREA-AVERAGED Fm(INCH/HR) =  0.28
   AREA-AVERAGED Fp(INCH/HR) =  0.57  AREA-AVERAGED Ap =  0.50
   TOTAL AREA(ACRES) =      7.02       PEAK FLOW RATE(CFS) =      10.45


***************************************************************************
*
   FLOW PROCESS FROM NODE     25.10 TO NODE     25.10 IS CODE =  81

---------------------------------------------------------------------------
-
   >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

===========================================================================
=
   MAINLINE Tc(MIN) =  17.20
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.936
   SUBAREA LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
   RESIDENTIAL
   "5-7 DWELLINGS/ACRE"       A        0.78      0.98      0.50    32
   RESIDENTIAL
   "5-7 DWELLINGS/ACRE"       C        1.00      0.57      0.50    69
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
   SUBAREA AREA(ACRES) =    1.78      SUBAREA RUNOFF(CFS) =    2.51
   EFFECTIVE AREA(ACRES) =      8.80   AREA-AVERAGED Fm(INCH/HR) =  0.30
   AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.50
   TOTAL AREA(ACRES) =      8.80       PEAK FLOW RATE(CFS) =      12.95


***************************************************************************
*
   FLOW PROCESS FROM NODE     25.10 TO NODE     29.00 IS CODE =  31

---------------------------------------------------------------------------
-
   >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
   >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

===========================================================================
=
   ELEVATION DATA: UPSTREAM(FEET) =   756.90  DOWNSTREAM(FEET) =   755.90
   FLOW LENGTH(FEET) =   295.00   MANNING'S N =  0.013
   DEPTH OF FLOW IN  27.0 INCH PIPE IS  17.2 INCHES
   PIPE-FLOW VELOCITY(FEET/SEC.) =   4.83
   ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
   PIPE-FLOW(CFS) =     12.95
   PIPE TRAVEL TIME(MIN.) =   1.02    Tc(MIN.) =  18.22
   LONGEST FLOWPATH FROM NODE     24.00 TO NODE     29.00 =  1490.00 FEET.


***************************************************************************
*
   FLOW PROCESS FROM NODE     29.00 TO NODE     29.00 IS CODE =   1

---------------------------------------------------------------------------
-
   >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<

===========================================================================
```

```
=
   TOTAL NUMBER OF STREAMS =  2
   CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
   TIME OF CONCENTRATION(MIN.) =  18.22
   RAINFALL INTENSITY(INCH/HR) =   1.87
   AREA-AVERAGED Fm(INCH/HR) =  0.30
   AREA-AVERAGED Fp(INCH/HR) =  0.60
   AREA-AVERAGED Ap =  0.50
   EFFECTIVE STREAM AREA(ACRES) =     8.80
   TOTAL STREAM AREA(ACRES) =     8.80
   PEAK FLOW RATE(CFS) AT CONFLUENCE =     12.95


***************************************************************************
*
   FLOW PROCESS FROM NODE     20.00 TO NODE     22.00 IS CODE =  21

---------------------------------------------------------------------------
-
   >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
   >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

===========================================================================
=
   INITIAL SUBAREA FLOW-LENGTH(FEET) =   995.00
   ELEVATION DATA: UPSTREAM(FEET) =    773.30  DOWNSTREAM(FEET) =    766.10

   Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
   SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   16.488
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.986
   SUBAREA Tc AND LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
(MIN.)
   RESIDENTIAL
   "5-7 DWELLINGS/ACRE"       A        1.67      0.98      0.50    32
16.49
   RESIDENTIAL
   "5-7 DWELLINGS/ACRE"       C        0.78      0.57      0.50    69
16.49
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.84
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
   SUBAREA RUNOFF(CFS) =      3.45
   TOTAL AREA(ACRES) =      2.45   PEAK FLOW RATE(CFS) =      3.45


***************************************************************************
*
   FLOW PROCESS FROM NODE     22.00 TO NODE     29.00 IS CODE =  62

---------------------------------------------------------------------------
-
   >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
   >>>>>(STREET TABLE SECTION #  1 USED)<<<<<

===========================================================================
=
   UPSTREAM ELEVATION(FEET) =  766.10  DOWNSTREAM ELEVATION(FEET) =  762.90
   STREET LENGTH(FEET) =   630.00   CURB HEIGHT(INCHES) =  6.0
   STREET HALFWIDTH(FEET) = 18.00

   DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
```

```
   INSIDE STREET CROSSFALL(DECIMAL) =  0.020
   OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

   SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
   Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =
0.0150

     **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.10
     STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
     STREET FLOW DEPTH(FEET) =  0.46
     HALFSTREET FLOOD WIDTH(FEET) =   15.09
     AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.07
     PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.95
   STREET FLOW TRAVEL TIME(MIN.) =   5.08   Tc(MIN.) =  21.57
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.690
   SUBAREA LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
   RESIDENTIAL
   "5-7 DWELLINGS/ACRE"       C        2.60      0.57      0.50    69
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.57
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
   SUBAREA AREA(ACRES) =    2.60      SUBAREA RUNOFF(CFS) =    3.29
   EFFECTIVE AREA(ACRES) =      5.05    AREA-AVERAGED Fm(INCH/HR) =  0.35
   AREA-AVERAGED Fp(INCH/HR) =  0.70  AREA-AVERAGED Ap =  0.50
   TOTAL AREA(ACRES) =      5.05        PEAK FLOW RATE(CFS) =       6.09

   END OF SUBAREA STREET FLOW HYDRAULICS:
   DEPTH(FEET) = 0.48   HALFSTREET FLOOD WIDTH(FEET) =  16.22
   FLOW VELOCITY(FEET/SEC.) =  2.16   DEPTH*VELOCITY(FT*FT/SEC.) =   1.04
   LONGEST FLOWPATH FROM NODE     20.00 TO NODE     29.00 =  1625.00 FEET.


****************************************************************************
*
   FLOW PROCESS FROM NODE     29.00 TO NODE     29.00 IS CODE =   1

----------------------------------------------------------------------------
-
   >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
   >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<

============================================================================
=
   TOTAL NUMBER OF STREAMS =  2
   CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
   TIME OF CONCENTRATION(MIN.) =  21.57
   RAINFALL INTENSITY(INCH/HR) =   1.69
   AREA-AVERAGED Fm(INCH/HR) =  0.35
   AREA-AVERAGED Fp(INCH/HR) =  0.70
   AREA-AVERAGED Ap =  0.50
   EFFECTIVE STREAM AREA(ACRES) =     5.05
   TOTAL STREAM AREA(ACRES) =     5.05
   PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.09

   ** CONFLUENCE DATA **
    STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
    NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
       1     12.95  18.22    1.871  0.60( 0.30) 0.50     8.8      24.00
       2      6.09  21.57    1.690  0.70( 0.35) 0.50     5.0      20.00

   RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
```

```
   CONFLUENCE FORMULA USED FOR  2 STREAMS.

   ** PEAK FLOW RATE TABLE **
    STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
    NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
       1     18.79  18.22    1.871  0.63( 0.32) 0.50    13.1      24.00
       2     17.55  21.57    1.690  0.64( 0.32) 0.50    13.9      20.00

   COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
   PEAK FLOW RATE(CFS) =     18.79    Tc(MIN.) =    18.22
   EFFECTIVE AREA(ACRES) =    13.07   AREA-AVERAGED Fm(INCH/HR) =  0.32
   AREA-AVERAGED Fp(INCH/HR) =  0.63  AREA-AVERAGED Ap =  0.50
   TOTAL AREA(ACRES) =     13.85
   LONGEST FLOWPATH FROM NODE     20.00 TO NODE     29.00 =  1625.00 FEET.

***************************************************************************
*
   FLOW PROCESS FROM NODE     29.00 TO NODE     39.00 IS CODE =  31

---------------------------------------------------------------------------
-
   >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
   >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

===========================================================================
=
   ELEVATION DATA: UPSTREAM(FEET) =   755.90  DOWNSTREAM(FEET) =   751.00
   FLOW LENGTH(FEET) =   380.00   MANNING'S N =  0.013
   DEPTH OF FLOW IN  24.0 INCH PIPE IS  15.5 INCHES
   PIPE-FLOW VELOCITY(FEET/SEC.) =   8.75
   ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
   PIPE-FLOW(CFS) =     18.79
   PIPE TRAVEL TIME(MIN.) =   0.72    Tc(MIN.) =  18.94
   LONGEST FLOWPATH FROM NODE     20.00 TO NODE     39.00 =  2005.00 FEET.

***************************************************************************
*
   FLOW PROCESS FROM NODE     39.00 TO NODE     39.00 IS CODE =  12

---------------------------------------------------------------------------
-
   >>>>>CLEAR MEMORY BANK # 1 <<<<<

===========================================================================
=

***************************************************************************
*
   FLOW PROCESS FROM NODE     39.00 TO NODE     39.00 IS CODE =  12

---------------------------------------------------------------------------
-
   >>>>>CLEAR MEMORY BANK # 2 <<<<<

===========================================================================
=

***************************************************************************
```

```
*
   FLOW PROCESS FROM NODE     39.00 TO NODE     39.00 IS CODE =   1

---------------------------------------------------------------------------
-
   >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<

===========================================================================
=
   TOTAL NUMBER OF STREAMS =  2
   CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
   TIME OF CONCENTRATION(MIN.) =  18.94
   RAINFALL INTENSITY(INCH/HR) =   1.83
   AREA-AVERAGED Fm(INCH/HR) =  0.32
   AREA-AVERAGED Fp(INCH/HR) =  0.63
   AREA-AVERAGED Ap =  0.50
   EFFECTIVE STREAM AREA(ACRES) =    13.07
   TOTAL STREAM AREA(ACRES) =    13.85
   PEAK FLOW RATE(CFS) AT CONFLUENCE =     18.79


***************************************************************************
*
   FLOW PROCESS FROM NODE     30.00 TO NODE     32.00 IS CODE =  21

---------------------------------------------------------------------------
-
   >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
   >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

===========================================================================
=
   INITIAL SUBAREA FLOW-LENGTH(FEET) =  1000.00
   ELEVATION DATA: UPSTREAM(FEET) =    771.70  DOWNSTREAM(FEET) =    763.40

   Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
   SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   16.074
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.017
   SUBAREA Tc AND LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
        LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
(MIN.)
   RESIDENTIAL
   "5-7 DWELLINGS/ACRE"       C        2.23      0.57      0.50    69
16.07
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.57
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
   SUBAREA RUNOFF(CFS) =      3.48
   TOTAL AREA(ACRES) =      2.23   PEAK FLOW RATE(CFS) =      3.48


***************************************************************************
*
   FLOW PROCESS FROM NODE     32.00 TO NODE     32.00 IS CODE =  81

---------------------------------------------------------------------------
-
   >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

===========================================================================
=
   MAINLINE Tc(MIN) =  16.07
```

```
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.017
   SUBAREA LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
   RESIDENTIAL
   "5-7 DWELLINGS/ACRE"       A        1.08      0.98      0.50    32
   RESIDENTIAL
   "5-7 DWELLINGS/ACRE"       C        0.50      0.57      0.50    69
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.85
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
   SUBAREA AREA(ACRES) =    1.58      SUBAREA RUNOFF(CFS) =    2.27
   EFFECTIVE AREA(ACRES) =      3.81   AREA-AVERAGED Fm(INCH/HR) =  0.34
   AREA-AVERAGED Fp(INCH/HR) =  0.68  AREA-AVERAGED Ap =  0.50
   TOTAL AREA(ACRES) =      3.81       PEAK FLOW RATE(CFS) =       5.75

***************************************************************************
*
   FLOW PROCESS FROM NODE     32.00 TO NODE     32.10 IS CODE =  31

---------------------------------------------------------------------------
-
   >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
   >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

===========================================================================
=
   ELEVATION DATA: UPSTREAM(FEET) =   756.40  DOWNSTREAM(FEET) =   754.00
   FLOW LENGTH(FEET) =   270.00   MANNING'S N =  0.013
   ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
   DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.0 INCHES
   PIPE-FLOW VELOCITY(FEET/SEC.) =   5.70
   ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
   PIPE-FLOW(CFS) =      5.75
   PIPE TRAVEL TIME(MIN.) =   0.79    Tc(MIN.) =  16.86
   LONGEST FLOWPATH FROM NODE     30.00 TO NODE     32.10 =  1270.00 FEET.

***************************************************************************
*
   FLOW PROCESS FROM NODE     32.10 TO NODE     32.10 IS CODE =  81

---------------------------------------------------------------------------
-
   >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

===========================================================================
=
   MAINLINE Tc(MIN) =  16.86
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.960
   SUBAREA LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
   RESIDENTIAL
   "5-7 DWELLINGS/ACRE"       A        2.36      0.98      0.50    32
   RESIDENTIAL
   "5-7 DWELLINGS/ACRE"       C        0.89      0.57      0.50    69
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
   SUBAREA AREA(ACRES) =    3.25      SUBAREA RUNOFF(CFS) =    4.47
   EFFECTIVE AREA(ACRES) =      7.06   AREA-AVERAGED Fm(INCH/HR) =  0.38
   AREA-AVERAGED Fp(INCH/HR) =  0.77  AREA-AVERAGED Ap =  0.50
```

```
   TOTAL AREA(ACRES) =      7.06       PEAK FLOW RATE(CFS) =      10.02

****************************************************************************
*
   FLOW PROCESS FROM NODE     32.10 TO NODE     34.00 IS CODE =  31

----------------------------------------------------------------------------
-
   >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
   >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

============================================================================
=
   ELEVATION DATA: UPSTREAM(FEET) =   754.00  DOWNSTREAM(FEET) =   752.60
   FLOW LENGTH(FEET) =   295.00   MANNING'S N =  0.013
   DEPTH OF FLOW IN  21.0 INCH PIPE IS  16.2 INCHES
   PIPE-FLOW VELOCITY(FEET/SEC.) =   5.03
   ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
   PIPE-FLOW(CFS) =     10.02
   PIPE TRAVEL TIME(MIN.) =   0.98    Tc(MIN.) =  17.84
   LONGEST FLOWPATH FROM NODE     30.00 TO NODE     34.00 =  1565.00 FEET.

****************************************************************************
*
   FLOW PROCESS FROM NODE     34.00 TO NODE     34.00 IS CODE =  81

----------------------------------------------------------------------------
-
   >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

============================================================================
=
   MAINLINE Tc(MIN) =  17.84
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.894
   SUBAREA LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
   RESIDENTIAL
   "5-7 DWELLINGS/ACRE"       A        1.59      0.98      0.50    32
   RESIDENTIAL
   "5-7 DWELLINGS/ACRE"       C        3.88      0.57      0.50    69
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.68
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
   SUBAREA AREA(ACRES) =    5.47      SUBAREA RUNOFF(CFS) =    7.64
   EFFECTIVE AREA(ACRES) =     12.53   AREA-AVERAGED Fm(INCH/HR) =  0.37
   AREA-AVERAGED Fp(INCH/HR) =  0.73  AREA-AVERAGED Ap =  0.50
   TOTAL AREA(ACRES) =     12.53       PEAK FLOW RATE(CFS) =      17.25

****************************************************************************
*
   FLOW PROCESS FROM NODE     34.00 TO NODE     39.00 IS CODE =  31

----------------------------------------------------------------------------
-
   >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
   >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

============================================================================
=
```

```
   ELEVATION DATA: UPSTREAM(FEET) =   752.60  DOWNSTREAM(FEET) =   751.00
   FLOW LENGTH(FEET) =   440.00   MANNING'S N =  0.013
   DEPTH OF FLOW IN  27.0 INCH PIPE IS  21.0 INCHES
   PIPE-FLOW VELOCITY(FEET/SEC.) =   5.21
   ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
   PIPE-FLOW(CFS) =     17.25
   PIPE TRAVEL TIME(MIN.) =   1.41    Tc(MIN.) =  19.25
   LONGEST FLOWPATH FROM NODE     30.00 TO NODE     39.00 =  2005.00 FEET.

****************************************************************************
*
   FLOW PROCESS FROM NODE     39.00 TO NODE     39.00 IS CODE =   1

----------------------------------------------------------------------------
-
   >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
   >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<

============================================================================
=
   TOTAL NUMBER OF STREAMS =  2
   CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
   TIME OF CONCENTRATION(MIN.) =  19.25
   RAINFALL INTENSITY(INCH/HR) =   1.81
   AREA-AVERAGED Fm(INCH/HR) =  0.37
   AREA-AVERAGED Fp(INCH/HR) =  0.73
   AREA-AVERAGED Ap =  0.50
   EFFECTIVE STREAM AREA(ACRES) =    12.53
   TOTAL STREAM AREA(ACRES) =    12.53
   PEAK FLOW RATE(CFS) AT CONFLUENCE =     17.25

   ** CONFLUENCE DATA **
    STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
    NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
       1     18.79  18.94    1.827  0.63( 0.32) 0.50    13.1      24.00
       1     17.55  22.31    1.657  0.64( 0.32) 0.50    13.9      20.00
       2     17.25  19.25    1.810  0.73( 0.37) 0.50    12.5      30.00

   RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
   CONFLUENCE FORMULA USED FOR  2 STREAMS.

   ** PEAK FLOW RATE TABLE **
    STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
    NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
       1     35.96  18.94    1.827  0.68( 0.34) 0.50    25.4      24.00
       2     35.92  19.25    1.810  0.68( 0.34) 0.50    25.7      30.00
       3     32.97  22.31    1.657  0.68( 0.34) 0.50    26.4      20.00

   COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
   PEAK FLOW RATE(CFS) =     35.96    Tc(MIN.) =    18.94
   EFFECTIVE AREA(ACRES) =    25.40   AREA-AVERAGED Fm(INCH/HR) =  0.34
   AREA-AVERAGED Fp(INCH/HR) =  0.68  AREA-AVERAGED Ap =  0.50
   TOTAL AREA(ACRES) =     26.38
   LONGEST FLOWPATH FROM NODE     20.00 TO NODE     39.00 =  2005.00 FEET.

****************************************************************************
*
   FLOW PROCESS FROM NODE     39.00 TO NODE     69.00 IS CODE =  31

----------------------------------------------------------------------------
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```
-
   >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
   >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

===========================================================================
=
   ELEVATION DATA: UPSTREAM(FEET) =   751.00  DOWNSTREAM(FEET) =   746.50
   FLOW LENGTH(FEET) =   170.00   MANNING'S N =  0.013
   DEPTH OF FLOW IN  27.0 INCH PIPE IS  17.2 INCHES
   PIPE-FLOW VELOCITY(FEET/SEC.) =  13.49
   ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
   PIPE-FLOW(CFS) =     35.96
   PIPE TRAVEL TIME(MIN.) =   0.21    Tc(MIN.) =  19.15
   LONGEST FLOWPATH FROM NODE     20.00 TO NODE     69.00 =  2175.00 FEET.


***************************************************************************
*
   FLOW PROCESS FROM NODE     69.00 TO NODE     69.00 IS CODE =  11

---------------------------------------------------------------------------
-
   >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<

===========================================================================
=

   ** MAIN STREAM CONFLUENCE DATA **
    STREAM     Q      Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
    NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
       1      35.96  19.15    1.815  0.68( 0.34) 0.50    25.4      24.00
       2      35.92  19.46    1.798  0.68( 0.34) 0.50    25.7      30.00
       3      32.97  22.53    1.647  0.68( 0.34) 0.50    26.4      20.00
   LONGEST FLOWPATH FROM NODE     20.00 TO NODE     69.00 =  2175.00 FEET.

   ** MEMORY BANK #  3 CONFLUENCE DATA **
    STREAM     Q      Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
    NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
       1      50.84  10.77    2.564  0.79( 0.39) 0.49    24.0      60.00
       2      50.88  10.81    2.559  0.79( 0.39) 0.49    24.0      63.00
       3      54.55  17.65    1.907  0.80( 0.39) 0.49    37.3      58.00
       4      54.64  18.23    1.870  0.81( 0.39) 0.49    38.3      10.30
       5      54.57  18.45    1.857  0.81( 0.40) 0.49    38.6       7.00
       6      53.59  20.42    1.747  0.81( 0.40) 0.49    41.0      40.00
       7      53.37  20.57    1.740  0.81( 0.40) 0.49    41.1      43.00
       8      47.87  23.92    1.589  0.81( 0.39) 0.49    41.6       1.00
   LONGEST FLOWPATH FROM NODE      1.00 TO NODE     69.00 =  3184.00 FEET.

   ** PEAK FLOW RATE TABLE **
    STREAM     Q      Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
    NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
       1      81.34  10.77    2.564  0.75( 0.37) 0.50    38.2      60.00
       2      81.41  10.81    2.559  0.75( 0.37) 0.50    38.4      63.00
       3      89.74  17.65    1.907  0.76( 0.37) 0.49    60.7      58.00
       4      90.14  18.23    1.870  0.76( 0.37) 0.49    62.5      10.30
       5      90.18  18.45    1.857  0.76( 0.37) 0.49    63.1       7.00
       6      90.19  19.15    1.815  0.76( 0.37) 0.49    64.9      24.00
       7      89.99  19.46    1.798  0.76( 0.37) 0.49    65.5      30.00
       8      88.58  20.42    1.747  0.76( 0.38) 0.49    66.9      40.00
       9      88.22  20.57    1.740  0.76( 0.38) 0.49    67.0      43.00
      10      83.12  22.53    1.647  0.76( 0.37) 0.49    67.8      20.00
      11      79.37  23.92    1.589  0.76( 0.37) 0.49    68.0       1.00
```

```
    TOTAL AREA(ACRES) =     68.00

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       90.19  Tc(MIN.) =   19.155
  EFFECTIVE AREA(ACRES) =     64.86  AREA-AVERAGED Fm(INCH/HR) =  0.37
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.50
  TOTAL AREA(ACRES) =     68.00
  LONGEST FLOWPATH FROM NODE      1.00 TO NODE     69.00 =  3184.00 FEET.


***************************************************************************
*
  FLOW PROCESS FROM NODE     69.00 TO NODE     70.00 IS CODE =  31

---------------------------------------------------------------------------
-
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

===========================================================================
=
  ELEVATION DATA: UPSTREAM(FEET) =   746.50  DOWNSTREAM(FEET) =   744.50
  FLOW LENGTH(FEET) =   490.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  51.0 INCH PIPE IS  36.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.33
  ESTIMATED PIPE DIAMETER(INCH) =  51.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     90.19
  PIPE TRAVEL TIME(MIN.) =   0.98    Tc(MIN.) =  20.13
  LONGEST FLOWPATH FROM NODE      1.00 TO NODE     70.00 =  3674.00 FEET.


***************************************************************************
*
  FLOW PROCESS FROM NODE     70.00 TO NODE     70.00 IS CODE =   1

---------------------------------------------------------------------------
-
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<

===========================================================================
=
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  20.13
  RAINFALL INTENSITY(INCH/HR) =   1.76
  AREA-AVERAGED Fm(INCH/HR) =  0.37
  AREA-AVERAGED Fp(INCH/HR) =  0.76
  AREA-AVERAGED Ap =  0.49
  EFFECTIVE STREAM AREA(ACRES) =    64.86
  TOTAL STREAM AREA(ACRES) =    68.00
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     90.19


***************************************************************************
*
  FLOW PROCESS FROM NODE     70.10 TO NODE     70.00 IS CODE =  21

---------------------------------------------------------------------------
-
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
```

```
==========================================================================
=
   INITIAL SUBAREA FLOW-LENGTH(FEET) =   928.00
   ELEVATION DATA: UPSTREAM(FEET) =    766.30  DOWNSTREAM(FEET) =    755.80

   Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
   SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   11.459
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.471
   SUBAREA Tc AND LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
(MIN.)
   RESIDENTIAL
   "5-7 DWELLINGS/ACRE"       C        0.64      0.57      0.50    69
14.66
   COMMERCIAL                 C        2.98      0.57      0.10    69
11.46
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.57
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.17
   SUBAREA RUNOFF(CFS) =      7.74
   TOTAL AREA(ACRES) =      3.62   PEAK FLOW RATE(CFS) =      7.74


**************************************************************************
*
   FLOW PROCESS FROM NODE     70.00 TO NODE     70.00 IS CODE =  81

--------------------------------------------------------------------------
-
   >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

==========================================================================
=
   MAINLINE Tc(MIN) =  11.46
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.471
   SUBAREA LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
   PUBLIC PARK                C        1.07      0.57      0.85    69
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.57
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.85
   SUBAREA AREA(ACRES) =    1.07      SUBAREA RUNOFF(CFS) =    1.92
   EFFECTIVE AREA(ACRES) =      4.69   AREA-AVERAGED Fm(INCH/HR) =  0.18
   AREA-AVERAGED Fp(INCH/HR) =  0.57  AREA-AVERAGED Ap =  0.33
   TOTAL AREA(ACRES) =      4.69       PEAK FLOW RATE(CFS) =      9.65


**************************************************************************
*
   FLOW PROCESS FROM NODE     70.00 TO NODE     70.00 IS CODE =   1

--------------------------------------------------------------------------
-
   >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
   >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<

==========================================================================
=
   TOTAL NUMBER OF STREAMS =  2
   CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
   TIME OF CONCENTRATION(MIN.) =  11.46
   RAINFALL INTENSITY(INCH/HR) =   2.47
```

AREA-AVERAGED Fm(INCH/HR) = 0.18
AREA-AVERAGED Fp(INCH/HR) = 0.57
AREA-AVERAGED Ap = 0.33
EFFECTIVE STREAM AREA(ACRES) = 4.69
TOTAL STREAM AREA(ACRES) = 4.69
PEAK FLOW RATE(CFS) AT CONFLUENCE = 9.65

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	81.34	11.78	2.430	0.75(0.37)	0.50	38.2	60.00
1	81.41	11.82	2.425	0.75(0.37)	0.50	38.4	63.00
1	89.74	18.63	1.846	0.76(0.37)	0.49	60.7	58.00
1	90.14	19.21	1.812	0.76(0.37)	0.49	62.5	10.30
1	90.18	19.43	1.800	0.76(0.37)	0.49	63.1	7.00
1	90.19	20.13	1.762	0.76(0.37)	0.49	64.9	24.00
1	89.99	20.44	1.746	0.76(0.37)	0.49	65.5	30.00
1	88.58	21.43	1.697	0.76(0.38)	0.49	66.9	40.00
1	88.22	21.57	1.690	0.76(0.38)	0.49	67.0	43.00
1	83.12	23.54	1.604	0.76(0.37)	0.49	67.8	20.00
1	79.37	24.93	1.550	0.76(0.37)	0.49	68.0	1.00
2	9.65	11.46	2.471	0.57(0.18)	0.33	4.7	70.10

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR 2 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	90.33	11.46	2.471	0.73(0.35)	0.48	41.9	70.10
2	90.82	11.78	2.430	0.73(0.35)	0.48	42.9	60.00
3	90.87	11.82	2.425	0.73(0.35)	0.48	43.1	63.00
4	96.75	18.63	1.846	0.75(0.36)	0.48	65.4	58.00
5	97.01	19.21	1.812	0.75(0.36)	0.48	67.2	10.30
6	97.00	19.43	1.800	0.75(0.36)	0.48	67.8	7.00
7	96.84	20.13	1.762	0.75(0.36)	0.48	69.5	24.00
8	96.58	20.44	1.746	0.75(0.36)	0.48	70.2	30.00
9	94.97	21.43	1.697	0.75(0.36)	0.48	71.6	40.00
10	94.58	21.57	1.690	0.75(0.36)	0.48	71.7	43.00
11	89.12	23.54	1.604	0.75(0.36)	0.48	72.5	20.00
12	85.13	24.93	1.550	0.75(0.36)	0.48	72.7	1.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 97.01 Tc(MIN.) = 19.21
EFFECTIVE AREA(ACRES) = 67.16 AREA-AVERAGED Fm(INCH/HR) = 0.36
AREA-AVERAGED Fp(INCH/HR) = 0.75 AREA-AVERAGED Ap = 0.48
TOTAL AREA(ACRES) = 72.69
LONGEST FLOWPATH FROM NODE 1.00 TO NODE 70.00 = 3674.00 FEET.

+--
+
| South-West Area
|
|
|
|
|

+--
+

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************************************************************************
*
   FLOW PROCESS FROM NODE    100.00 TO NODE    102.00 IS CODE =  21

------------------------------------------------------------------------
-
   >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
   >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

========================================================================
=
   INITIAL SUBAREA FLOW-LENGTH(FEET) =   960.00
   ELEVATION DATA: UPSTREAM(FEET) =    764.00  DOWNSTREAM(FEET) =    755.70

   Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
   SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   16.613
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.977
   SUBAREA Tc AND LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
(MIN.)
   RESIDENTIAL
   "3-4 DWELLINGS/ACRE"       A        2.32      0.98      0.60    32
16.61
   RESIDENTIAL
   "3-4 DWELLINGS/ACRE"       C        5.06      0.57      0.60    69
16.61
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.69
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
   SUBAREA RUNOFF(CFS) =     10.37
   TOTAL AREA(ACRES) =      7.38   PEAK FLOW RATE(CFS) =     10.37


************************************************************************
*
   FLOW PROCESS FROM NODE    102.00 TO NODE    102.00 IS CODE =  81

------------------------------------------------------------------------
-
   >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

========================================================================
=
   MAINLINE Tc(MIN) =  16.61
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.977
   SUBAREA LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
   RESIDENTIAL
   "3-4 DWELLINGS/ACRE"       A        2.14      0.98      0.60    32
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
   SUBAREA AREA(ACRES) =    2.14      SUBAREA RUNOFF(CFS) =    2.68
   EFFECTIVE AREA(ACRES) =      9.52   AREA-AVERAGED Fm(INCH/HR) =  0.45
   AREA-AVERAGED Fp(INCH/HR) =  0.76  AREA-AVERAGED Ap =  0.60
   TOTAL AREA(ACRES) =      9.52       PEAK FLOW RATE(CFS) =      13.05


************************************************************************
*
   FLOW PROCESS FROM NODE    102.00 TO NODE    103.00 IS CODE =  31
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----------------------------------------------------------------------------
-
   >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
   >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

============================================================================
=
   ELEVATION DATA: UPSTREAM(FEET) =   748.70  DOWNSTREAM(FEET) =   746.80
   FLOW LENGTH(FEET) =   480.00   MANNING'S N =  0.013
   DEPTH OF FLOW IN  24.0 INCH PIPE IS  18.5 INCHES
   PIPE-FLOW VELOCITY(FEET/SEC.) =   5.02
   ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
   PIPE-FLOW(CFS) =     13.05
   PIPE TRAVEL TIME(MIN.) =   1.59    Tc(MIN.) =  18.21
   LONGEST FLOWPATH FROM NODE    100.00 TO NODE    103.00 =  1440.00 FEET.

****************************************************************************
*
   FLOW PROCESS FROM NODE    103.00 TO NODE    103.00 IS CODE =  81

----------------------------------------------------------------------------
-
   >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

============================================================================
=
   MAINLINE Tc(MIN) =  18.21
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.872
   SUBAREA LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
   RESIDENTIAL
   "5-7 DWELLINGS/ACRE"       A        1.44      0.98      0.50    32
   RESIDENTIAL
   "5-7 DWELLINGS/ACRE"       C        1.82      0.57      0.50    69
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
   SUBAREA AREA(ACRES) =    3.26      SUBAREA RUNOFF(CFS) =    4.40
   EFFECTIVE AREA(ACRES) =     12.78   AREA-AVERAGED Fm(INCH/HR) =  0.43
   AREA-AVERAGED Fp(INCH/HR) =  0.76  AREA-AVERAGED Ap =  0.57
   TOTAL AREA(ACRES) =     12.78       PEAK FLOW RATE(CFS) =      16.54

****************************************************************************
*
   FLOW PROCESS FROM NODE    103.00 TO NODE    109.00 IS CODE =  31

----------------------------------------------------------------------------
-
   >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
   >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

============================================================================
=
   ELEVATION DATA: UPSTREAM(FEET) =   746.80  DOWNSTREAM(FEET) =   745.90
   FLOW LENGTH(FEET) =   230.00   MANNING'S N =  0.013
   DEPTH OF FLOW IN  27.0 INCH PIPE IS  19.6 INCHES
   PIPE-FLOW VELOCITY(FEET/SEC.) =   5.36
   ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
   PIPE-FLOW(CFS) =     16.54
```

```
   PIPE TRAVEL TIME(MIN.) =   0.72    Tc(MIN.) =  18.92
   LONGEST FLOWPATH FROM NODE    100.00 TO NODE    109.00 =  1670.00 FEET.


****************************************************************************
*
   FLOW PROCESS FROM NODE    109.00 TO NODE    109.00 IS CODE =  81

----------------------------------------------------------------------------
-
   >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

============================================================================
=
   MAINLINE Tc(MIN) =  18.92
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.829
   SUBAREA LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp        Ap     SCS
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
   RESIDENTIAL
   "5-7 DWELLINGS/ACRE"       A        1.81      0.98      0.50    32
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
   SUBAREA AREA(ACRES) =    1.81      SUBAREA RUNOFF(CFS) =    2.18
   EFFECTIVE AREA(ACRES) =     14.59   AREA-AVERAGED Fm(INCH/HR) =  0.44
   AREA-AVERAGED Fp(INCH/HR) =  0.78  AREA-AVERAGED Ap =  0.57
   TOTAL AREA(ACRES) =     14.59       PEAK FLOW RATE(CFS) =      18.23


****************************************************************************
*
   FLOW PROCESS FROM NODE    109.00 TO NODE    109.00 IS CODE =   1

----------------------------------------------------------------------------
-
   >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<

============================================================================
=
   TOTAL NUMBER OF STREAMS =  2
   CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
   TIME OF CONCENTRATION(MIN.) =  18.92
   RAINFALL INTENSITY(INCH/HR) =   1.83
   AREA-AVERAGED Fm(INCH/HR) =  0.44
   AREA-AVERAGED Fp(INCH/HR) =  0.78
   AREA-AVERAGED Ap =  0.57
   EFFECTIVE STREAM AREA(ACRES) =    14.59
   TOTAL STREAM AREA(ACRES) =    14.59
   PEAK FLOW RATE(CFS) AT CONFLUENCE =     18.23


****************************************************************************
*
   FLOW PROCESS FROM NODE    104.00 TO NODE    105.00 IS CODE =  21

----------------------------------------------------------------------------
-
   >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
   >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

============================================================================
=
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```
   INITIAL SUBAREA FLOW-LENGTH(FEET) =   710.00
   ELEVATION DATA: UPSTREAM(FEET) =    761.80  DOWNSTREAM(FEET) =    756.60

   Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
   SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   15.221
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.084
   SUBAREA Tc AND LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
(MIN.)
   RESIDENTIAL
   "3-4 DWELLINGS/ACRE"       C        2.45      0.57      0.60    69
15.22
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.57
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
   SUBAREA RUNOFF(CFS) =      3.85
   TOTAL AREA(ACRES) =      2.45   PEAK FLOW RATE(CFS) =      3.85


***************************************************************************
*
   FLOW PROCESS FROM NODE    105.00 TO NODE    109.00 IS CODE =  62

---------------------------------------------------------------------------
-
   >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
   >>>>>(STREET TABLE SECTION #  1 USED)<<<<<

===========================================================================
=
   UPSTREAM ELEVATION(FEET) =  756.60  DOWNSTREAM ELEVATION(FEET) =  753.00
   STREET LENGTH(FEET) =   600.00   CURB HEIGHT(INCHES) =  6.0
   STREET HALFWIDTH(FEET) = 18.00

   DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
   INSIDE STREET CROSSFALL(DECIMAL) =  0.020
   OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

   SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
   Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =
0.0150

     **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      6.11
     STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
     STREET FLOW DEPTH(FEET) =  0.39
     HALFSTREET FLOOD WIDTH(FEET) =   11.72
     AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.96
     PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.77
   STREET FLOW TRAVEL TIME(MIN.) =   5.11   Tc(MIN.) =  20.33
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.752
   SUBAREA LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
   RESIDENTIAL
   "3-4 DWELLINGS/ACRE"       A        2.55      0.98      0.60    32
   RESIDENTIAL
   "3-4 DWELLINGS/ACRE"       C        1.44      0.57      0.60    69
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.83
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
   SUBAREA AREA(ACRES) =    3.99      SUBAREA RUNOFF(CFS) =    4.51
   EFFECTIVE AREA(ACRES) =      6.44    AREA-AVERAGED Fm(INCH/HR) =  0.44
   AREA-AVERAGED Fp(INCH/HR) =  0.73  AREA-AVERAGED Ap =  0.60
```

```
   TOTAL AREA(ACRES) =      6.44        PEAK FLOW RATE(CFS) =       7.62

   END OF SUBAREA STREET FLOW HYDRAULICS:
   DEPTH(FEET) = 0.42   HALFSTREET FLOOD WIDTH(FEET) =  12.91
   FLOW VELOCITY(FEET/SEC.) =  2.05   DEPTH*VELOCITY(FT*FT/SEC.) =   0.86
   LONGEST FLOWPATH FROM NODE    104.00 TO NODE    109.00 =  1310.00 FEET.


****************************************************************************
*
   FLOW PROCESS FROM NODE    109.00 TO NODE    109.00 IS CODE =   1

----------------------------------------------------------------------------
-
   >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
   >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<

============================================================================
=
   TOTAL NUMBER OF STREAMS =  2
   CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
   TIME OF CONCENTRATION(MIN.) =  20.33
   RAINFALL INTENSITY(INCH/HR) =   1.75
   AREA-AVERAGED Fm(INCH/HR) =  0.44
   AREA-AVERAGED Fp(INCH/HR) =  0.73
   AREA-AVERAGED Ap =  0.60
   EFFECTIVE STREAM AREA(ACRES) =     6.44
   TOTAL STREAM AREA(ACRES) =     6.44
   PEAK FLOW RATE(CFS) AT CONFLUENCE =      7.62

   ** CONFLUENCE DATA **
    STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
    NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
       1     18.23  18.92    1.829  0.78( 0.44) 0.57    14.6     100.00
       2      7.62  20.33    1.752  0.73( 0.44) 0.60     6.4     104.00

   RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
   CONFLUENCE FORMULA USED FOR  2 STREAMS.

   ** PEAK FLOW RATE TABLE **
    STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
    NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
       1     25.74  18.92    1.829  0.76( 0.44) 0.58    20.6     100.00
       2     24.84  20.33    1.752  0.76( 0.44) 0.58    21.0     104.00

   COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
   PEAK FLOW RATE(CFS) =     25.74    Tc(MIN.) =    18.92
   EFFECTIVE AREA(ACRES) =    20.58   AREA-AVERAGED Fm(INCH/HR) =  0.44
   AREA-AVERAGED Fp(INCH/HR) =  0.76  AREA-AVERAGED Ap =  0.58
   TOTAL AREA(ACRES) =     21.03
   LONGEST FLOWPATH FROM NODE    100.00 TO NODE    109.00 =  1670.00 FEET.


+--------------------------------------------------------------------------
+
 | South-East Area
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+--------------------------------------------------------------------------
+


***************************************************************************
*
   FLOW PROCESS FROM NODE    200.00 TO NODE    202.00 IS CODE =  21

---------------------------------------------------------------------------
-
   >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
   >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

===========================================================================
=
   INITIAL SUBAREA FLOW-LENGTH(FEET) =   810.00
   ELEVATION DATA: UPSTREAM(FEET) =    764.00  DOWNSTREAM(FEET) =    757.70

   Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
   SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   14.968
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.105
   SUBAREA Tc AND LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
(MIN.)
   RESIDENTIAL
   "5-7 DWELLINGS/ACRE"       A        4.60      0.98      0.50    32
14.97
   RESIDENTIAL
   "5-7 DWELLINGS/ACRE"       C        4.60      0.57      0.50    69
14.97
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.77
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
   SUBAREA RUNOFF(CFS) =     14.24
   TOTAL AREA(ACRES) =      9.20   PEAK FLOW RATE(CFS) =     14.24


***************************************************************************
*
   FLOW PROCESS FROM NODE    202.00 TO NODE    203.00 IS CODE =  31

---------------------------------------------------------------------------
-
   >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
   >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

===========================================================================
=
   ELEVATION DATA: UPSTREAM(FEET) =   750.70  DOWNSTREAM(FEET) =   748.70
   FLOW LENGTH(FEET) =   250.00   MANNING'S N =  0.013
   DEPTH OF FLOW IN  24.0 INCH PIPE IS  15.1 INCHES
   PIPE-FLOW VELOCITY(FEET/SEC.) =   6.84
   ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
   PIPE-FLOW(CFS) =     14.24
   PIPE TRAVEL TIME(MIN.) =   0.61    Tc(MIN.) =  15.58
   LONGEST FLOWPATH FROM NODE    200.00 TO NODE    203.00 =  1060.00 FEET.


***************************************************************************
*
   FLOW PROCESS FROM NODE    203.00 TO NODE    203.00 IS CODE =  81
```

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--------------------------------------------------------------------------
-
   >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

==========================================================================
=
   MAINLINE Tc(MIN) =  15.58
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.055
   SUBAREA LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
   RESIDENTIAL
   "3-4 DWELLINGS/ACRE"       A        1.38      0.98      0.60    32
   RESIDENTIAL
   "5-7 DWELLINGS/ACRE"       C        0.70      0.57      0.50    69
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.85
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.57
   SUBAREA AREA(ACRES) =    2.08      SUBAREA RUNOFF(CFS) =    2.94
   EFFECTIVE AREA(ACRES) =     11.28   AREA-AVERAGED Fm(INCH/HR) =  0.40
   AREA-AVERAGED Fp(INCH/HR) =  0.79  AREA-AVERAGED Ap =  0.51
   TOTAL AREA(ACRES) =     11.28       PEAK FLOW RATE(CFS) =      16.77


**************************************************************************
*
   FLOW PROCESS FROM NODE    203.00 TO NODE    207.00 IS CODE =  31

--------------------------------------------------------------------------
-
   >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
   >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

==========================================================================
=
   ELEVATION DATA: UPSTREAM(FEET) =   748.70  DOWNSTREAM(FEET) =   747.80
   FLOW LENGTH(FEET) =   210.00   MANNING'S N =  0.013
   DEPTH OF FLOW IN  27.0 INCH PIPE IS  19.1 INCHES
   PIPE-FLOW VELOCITY(FEET/SEC.) =   5.58
   ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
   PIPE-FLOW(CFS) =     16.77
   PIPE TRAVEL TIME(MIN.) =   0.63    Tc(MIN.) =  16.21
   LONGEST FLOWPATH FROM NODE    200.00 TO NODE    207.00 =  1270.00 FEET.


**************************************************************************
*
   FLOW PROCESS FROM NODE    207.00 TO NODE    207.00 IS CODE =  81

--------------------------------------------------------------------------
-
   >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

==========================================================================
=
   MAINLINE Tc(MIN) =  16.21
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.007
   SUBAREA LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
   RESIDENTIAL
   "5-7 DWELLINGS/ACRE"       A        2.64      0.98      0.50    32
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
```

```
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
   SUBAREA AREA(ACRES) =    2.64      SUBAREA RUNOFF(CFS) =    3.61
   EFFECTIVE AREA(ACRES) =     13.92   AREA-AVERAGED Fm(INCH/HR) =  0.42
   AREA-AVERAGED Fp(INCH/HR) =  0.82  AREA-AVERAGED Ap =  0.51
   TOTAL AREA(ACRES) =     13.92       PEAK FLOW RATE(CFS) =      19.89


****************************************************************************
*
   FLOW PROCESS FROM NODE    207.00 TO NODE    207.10 IS CODE =  31

----------------------------------------------------------------------------
-
   >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
   >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

============================================================================
=
   ELEVATION DATA: UPSTREAM(FEET) =   747.80  DOWNSTREAM(FEET) =   745.90
   FLOW LENGTH(FEET) =   320.00   MANNING'S N =  0.013
   DEPTH OF FLOW IN  27.0 INCH PIPE IS  19.2 INCHES
   PIPE-FLOW VELOCITY(FEET/SEC.) =   6.57
   ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
   PIPE-FLOW(CFS) =     19.89
   PIPE TRAVEL TIME(MIN.) =   0.81    Tc(MIN.) =  17.02
   LONGEST FLOWPATH FROM NODE    200.00 TO NODE    207.10 =  1590.00 FEET.


****************************************************************************
*
   FLOW PROCESS FROM NODE    207.10 TO NODE    207.10 IS CODE =   1

----------------------------------------------------------------------------
-
   >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<

============================================================================
=
   TOTAL NUMBER OF STREAMS =  2
   CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
   TIME OF CONCENTRATION(MIN.) =  17.02
   RAINFALL INTENSITY(INCH/HR) =   1.95
   AREA-AVERAGED Fm(INCH/HR) =  0.42
   AREA-AVERAGED Fp(INCH/HR) =  0.82
   AREA-AVERAGED Ap =  0.51
   EFFECTIVE STREAM AREA(ACRES) =    13.92
   TOTAL STREAM AREA(ACRES) =    13.92
   PEAK FLOW RATE(CFS) AT CONFLUENCE =     19.89


****************************************************************************
*
   FLOW PROCESS FROM NODE    204.00 TO NODE    204.10 IS CODE =  21

----------------------------------------------------------------------------
-
   >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
   >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

============================================================================
=
   INITIAL SUBAREA FLOW-LENGTH(FEET) =   900.00
```

```
   ELEVATION DATA: UPSTREAM(FEET) =    761.20  DOWNSTREAM(FEET) =    754.20

   Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
   SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   15.613
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.052
   SUBAREA Tc AND LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp        Ap     SCS   Tc
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
(MIN.)
   RESIDENTIAL
   "5-7 DWELLINGS/ACRE"       A        2.70      0.98      0.50    32
15.61
   RESIDENTIAL
   "5-7 DWELLINGS/ACRE"       C        0.70      0.57      0.50    69
15.61
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.89
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
   SUBAREA RUNOFF(CFS) =      4.92
   TOTAL AREA(ACRES) =      3.40   PEAK FLOW RATE(CFS) =      4.92


****************************************************************************
*
   FLOW PROCESS FROM NODE    204.10 TO NODE    207.10 IS CODE =  62

----------------------------------------------------------------------------
-
   >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
   >>>>>(STREET TABLE SECTION #  1 USED)<<<<<

============================================================================
=
   UPSTREAM ELEVATION(FEET) =  754.20  DOWNSTREAM ELEVATION(FEET) =  752.90
   STREET LENGTH(FEET) =   200.00   CURB HEIGHT(INCHES) =  6.0
   STREET HALFWIDTH(FEET) = 18.00

   DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
   INSIDE STREET CROSSFALL(DECIMAL) =  0.020
   OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

   SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
   Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =
0.0150

     **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      5.53
     STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
     STREET FLOW DEPTH(FEET) =  0.38
     HALFSTREET FLOOD WIDTH(FEET) =   11.03
     AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.97
     PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.75
   STREET FLOW TRAVEL TIME(MIN.) =   1.69   Tc(MIN.) =  17.31
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.929
   SUBAREA LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp        Ap     SCS
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
   RESIDENTIAL
   "5-7 DWELLINGS/ACRE"       C        0.83      0.57      0.50    69
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.57
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
   SUBAREA AREA(ACRES) =    0.83      SUBAREA RUNOFF(CFS) =    1.23
   EFFECTIVE AREA(ACRES) =      4.23    AREA-AVERAGED Fm(INCH/HR) =  0.41
   AREA-AVERAGED Fp(INCH/HR) =  0.83  AREA-AVERAGED Ap =  0.50
```

```
   TOTAL AREA(ACRES) =      4.23        PEAK FLOW RATE(CFS) =       5.77

   END OF SUBAREA STREET FLOW HYDRAULICS:
   DEPTH(FEET) = 0.38   HALFSTREET FLOOD WIDTH(FEET) =  11.22
   FLOW VELOCITY(FEET/SEC.) =  1.99   DEPTH*VELOCITY(FT*FT/SEC.) =   0.76
   LONGEST FLOWPATH FROM NODE    204.00 TO NODE    207.10 =  1100.00 FEET.


****************************************************************************
*
   FLOW PROCESS FROM NODE    207.10 TO NODE    207.10 IS CODE =   1

----------------------------------------------------------------------------
-
   >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
   >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<

============================================================================
=
   TOTAL NUMBER OF STREAMS =  2
   CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
   TIME OF CONCENTRATION(MIN.) =  17.31
   RAINFALL INTENSITY(INCH/HR) =   1.93
   AREA-AVERAGED Fm(INCH/HR) =  0.41
   AREA-AVERAGED Fp(INCH/HR) =  0.83
   AREA-AVERAGED Ap =  0.50
   EFFECTIVE STREAM AREA(ACRES) =     4.23
   TOTAL STREAM AREA(ACRES) =     4.23
   PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.77

   ** CONFLUENCE DATA **
    STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
    NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
       1     19.89  17.02    1.949  0.82( 0.42) 0.51    13.9     200.00
       2      5.77  17.31    1.929  0.83( 0.41) 0.50     4.2     204.00

   RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
   CONFLUENCE FORMULA USED FOR  2 STREAMS.

   ** PEAK FLOW RATE TABLE **
    STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
    NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
       1     25.64  17.02    1.949  0.82( 0.42) 0.51    18.1     200.00
       2     25.40  17.31    1.929  0.82( 0.42) 0.51    18.1     204.00

   COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
   PEAK FLOW RATE(CFS) =     25.64    Tc(MIN.) =    17.02
   EFFECTIVE AREA(ACRES) =    18.08   AREA-AVERAGED Fm(INCH/HR) =  0.42
   AREA-AVERAGED Fp(INCH/HR) =  0.82  AREA-AVERAGED Ap =  0.51
   TOTAL AREA(ACRES) =     18.15
   LONGEST FLOWPATH FROM NODE    200.00 TO NODE    207.10 =  1590.00 FEET.


****************************************************************************
*
   FLOW PROCESS FROM NODE    207.10 TO NODE    220.00 IS CODE =  81

----------------------------------------------------------------------------
-
   >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

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```
=
   MAINLINE Tc(MIN) =  17.02
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.949
   SUBAREA LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
   RESIDENTIAL
   "3-4 DWELLINGS/ACRE"       A        3.79      0.98      0.60    32
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
   SUBAREA AREA(ACRES) =    3.79      SUBAREA RUNOFF(CFS) =    4.65
   EFFECTIVE AREA(ACRES) =     21.87   AREA-AVERAGED Fm(INCH/HR) =  0.45
   AREA-AVERAGED Fp(INCH/HR) =  0.85  AREA-AVERAGED Ap =  0.52
   TOTAL AREA(ACRES) =     21.94       PEAK FLOW RATE(CFS) =      29.56


****************************************************************************
*
   FLOW PROCESS FROM NODE    220.00 TO NODE    220.00 IS CODE =   1

----------------------------------------------------------------------------
-
   >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<

============================================================================
=
   TOTAL NUMBER OF STREAMS =  2
   CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
   TIME OF CONCENTRATION(MIN.) =  17.02
   RAINFALL INTENSITY(INCH/HR) =   1.95
   AREA-AVERAGED Fm(INCH/HR) =  0.45
   AREA-AVERAGED Fp(INCH/HR) =  0.85
   AREA-AVERAGED Ap =  0.52
   EFFECTIVE STREAM AREA(ACRES) =    21.87
   TOTAL STREAM AREA(ACRES) =    21.94
   PEAK FLOW RATE(CFS) AT CONFLUENCE =     29.56


****************************************************************************
*
   FLOW PROCESS FROM NODE    217.00 TO NODE    218.00 IS CODE =  21

----------------------------------------------------------------------------
-
   >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
   >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

============================================================================
=
   INITIAL SUBAREA FLOW-LENGTH(FEET) =   995.00
   ELEVATION DATA: UPSTREAM(FEET) =    764.30  DOWNSTREAM(FEET) =    756.50

   Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
   SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   16.226
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.005
   SUBAREA Tc AND LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
(MIN.)
   RESIDENTIAL
   "5-7 DWELLINGS/ACRE"       A        1.71      0.98      0.50    32
16.23
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```
   RESIDENTIAL
   "5-7 DWELLINGS/ACRE"       C        1.30      0.57      0.50    69
16.23
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.80
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
   SUBAREA RUNOFF(CFS) =      4.35
   TOTAL AREA(ACRES) =      3.01   PEAK FLOW RATE(CFS) =      4.35


***************************************************************************
*
   FLOW PROCESS FROM NODE    218.00 TO NODE    220.00 IS CODE =  62

---------------------------------------------------------------------------
-
   >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
   >>>>>(STREET TABLE SECTION #  1 USED)<<<<<

===========================================================================
=
   UPSTREAM ELEVATION(FEET) =  756.50  DOWNSTREAM ELEVATION(FEET) =  750.70
   STREET LENGTH(FEET) =   835.00   CURB HEIGHT(INCHES) =  6.0
   STREET HALFWIDTH(FEET) = 18.00

   DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
   INSIDE STREET CROSSFALL(DECIMAL) =  0.020
   OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

   SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
   Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =
0.0150

     **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       7.18
     STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
     STREET FLOW DEPTH(FEET) =  0.40
     HALFSTREET FLOOD WIDTH(FEET) =   12.16
     AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.15
     PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.86
   STREET FLOW TRAVEL TIME(MIN.) =   6.46   Tc(MIN.) =  22.69
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.640
   SUBAREA LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
   RESIDENTIAL
   "3-4 DWELLINGS/ACRE"       A        5.90      0.98      0.60    32
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
   SUBAREA AREA(ACRES) =    5.90      SUBAREA RUNOFF(CFS) =    5.60
   EFFECTIVE AREA(ACRES) =      8.91    AREA-AVERAGED Fm(INCH/HR) =  0.52
   AREA-AVERAGED Fp(INCH/HR) =  0.92  AREA-AVERAGED Ap =  0.57
   TOTAL AREA(ACRES) =      8.91        PEAK FLOW RATE(CFS) =       8.96

   END OF SUBAREA STREET FLOW HYDRAULICS:
   DEPTH(FEET) = 0.43   HALFSTREET FLOOD WIDTH(FEET) =  13.41
   FLOW VELOCITY(FEET/SEC.) =  2.26   DEPTH*VELOCITY(FT*FT/SEC.) =   0.96
   LONGEST FLOWPATH FROM NODE    217.00 TO NODE    220.00 =  1830.00 FEET.


***************************************************************************
*
   FLOW PROCESS FROM NODE    220.00 TO NODE    220.00 IS CODE =   1
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---------------------------------------------------------------------------
-
   >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
   >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<

===========================================================================
=
   TOTAL NUMBER OF STREAMS =  2
   CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
   TIME OF CONCENTRATION(MIN.) =  22.69
   RAINFALL INTENSITY(INCH/HR) =   1.64
   AREA-AVERAGED Fm(INCH/HR) =  0.52
   AREA-AVERAGED Fp(INCH/HR) =  0.92
   AREA-AVERAGED Ap =  0.57
   EFFECTIVE STREAM AREA(ACRES) =     8.91
   TOTAL STREAM AREA(ACRES) =     8.91
   PEAK FLOW RATE(CFS) AT CONFLUENCE =      8.96

   ** CONFLUENCE DATA **
    STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
    NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
       1     29.56  17.02    1.949  0.85( 0.45) 0.52    21.9     200.00
       1     29.27  17.31    1.929  0.85( 0.45) 0.52    21.9     204.00
       2      8.96  22.69    1.640  0.92( 0.52) 0.57     8.9     217.00

   RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
   CONFLUENCE FORMULA USED FOR  2 STREAMS.

   ** PEAK FLOW RATE TABLE **
    STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
    NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
       1     38.15  17.02    1.949  0.87( 0.46) 0.53    28.6     200.00
       2     37.88  17.31    1.929  0.87( 0.46) 0.53    28.7     204.00
       3     32.53  22.69    1.640  0.87( 0.47) 0.54    30.8     217.00

   COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
   PEAK FLOW RATE(CFS) =     38.15    Tc(MIN.) =    17.02
   EFFECTIVE AREA(ACRES) =    28.55   AREA-AVERAGED Fm(INCH/HR) =  0.46
   AREA-AVERAGED Fp(INCH/HR) =  0.87  AREA-AVERAGED Ap =  0.53
   TOTAL AREA(ACRES) =     30.85
   LONGEST FLOWPATH FROM NODE    217.00 TO NODE    220.00 =  1830.00 FEET.


+--------------------------------------------------------------------------
+
 | North-East Area
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***************************************************************************
*
   FLOW PROCESS FROM NODE    308.00 TO NODE    309.00 IS CODE =  21

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```
   >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
   >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

===========================================================================
=
   INITIAL SUBAREA FLOW-LENGTH(FEET) =   830.00
   ELEVATION DATA: UPSTREAM(FEET) =    774.10  DOWNSTREAM(FEET) =    767.10

   Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
   SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   14.872
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.113
   SUBAREA Tc AND LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
(MIN.)
   RESIDENTIAL
   "5-7 DWELLINGS/ACRE"       A        3.73      0.98      0.50    32
14.87
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
   SUBAREA RUNOFF(CFS) =      5.46
   TOTAL AREA(ACRES) =      3.73   PEAK FLOW RATE(CFS) =      5.46


***************************************************************************
*
   FLOW PROCESS FROM NODE    309.00 TO NODE    310.00 IS CODE =  62

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-
   >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
   >>>>>(STREET TABLE SECTION #  1 USED)<<<<<

===========================================================================
=
   UPSTREAM ELEVATION(FEET) =  767.10  DOWNSTREAM ELEVATION(FEET) =  763.50
   STREET LENGTH(FEET) =   600.00   CURB HEIGHT(INCHES) =  6.0
   STREET HALFWIDTH(FEET) = 18.00

   DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
   INSIDE STREET CROSSFALL(DECIMAL) =  0.020
   OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

   SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
   Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =
0.0150

     **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      6.98
     STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
     STREET FLOW DEPTH(FEET) =  0.41
     HALFSTREET FLOOD WIDTH(FEET) =   12.41
     AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.02
     PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.82
   STREET FLOW TRAVEL TIME(MIN.) =   4.95   Tc(MIN.) =  19.82
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.778
   SUBAREA LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
   RESIDENTIAL
   "5-7 DWELLINGS/ACRE"       A        2.62      0.98      0.50    32
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
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```
   SUBAREA AREA(ACRES) =    2.62      SUBAREA RUNOFF(CFS) =    3.04
   EFFECTIVE AREA(ACRES) =      6.35    AREA-AVERAGED Fm(INCH/HR) =  0.49
   AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.50
   TOTAL AREA(ACRES) =      6.35        PEAK FLOW RATE(CFS) =       7.38

   END OF SUBAREA STREET FLOW HYDRAULICS:
   DEPTH(FEET) = 0.41   HALFSTREET FLOOD WIDTH(FEET) =  12.72
   FLOW VELOCITY(FEET/SEC.) =  2.04   DEPTH*VELOCITY(FT*FT/SEC.) =   0.84
   LONGEST FLOWPATH FROM NODE    308.00 TO NODE    310.00 =  1430.00 FEET.


***************************************************************************
*
   FLOW PROCESS FROM NODE    310.00 TO NODE    310.00 IS CODE =  81

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-
   >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

===========================================================================
=
   MAINLINE Tc(MIN) =  19.82
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.778
   SUBAREA LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
   RESIDENTIAL
   "5-7 DWELLINGS/ACRE"       A        3.75      0.98      0.50    32
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
   SUBAREA AREA(ACRES) =    3.75      SUBAREA RUNOFF(CFS) =    4.36
   EFFECTIVE AREA(ACRES) =     10.10   AREA-AVERAGED Fm(INCH/HR) =  0.49
   AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.50
   TOTAL AREA(ACRES) =     10.10       PEAK FLOW RATE(CFS) =      11.73


***************************************************************************
*
   FLOW PROCESS FROM NODE    310.00 TO NODE    310.00 IS CODE =  81

---------------------------------------------------------------------------
-
   >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

===========================================================================
=
   MAINLINE Tc(MIN) =  19.82
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.778
   SUBAREA LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
   RESIDENTIAL
   "5-7 DWELLINGS/ACRE"       A        0.93      0.98      0.50    32
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
   SUBAREA AREA(ACRES) =    0.93      SUBAREA RUNOFF(CFS) =    1.08
   EFFECTIVE AREA(ACRES) =     11.03   AREA-AVERAGED Fm(INCH/HR) =  0.49
   AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.50
   TOTAL AREA(ACRES) =     11.03       PEAK FLOW RATE(CFS) =      12.81


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*
   FLOW PROCESS FROM NODE    310.00 TO NODE    313.00 IS CODE =  31

---------------------------------------------------------------------------
-
   >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
   >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

===========================================================================
=
   ELEVATION DATA: UPSTREAM(FEET) =   756.50  DOWNSTREAM(FEET) =   755.20
   FLOW LENGTH(FEET) =   330.00   MANNING'S N =  0.013
   DEPTH OF FLOW IN  24.0 INCH PIPE IS  18.2 INCHES
   PIPE-FLOW VELOCITY(FEET/SEC.) =   5.00
   ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
   PIPE-FLOW(CFS) =     12.81
   PIPE TRAVEL TIME(MIN.) =   1.10    Tc(MIN.) =  20.92
   LONGEST FLOWPATH FROM NODE    308.00 TO NODE    313.00 =  1760.00 FEET.


***************************************************************************
*
   FLOW PROCESS FROM NODE    313.00 TO NODE    313.00 IS CODE =  81

---------------------------------------------------------------------------
-
   >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

===========================================================================
=
   MAINLINE Tc(MIN) =  20.92
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.722
   SUBAREA LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
        LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
   RESIDENTIAL
   "5-7 DWELLINGS/ACRE"       A        3.87      0.98      0.50    32
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
   SUBAREA AREA(ACRES) =    3.87      SUBAREA RUNOFF(CFS) =    4.30
   EFFECTIVE AREA(ACRES) =     14.90   AREA-AVERAGED Fm(INCH/HR) =  0.49
   AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.50
   TOTAL AREA(ACRES) =     14.90       PEAK FLOW RATE(CFS) =      16.55


***************************************************************************
*
   FLOW PROCESS FROM NODE    313.00 TO NODE    317.00 IS CODE =  31

---------------------------------------------------------------------------
-
   >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
   >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

===========================================================================
=
   ELEVATION DATA: UPSTREAM(FEET) =   755.20  DOWNSTREAM(FEET) =   754.40
   FLOW LENGTH(FEET) =   250.00   MANNING'S N =  0.013
   DEPTH OF FLOW IN  27.0 INCH PIPE IS  21.4 INCHES
   PIPE-FLOW VELOCITY(FEET/SEC.) =   4.89
   ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
   PIPE-FLOW(CFS) =     16.55
```

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   PIPE TRAVEL TIME(MIN.) =   0.85    Tc(MIN.) =  21.78
   LONGEST FLOWPATH FROM NODE    308.00 TO NODE    317.00 =  2010.00 FEET.

****************************************************************************
*
   FLOW PROCESS FROM NODE    317.00 TO NODE    317.00 IS CODE =   1

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-
   >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<

============================================================================
=
   TOTAL NUMBER OF STREAMS =  2
   CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
   TIME OF CONCENTRATION(MIN.) =  21.78
   RAINFALL INTENSITY(INCH/HR) =   1.68
   AREA-AVERAGED Fm(INCH/HR) =  0.49
   AREA-AVERAGED Fp(INCH/HR) =  0.97
   AREA-AVERAGED Ap =  0.50
   EFFECTIVE STREAM AREA(ACRES) =    14.90
   TOTAL STREAM AREA(ACRES) =    14.90
   PEAK FLOW RATE(CFS) AT CONFLUENCE =     16.55

****************************************************************************
*
   FLOW PROCESS FROM NODE    315.00 TO NODE    316.00 IS CODE =  21

----------------------------------------------------------------------------
-
   >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
   >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

============================================================================
=
   INITIAL SUBAREA FLOW-LENGTH(FEET) =   665.00
   ELEVATION DATA: UPSTREAM(FEET) =    774.10  DOWNSTREAM(FEET) =    767.70

   Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
   SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   13.256
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.264
   SUBAREA Tc AND LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
(MIN.)
   RESIDENTIAL
   "5-7 DWELLINGS/ACRE"       A        2.32      0.98      0.50    32
13.26
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
   SUBAREA RUNOFF(CFS) =      3.71
   TOTAL AREA(ACRES) =      2.32   PEAK FLOW RATE(CFS) =      3.71

****************************************************************************
*
   FLOW PROCESS FROM NODE    316.00 TO NODE    317.00 IS CODE =  62

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```
   >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
   >>>>>(STREET TABLE SECTION #  1 USED)<<<<<

===========================================================================
=
   UPSTREAM ELEVATION(FEET) =  767.70  DOWNSTREAM ELEVATION(FEET) =  763.70
   STREET LENGTH(FEET) =   550.00   CURB HEIGHT(INCHES) =  6.0
   STREET HALFWIDTH(FEET) = 18.00

   DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
   INSIDE STREET CROSSFALL(DECIMAL) =  0.020
   OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

   SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
   Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =
0.0150

     **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       6.86
     STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
     STREET FLOW DEPTH(FEET) =  0.40
     HALFSTREET FLOOD WIDTH(FEET) =   11.84
     AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.16
     PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.85
   STREET FLOW TRAVEL TIME(MIN.) =   4.25   Tc(MIN.) =  17.51
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.916
   SUBAREA LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
   RESIDENTIAL
   "5-7 DWELLINGS/ACRE"       A        4.88      0.98      0.50    32
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
   SUBAREA AREA(ACRES) =    4.88      SUBAREA RUNOFF(CFS) =    6.27
   EFFECTIVE AREA(ACRES) =      7.20    AREA-AVERAGED Fm(INCH/HR) =  0.49
   AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.50
   TOTAL AREA(ACRES) =      7.20        PEAK FLOW RATE(CFS) =       9.26

   END OF SUBAREA STREET FLOW HYDRAULICS:
   DEPTH(FEET) = 0.43   HALFSTREET FLOOD WIDTH(FEET) =  13.47
   FLOW VELOCITY(FEET/SEC.) =  2.31   DEPTH*VELOCITY(FT*FT/SEC.) =   0.99
   LONGEST FLOWPATH FROM NODE    315.00 TO NODE    317.00 =  1215.00 FEET.


***************************************************************************
*
   FLOW PROCESS FROM NODE    317.00 TO NODE    317.00 IS CODE =   1

---------------------------------------------------------------------------
-
   >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
   >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<

===========================================================================
=
   TOTAL NUMBER OF STREAMS =  2
   CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
   TIME OF CONCENTRATION(MIN.) =  17.51
   RAINFALL INTENSITY(INCH/HR) =   1.92
   AREA-AVERAGED Fm(INCH/HR) =  0.49
   AREA-AVERAGED Fp(INCH/HR) =  0.98
   AREA-AVERAGED Ap =  0.50
   EFFECTIVE STREAM AREA(ACRES) =     7.20
```

```
   TOTAL STREAM AREA(ACRES) =     7.20
   PEAK FLOW RATE(CFS) AT CONFLUENCE =      9.26

   ** CONFLUENCE DATA **
    STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
    NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
       1     16.55  21.78    1.681  0.97( 0.49) 0.50    14.9     308.00
       2      9.26  17.51    1.916  0.98( 0.49) 0.50     7.2     315.00

   RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
   CONFLUENCE FORMULA USED FOR  2 STREAMS.

   ** PEAK FLOW RATE TABLE **
    STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
    NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
       1     25.18  17.51    1.916  0.97( 0.49) 0.50    19.2     315.00
       2     24.28  21.78    1.681  0.97( 0.49) 0.50    22.1     308.00

   COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
   PEAK FLOW RATE(CFS) =     25.18    Tc(MIN.) =    17.51
   EFFECTIVE AREA(ACRES) =    19.18   AREA-AVERAGED Fm(INCH/HR) =  0.49
   AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.50
   TOTAL AREA(ACRES) =     22.10
   LONGEST FLOWPATH FROM NODE    308.00 TO NODE    317.00 =  2010.00 FEET.


***************************************************************************
*
   FLOW PROCESS FROM NODE    317.00 TO NODE    325.00 IS CODE =  31

---------------------------------------------------------------------------
-
   >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
   >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

===========================================================================
=
   ELEVATION DATA: UPSTREAM(FEET) =   763.70  DOWNSTREAM(FEET) =   752.60
   FLOW LENGTH(FEET) =   445.00   MANNING'S N =  0.013
   DEPTH OF FLOW IN  24.0 INCH PIPE IS  15.1 INCHES
   PIPE-FLOW VELOCITY(FEET/SEC.) =  12.07
   ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
   PIPE-FLOW(CFS) =     25.18
   PIPE TRAVEL TIME(MIN.) =   0.61    Tc(MIN.) =  18.12
   LONGEST FLOWPATH FROM NODE    308.00 TO NODE    325.00 =  2455.00 FEET.


***************************************************************************
*
   FLOW PROCESS FROM NODE    325.00 TO NODE    325.00 IS CODE =   1

---------------------------------------------------------------------------
-
   >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<

===========================================================================
=
   TOTAL NUMBER OF STREAMS =  2
   CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
   TIME OF CONCENTRATION(MIN.) =  18.12
   RAINFALL INTENSITY(INCH/HR) =   1.88
   AREA-AVERAGED Fm(INCH/HR) =  0.49
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```
   AREA-AVERAGED Fp(INCH/HR) =  0.97
   AREA-AVERAGED Ap =  0.50
   EFFECTIVE STREAM AREA(ACRES) =    19.18
   TOTAL STREAM AREA(ACRES) =    22.10
   PEAK FLOW RATE(CFS) AT CONFLUENCE =     25.18


***************************************************************************
*
   FLOW PROCESS FROM NODE    320.00 TO NODE    321.00 IS CODE =  21

---------------------------------------------------------------------------
-
   >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
   >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

===========================================================================
=
   INITIAL SUBAREA FLOW-LENGTH(FEET) =   650.00
   ELEVATION DATA: UPSTREAM(FEET) =    783.80  DOWNSTREAM(FEET) =    778.90

   Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
   SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.779
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.563
   SUBAREA Tc AND LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
(MIN.)
   COMMERCIAL                 A        1.14      0.98      0.10    32
10.78
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.10
   SUBAREA RUNOFF(CFS) =      2.53
   TOTAL AREA(ACRES) =      1.14   PEAK FLOW RATE(CFS) =      2.53


***************************************************************************
*
   FLOW PROCESS FROM NODE    321.00 TO NODE    323.00 IS CODE =  62

---------------------------------------------------------------------------
-
   >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
   >>>>>(STREET TABLE SECTION #  2 USED)<<<<<

===========================================================================
=
   UPSTREAM ELEVATION(FEET) =  778.90  DOWNSTREAM ELEVATION(FEET) =  778.70
   STREET LENGTH(FEET) =   395.00   CURB HEIGHT(INCHES) =  8.0
   STREET HALFWIDTH(FEET) = 32.00

   DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  27.00
   INSIDE STREET CROSSFALL(DECIMAL) =  0.020
   OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

   SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
   Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =
0.0150

     **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.48
     STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
     STREET FLOW DEPTH(FEET) =  0.47
```

```
    HALFSTREET FLOOD WIDTH(FEET) =   15.56
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    0.67
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.31
  STREET FLOW TRAVEL TIME(MIN.) =   9.88   Tc(MIN.) =  20.66
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.735
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 A        1.28      0.98      0.10    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.10
  SUBAREA AREA(ACRES) =    1.28      SUBAREA RUNOFF(CFS) =    1.89
  EFFECTIVE AREA(ACRES) =      2.42    AREA-AVERAGED Fm(INCH/HR) =  0.10
  AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.10
  TOTAL AREA(ACRES) =      2.42        PEAK FLOW RATE(CFS) =       3.57

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.47   HALFSTREET FLOOD WIDTH(FEET) =  15.74
  FLOW VELOCITY(FEET/SEC.) =  0.67   DEPTH*VELOCITY(FT*FT/SEC.) =   0.32
  LONGEST FLOWPATH FROM NODE    320.00 TO NODE    323.00 =  1045.00 FEET.

***************************************************************************
*
  FLOW PROCESS FROM NODE    323.00 TO NODE    325.00 IS CODE =  31

---------------------------------------------------------------------------
-
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

===========================================================================
=
  ELEVATION DATA: UPSTREAM(FEET) =   766.70  DOWNSTREAM(FEET) =   752.60
  FLOW LENGTH(FEET) =    50.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   3.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  17.39
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      3.57
  PIPE TRAVEL TIME(MIN.) =   0.05    Tc(MIN.) =  20.71
  LONGEST FLOWPATH FROM NODE    320.00 TO NODE    325.00 =  1095.00 FEET.

***************************************************************************
*
  FLOW PROCESS FROM NODE    325.00 TO NODE    325.00 IS CODE =   1

---------------------------------------------------------------------------
-
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<

===========================================================================
=
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  20.71
  RAINFALL INTENSITY(INCH/HR) =   1.73
  AREA-AVERAGED Fm(INCH/HR) =  0.10
  AREA-AVERAGED Fp(INCH/HR) =  0.97
  AREA-AVERAGED Ap =  0.10
```

```
   EFFECTIVE STREAM AREA(ACRES) =     2.42
   TOTAL STREAM AREA(ACRES) =     2.42
   PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.57

   ** CONFLUENCE DATA **
    STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
    NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
       1     25.18  18.12    1.877  0.97( 0.49) 0.50    19.2     315.00
       1     24.28  22.42    1.652  0.97( 0.49) 0.50    22.1     308.00
       2      3.57  20.71    1.732  0.97( 0.10) 0.10     2.4     320.00

   RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
   CONFLUENCE FORMULA USED FOR  2 STREAMS.

   ** PEAK FLOW RATE TABLE **
    STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
    NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
       1     28.58  18.12    1.877  0.98( 0.45) 0.46    21.3     315.00
       2     28.21  20.71    1.732  0.97( 0.45) 0.46    23.4     320.00
       3     27.67  22.42    1.652  0.97( 0.45) 0.46    24.5     308.00

   COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
   PEAK FLOW RATE(CFS) =     28.58    Tc(MIN.) =    18.12
   EFFECTIVE AREA(ACRES) =    21.30   AREA-AVERAGED Fm(INCH/HR) =  0.45
   AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.46
   TOTAL AREA(ACRES) =     24.52
   LONGEST FLOWPATH FROM NODE    308.00 TO NODE    325.00 =  2455.00 FEET.


****************************************************************************
*
   FLOW PROCESS FROM NODE    325.00 TO NODE    326.00 IS CODE =  31

----------------------------------------------------------------------------
-
   >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
   >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

============================================================================
=
   ELEVATION DATA: UPSTREAM(FEET) =   752.60  DOWNSTREAM(FEET) =   326.00
   FLOW LENGTH(FEET) =   640.00   MANNING'S N =  0.013
   ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
   DEPTH OF FLOW IN  18.0 INCH PIPE IS   7.3 INCHES
   PIPE-FLOW VELOCITY(FEET/SEC.) =  42.84
   ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
   PIPE-FLOW(CFS) =     28.58
   PIPE TRAVEL TIME(MIN.) =   0.25    Tc(MIN.) =  18.37
   LONGEST FLOWPATH FROM NODE    308.00 TO NODE    326.00 =  3095.00 FEET.


****************************************************************************
*
   FLOW PROCESS FROM NODE    326.00 TO NODE    326.00 IS CODE =  81

----------------------------------------------------------------------------
-
   >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

============================================================================
=
   MAINLINE Tc(MIN) =  18.37
```

```
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.861
   SUBAREA LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
   RESIDENTIAL
   "5-7 DWELLINGS/ACRE"       A       13.00      0.98      0.50    32
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
   SUBAREA AREA(ACRES) =   13.00      SUBAREA RUNOFF(CFS) =   16.08
   EFFECTIVE AREA(ACRES) =     34.30   AREA-AVERAGED Fm(INCH/HR) =  0.46
   AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.48
   TOTAL AREA(ACRES) =     37.52       PEAK FLOW RATE(CFS) =      43.15


***************************************************************************
*
   FLOW PROCESS FROM NODE    326.00 TO NODE    326.00 IS CODE =  81

---------------------------------------------------------------------------
-
   >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

===========================================================================
=
   MAINLINE Tc(MIN) =  18.37
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.861
   SUBAREA LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
   COMMERCIAL                 A        2.00      0.98      0.10    32
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.10
   SUBAREA AREA(ACRES) =    2.00      SUBAREA RUNOFF(CFS) =    3.18
   EFFECTIVE AREA(ACRES) =     36.30   AREA-AVERAGED Fm(INCH/HR) =  0.44
   AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.45
   TOTAL AREA(ACRES) =     39.52       PEAK FLOW RATE(CFS) =      46.33


***************************************************************************
*
   FLOW PROCESS FROM NODE    326.00 TO NODE    327.00 IS CODE =  31

---------------------------------------------------------------------------
-
   >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
   >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

===========================================================================
=
   ELEVATION DATA: UPSTREAM(FEET) =   750.00  DOWNSTREAM(FEET) =   749.90
   FLOW LENGTH(FEET) =    50.00   MANNING'S N =  0.013
   DEPTH OF FLOW IN  45.0 INCH PIPE IS  32.7 INCHES
   PIPE-FLOW VELOCITY(FEET/SEC.) =   5.38
   ESTIMATED PIPE DIAMETER(INCH) =  45.00    NUMBER OF PIPES =   1
   PIPE-FLOW(CFS) =     46.33
   PIPE TRAVEL TIME(MIN.) =   0.15    Tc(MIN.) =  18.53
   LONGEST FLOWPATH FROM NODE    308.00 TO NODE    327.00 =  3145.00 FEET.


***************************************************************************
*
   FLOW PROCESS FROM NODE    327.00 TO NODE    327.00 IS CODE =  81
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----------------------------------------------------------------------------
-
   >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

============================================================================
=
   MAINLINE Tc(MIN) =  18.53
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.852
   SUBAREA LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
   COMMERCIAL                 A       1.00      0.98      0.10    32
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.10
   SUBAREA AREA(ACRES) =    1.00      SUBAREA RUNOFF(CFS) =    1.58
   EFFECTIVE AREA(ACRES) =     37.30   AREA-AVERAGED Fm(INCH/HR) =  0.43
   AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.45
   TOTAL AREA(ACRES) =     40.52       PEAK FLOW RATE(CFS) =      47.60


****************************************************************************
*
   FLOW PROCESS FROM NODE    327.00 TO NODE    328.00 IS CODE =  31

----------------------------------------------------------------------------
-
   >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
   >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

============================================================================
=
   ELEVATION DATA: UPSTREAM(FEET) =   749.90  DOWNSTREAM(FEET) =   746.40
   FLOW LENGTH(FEET) =   860.00   MANNING'S N =  0.013
   DEPTH OF FLOW IN  39.0 INCH PIPE IS  29.7 INCHES
   PIPE-FLOW VELOCITY(FEET/SEC.) =   7.03
   ESTIMATED PIPE DIAMETER(INCH) =  39.00    NUMBER OF PIPES =   1
   PIPE-FLOW(CFS) =     47.60
   PIPE TRAVEL TIME(MIN.) =   2.04    Tc(MIN.) =  20.57
   LONGEST FLOWPATH FROM NODE    308.00 TO NODE    328.00 =  4005.00 FEET.


****************************************************************************
*
   FLOW PROCESS FROM NODE    328.00 TO NODE    328.00 IS CODE =  81

----------------------------------------------------------------------------
-
   >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

============================================================================
=
   MAINLINE Tc(MIN) =  20.57
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.740
   SUBAREA LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
   SCHOOL                     A       9.70      0.98      0.60    32
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
   SUBAREA AREA(ACRES) =    9.70      SUBAREA RUNOFF(CFS) =   10.08
   EFFECTIVE AREA(ACRES) =     47.00   AREA-AVERAGED Fm(INCH/HR) =  0.47
```

```
   AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.48
   TOTAL AREA(ACRES) =     50.22       PEAK FLOW RATE(CFS) =      53.91


***************************************************************************
*
   FLOW PROCESS FROM NODE    328.00 TO NODE    328.00 IS CODE =  81

---------------------------------------------------------------------------
-
   >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

===========================================================================
=
   MAINLINE Tc(MIN) =  20.57
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.740
   SUBAREA LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
   COMMERCIAL                 A        2.60      0.98      0.10    32
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.10
   SUBAREA AREA(ACRES) =    2.60      SUBAREA RUNOFF(CFS) =    3.84
   EFFECTIVE AREA(ACRES) =     49.60   AREA-AVERAGED Fm(INCH/HR) =  0.45
   AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.46
   TOTAL AREA(ACRES) =     52.82       PEAK FLOW RATE(CFS) =      57.75


***************************************************************************
*
   FLOW PROCESS FROM NODE    328.00 TO NODE    329.00 IS CODE =  31

---------------------------------------------------------------------------
-
   >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
   >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

===========================================================================
=
   ELEVATION DATA: UPSTREAM(FEET) =   746.40  DOWNSTREAM(FEET) =   746.30
   FLOW LENGTH(FEET) =    50.00   MANNING'S N =  0.013
   DEPTH OF FLOW IN  48.0 INCH PIPE IS  36.4 INCHES
   PIPE-FLOW VELOCITY(FEET/SEC.) =   5.66
   ESTIMATED PIPE DIAMETER(INCH) =  48.00    NUMBER OF PIPES =   1
   PIPE-FLOW(CFS) =     57.75
   PIPE TRAVEL TIME(MIN.) =   0.15    Tc(MIN.) =  20.71
   LONGEST FLOWPATH FROM NODE    308.00 TO NODE    329.00 =  4055.00 FEET.


***************************************************************************
*
   FLOW PROCESS FROM NODE    329.00 TO NODE    329.00 IS CODE =  81

---------------------------------------------------------------------------
-
   >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

===========================================================================
=
   MAINLINE Tc(MIN) =  20.71
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.732
   SUBAREA LOSS RATE DATA(AMC  II):
```

```
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
COMMERCIAL                 A        0.95      0.98      0.10    32
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.10
SUBAREA AREA(ACRES) =    0.95      SUBAREA RUNOFF(CFS) =    1.40
EFFECTIVE AREA(ACRES) =     50.55   AREA-AVERAGED Fm(INCH/HR) =  0.44
AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.45
TOTAL AREA(ACRES) =     53.77       PEAK FLOW RATE(CFS) =      58.81

***************************************************************************
*
FLOW PROCESS FROM NODE    329.00 TO NODE    330.00 IS CODE =  31

---------------------------------------------------------------------------
-
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

===========================================================================
=
ELEVATION DATA: UPSTREAM(FEET) =   746.30  DOWNSTREAM(FEET) =   744.00
FLOW LENGTH(FEET) =   500.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  42.0 INCH PIPE IS  30.7 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   7.80
ESTIMATED PIPE DIAMETER(INCH) =  42.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =     58.81
PIPE TRAVEL TIME(MIN.) =   1.07    Tc(MIN.) =  21.78
LONGEST FLOWPATH FROM NODE    308.00 TO NODE    330.00 =  4555.00 FEET.

***************************************************************************
*
FLOW PROCESS FROM NODE    330.00 TO NODE    330.00 IS CODE =  81

---------------------------------------------------------------------------
-
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

===========================================================================
=
MAINLINE Tc(MIN) =  21.78
*  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.681
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
COMMERCIAL                 A        1.65      0.98      0.10    32
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.10
SUBAREA AREA(ACRES) =    1.65      SUBAREA RUNOFF(CFS) =    2.35
EFFECTIVE AREA(ACRES) =     52.20   AREA-AVERAGED Fm(INCH/HR) =  0.43
AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.44
TOTAL AREA(ACRES) =     55.42       PEAK FLOW RATE(CFS) =      58.83

***************************************************************************
*
FLOW PROCESS FROM NODE    330.00 TO NODE    330.00 IS CODE =  81

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```
   >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

============================================================================
=
   MAINLINE Tc(MIN) =  21.78
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.681
   SUBAREA LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
   RESIDENTIAL
   "5-7 DWELLINGS/ACRE"       A        5.54      0.98      0.50    32
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
   SUBAREA AREA(ACRES) =    5.54      SUBAREA RUNOFF(CFS) =    5.95
   EFFECTIVE AREA(ACRES) =     57.74   AREA-AVERAGED Fm(INCH/HR) =  0.43
   AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.45
   TOTAL AREA(ACRES) =     60.96       PEAK FLOW RATE(CFS) =      64.77


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***************************************************************************
*
   FLOW PROCESS FROM NODE    524.00 TO NODE    522.00 IS CODE =  21

----------------------------------------------------------------------------
-
   >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
   >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

============================================================================
=
   INITIAL SUBAREA FLOW-LENGTH(FEET) =   700.00
   ELEVATION DATA: UPSTREAM(FEET) =    754.20  DOWNSTREAM(FEET) =    751.40

   Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
   SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.604
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.334
   SUBAREA Tc AND LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
(MIN.)
   COMMERCIAL                 A        0.92      0.98      0.10    32
12.60
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.10
   SUBAREA RUNOFF(CFS) =      1.85
   TOTAL AREA(ACRES) =      0.92   PEAK FLOW RATE(CFS) =      1.85


***************************************************************************
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*
   FLOW PROCESS FROM NODE    522.00 TO NODE    522.00 IS CODE =  81

----------------------------------------------------------------------------
-
   >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

============================================================================
=
   MAINLINE Tc(MIN) =  12.60
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.334
   SUBAREA LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
   PUBLIC PARK                A        0.78      0.98      0.85    32
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.85
   SUBAREA AREA(ACRES) =    0.78      SUBAREA RUNOFF(CFS) =    1.06
   EFFECTIVE AREA(ACRES) =      1.70   AREA-AVERAGED Fm(INCH/HR) =  0.43
   AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.44
   TOTAL AREA(ACRES) =      1.70       PEAK FLOW RATE(CFS) =       2.91


****************************************************************************
*
   FLOW PROCESS FROM NODE    522.00 TO NODE    523.00 IS CODE =  21

----------------------------------------------------------------------------
-
   >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
   >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

============================================================================
=
   INITIAL SUBAREA FLOW-LENGTH(FEET) =   820.00
   ELEVATION DATA: UPSTREAM(FEET) =    755.00  DOWNSTREAM(FEET) =    748.20

   Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
   SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   11.605
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.452
   SUBAREA Tc AND LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
(MIN.)
   COMMERCIAL                 A        0.80      0.98      0.10    32
11.61
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.10
   SUBAREA RUNOFF(CFS) =      1.70
   TOTAL AREA(ACRES) =      0.80   PEAK FLOW RATE(CFS) =      1.70


****************************************************************************
*
   FLOW PROCESS FROM NODE    523.00 TO NODE    524.00 IS CODE =  62

----------------------------------------------------------------------------
-
   >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
   >>>>>(STREET TABLE SECTION #  2 USED)<<<<<

============================================================================
```

```
=
   UPSTREAM ELEVATION(FEET) =  748.20  DOWNSTREAM ELEVATION(FEET) =  747.70
   STREET LENGTH(FEET) =   565.00   CURB HEIGHT(INCHES) =  8.0
   STREET HALFWIDTH(FEET) = 32.00

   DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  27.00
   INSIDE STREET CROSSFALL(DECIMAL) =  0.020
   OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

   SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
   Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =
0.0150

     **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.25
     STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
     STREET FLOW DEPTH(FEET) =  0.47
     HALFSTREET FLOOD WIDTH(FEET) =   15.45
     AVERAGE FLOW VELOCITY(FEET/SEC.) =    0.87
     PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.41
   STREET FLOW TRAVEL TIME(MIN.) =  10.80   Tc(MIN.) =  22.41
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.652
   SUBAREA LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
   COMMERCIAL                 A        0.78      0.98      0.10    32
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.10
   SUBAREA AREA(ACRES) =    0.78      SUBAREA RUNOFF(CFS) =    1.09
   EFFECTIVE AREA(ACRES) =      1.58    AREA-AVERAGED Fm(INCH/HR) =  0.10
   AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.10
   TOTAL AREA(ACRES) =      1.58        PEAK FLOW RATE(CFS) =       2.21

   END OF SUBAREA STREET FLOW HYDRAULICS:
   DEPTH(FEET) = 0.46   HALFSTREET FLOOD WIDTH(FEET) =  15.33
   FLOW VELOCITY(FEET/SEC.) =  0.87   DEPTH*VELOCITY(FT*FT/SEC.) =   0.40
   LONGEST FLOWPATH FROM NODE    522.00 TO NODE    524.00 =  1385.00 FEET.


***************************************************************************
*
   FLOW PROCESS FROM NODE    524.00 TO NODE    524.00 IS CODE =  81

---------------------------------------------------------------------------
-
   >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

===========================================================================
=
   MAINLINE Tc(MIN) =  22.41
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.652
   SUBAREA LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
   PUBLIC PARK                A        1.37      0.98      0.85    32
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.85
   SUBAREA AREA(ACRES) =    1.37      SUBAREA RUNOFF(CFS) =    1.02
   EFFECTIVE AREA(ACRES) =      2.95   AREA-AVERAGED Fm(INCH/HR) =  0.44
   AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.45
   TOTAL AREA(ACRES) =      2.95       PEAK FLOW RATE(CFS) =       3.23
```

```
***********************************************************************
*
   FLOW PROCESS FROM NODE    520.00 TO NODE    518.00 IS CODE =  21

----------------------------------------------------------------------
-
   >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
   >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

======================================================================
=
   INITIAL SUBAREA FLOW-LENGTH(FEET) =   683.00
   ELEVATION DATA: UPSTREAM(FEET) =    758.20  DOWNSTREAM(FEET) =    745.20

   Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
   SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.136
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.831
   SUBAREA Tc AND LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
(MIN.)
   COMMERCIAL                 A        0.84      0.98      0.10    32
9.14
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.10
   SUBAREA RUNOFF(CFS) =      2.07
   TOTAL AREA(ACRES) =      0.84   PEAK FLOW RATE(CFS) =      2.07


***********************************************************************
*
   FLOW PROCESS FROM NODE    518.00 TO NODE    518.00 IS CODE =  81

----------------------------------------------------------------------
-
   >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

======================================================================
=
   MAINLINE Tc(MIN) =   9.14
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.831
   SUBAREA LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
   PUBLIC PARK                A        0.56      0.98      0.85    32
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.85
   SUBAREA AREA(ACRES) =    0.56      SUBAREA RUNOFF(CFS) =    1.01
   EFFECTIVE AREA(ACRES) =      1.40   AREA-AVERAGED Fm(INCH/HR) =  0.39
   AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.40
   TOTAL AREA(ACRES) =      1.40       PEAK FLOW RATE(CFS) =      3.08


***********************************************************************
*
   FLOW PROCESS FROM NODE    514.00 TO NODE    516.00 IS CODE =  21

----------------------------------------------------------------------
-
   >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
   >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
```

```
==========================================================================
=
   INITIAL SUBAREA FLOW-LENGTH(FEET) =   705.00
   ELEVATION DATA: UPSTREAM(FEET) =    760.00  DOWNSTREAM(FEET) =    745.80

   Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
   SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.148
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.828
   SUBAREA Tc AND LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
(MIN.)
   COMMERCIAL                A        1.50      0.98      0.10    32
9.15
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.10
   SUBAREA RUNOFF(CFS) =      3.69
   TOTAL AREA(ACRES) =      1.50   PEAK FLOW RATE(CFS) =      3.69


**************************************************************************
*
   FLOW PROCESS FROM NODE    510.00 TO NODE    512.00 IS CODE =  21

--------------------------------------------------------------------------
-
   >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
   >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

==========================================================================
=
   INITIAL SUBAREA FLOW-LENGTH(FEET) =   600.00
   ELEVATION DATA: UPSTREAM(FEET) =    753.00  DOWNSTREAM(FEET) =    752.40

   Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
   SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   15.636
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.050
   SUBAREA Tc AND LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
(MIN.)
   COMMERCIAL                A        1.50      0.98      0.10    32
15.64
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.10
   SUBAREA RUNOFF(CFS) =      2.64
   TOTAL AREA(ACRES) =      1.50   PEAK FLOW RATE(CFS) =      2.64


+--------------------------------------------------------------------------
+
 | East riverside Drive
|
 |
|
 |
|

+--------------------------------------------------------------------------
+
```

```
****************************************************************************
*
   FLOW PROCESS FROM NODE    500.00 TO NODE    502.00 IS CODE =  21

----------------------------------------------------------------------------
-
   >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
   >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

============================================================================
=
   INITIAL SUBAREA FLOW-LENGTH(FEET) =   758.00
   ELEVATION DATA: UPSTREAM(FEET) =    774.10  DOWNSTREAM(FEET) =    769.10

   Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
   SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   11.773
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.431
   SUBAREA Tc AND LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
(MIN.)
   COMMERCIAL                A        0.91      0.98      0.10    32
11.77
   COMMERCIAL                C        0.39      0.57      0.10    69
11.77
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.85
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.10
   SUBAREA RUNOFF(CFS) =      2.74
   TOTAL AREA(ACRES) =      1.30   PEAK FLOW RATE(CFS) =      2.74


****************************************************************************
*
   FLOW PROCESS FROM NODE    502.00 TO NODE    502.00 IS CODE =   1

----------------------------------------------------------------------------
-
   >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<

============================================================================
=
   TOTAL NUMBER OF STREAMS =  2
   CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
   TIME OF CONCENTRATION(MIN.) =  11.77
   RAINFALL INTENSITY(INCH/HR) =   2.43
   AREA-AVERAGED Fm(INCH/HR) =  0.09
   AREA-AVERAGED Fp(INCH/HR) =  0.85
   AREA-AVERAGED Ap =  0.10
   EFFECTIVE STREAM AREA(ACRES) =     1.30
   TOTAL STREAM AREA(ACRES) =     1.30
   PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.74


****************************************************************************
*
   FLOW PROCESS FROM NODE    501.00 TO NODE    502.00 IS CODE =  21

----------------------------------------------------------------------------
-
   >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
   >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
```

```
================================================================================
=
   INITIAL SUBAREA FLOW-LENGTH(FEET) =   452.00
   ELEVATION DATA: UPSTREAM(FEET) =    773.30  DOWNSTREAM(FEET) =    769.10

   Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
   SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    8.939
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.868
   SUBAREA Tc AND LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
(MIN.)
   COMMERCIAL                 A        0.55      0.98      0.10    32
8.94
   COMMERCIAL                 C        0.22      0.57      0.10    69
8.94
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.10
   SUBAREA RUNOFF(CFS) =      1.93
   TOTAL AREA(ACRES) =      0.77   PEAK FLOW RATE(CFS) =      1.93


****************************************************************************
*
   FLOW PROCESS FROM NODE    502.00 TO NODE    502.00 IS CODE =   1

----------------------------------------------------------------------------
-
   >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
   >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<

================================================================================
=
   TOTAL NUMBER OF STREAMS =  2
   CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
   TIME OF CONCENTRATION(MIN.) =   8.94
   RAINFALL INTENSITY(INCH/HR) =   2.87
   AREA-AVERAGED Fm(INCH/HR) =  0.09
   AREA-AVERAGED Fp(INCH/HR) =  0.86
   AREA-AVERAGED Ap =  0.10
   EFFECTIVE STREAM AREA(ACRES) =     0.77
   TOTAL STREAM AREA(ACRES) =     0.77
   PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.93

   ** CONFLUENCE DATA **
    STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
    NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
       1      2.74  11.77    2.431  0.85( 0.09) 0.10     1.3     500.00
       2      1.93   8.94    2.868  0.86( 0.09) 0.10     0.8     501.00

   RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
   CONFLUENCE FORMULA USED FOR  2 STREAMS.

   ** PEAK FLOW RATE TABLE **
    STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
    NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
       1      4.40   8.94    2.868  0.85( 0.09) 0.10     1.8     501.00
       2      4.37  11.77    2.431  0.85( 0.09) 0.10     2.1     500.00

   COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
   PEAK FLOW RATE(CFS) =      4.40    Tc(MIN.) =     8.94
   EFFECTIVE AREA(ACRES) =     1.76   AREA-AVERAGED Fm(INCH/HR) =  0.09
```

```
   AREA-AVERAGED Fp(INCH/HR) =  0.85  AREA-AVERAGED Ap =  0.10
   TOTAL AREA(ACRES) =      2.07
   LONGEST FLOWPATH FROM NODE    500.00 TO NODE    502.00 =   758.00 FEET.

***************************************************************************
*
   FLOW PROCESS FROM NODE    505.00 TO NODE    507.00 IS CODE =  21

---------------------------------------------------------------------------
-
   >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
   >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

===========================================================================
=
   INITIAL SUBAREA FLOW-LENGTH(FEET) =   572.00
   ELEVATION DATA: UPSTREAM(FEET) =    773.30  DOWNSTREAM(FEET) =    761.90

   Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
   SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    8.432
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.970
   SUBAREA Tc AND LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp        Ap     SCS   Tc
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
(MIN.)
   COMMERCIAL                 A       1.11      0.98      0.10    32
8.43
   PUBLIC PARK                A       0.34      0.98      0.85    32
13.40
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.28
   SUBAREA RUNOFF(CFS) =      3.53
   TOTAL AREA(ACRES) =      1.45   PEAK FLOW RATE(CFS) =      3.53

===========================================================================
=
   END OF STUDY SUMMARY:
   TOTAL AREA(ACRES)     =      1.45  TC(MIN.) =      8.43
   EFFECTIVE AREA(ACRES) =      1.45  AREA-AVERAGED Fm(INCH/HR)=  0.27
   AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.28
   PEAK FLOW RATE(CFS)   =      3.53

===========================================================================
=

===========================================================================
=
   END OF RATIONAL METHOD ANALYSIS
```

```
****************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
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            Ver. 8.0  Release Date: 01/01/2003  License ID 1269

                          Analysis prepared by:

                             MDS Consulting
                      17320 Redhill Avenue, Suite 350
                            Irvine, CA 92614
                             949-721-8821


 ************************* DESCRIPTION OF STUDY *************************
* Armstrong Ranch, City of Ontario                                       *
* Preliminary Hydrology                                                  *
* 100- year storm                                                        *
 ************************************************************************

  FILE NAME: 80350.DAT
  TIME/DATE OF STUDY: 08:49 11/04/2015
============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*
  10-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  0.906
  100-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  1.370
  COMPUTED RAINFALL INTENSITY DATA:
  STORM EVENT =  100.00   1-HOUR INTENSITY(INCH/HOUR) = 1.3700
  SLOPE OF INTENSITY DURATION CURVE = 0.6000

  *ANTECEDENT MOISTURE CONDITION (AMC) III ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN- / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ================  ======  ===== ====== ===== =======
  1   18.0     13.0    0.020/0.020/ ---    0.50    2.00 0.0313 0.167 0.0150
  2   32.0     27.0    0.020/0.020/ ---    0.67    2.00 0.0313 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.50 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

****************************************************************************
  FLOW PROCESS FROM NODE      1.00 TO NODE      3.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   860.00
  ELEVATION DATA: UPSTREAM(FEET) =    779.70  DOWNSTREAM(FEET) =    775.20

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.970
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.434
  SUBAREA Tc AND LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  COMMERCIAL                 A        1.06      0.80      0.10    52   12.97
  PUBLIC PARK                A        0.44      0.80      0.85    52   20.61
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.80
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.32
  SUBAREA RUNOFF(CFS) =      4.29
  TOTAL AREA(ACRES) =      1.50   PEAK FLOW RATE(CFS) =      4.29

****************************************************************************
  FLOW PROCESS FROM NODE      3.00 TO NODE      5.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  775.20  DOWNSTREAM ELEVATION(FEET) =  767.50
  STREET LENGTH(FEET) =   960.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       6.36
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.46
    HALFSTREET FLOOD WIDTH(FEET) =   15.03
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.60
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.19
  STREET FLOW TRAVEL TIME(MIN.) =    6.16   Tc(MIN.) =  19.13
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.720
```

```
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp        Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                  A        1.50      0.80      0.10    52
  PUBLIC PARK                 A        0.30      0.80      0.85    52
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.80
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.23
  SUBAREA AREA(ACRES) =    1.80      SUBAREA RUNOFF(CFS) =    4.12
  EFFECTIVE AREA(ACRES) =      3.30    AREA-AVERAGED Fm(INCH/HR) =  0.21
  AREA-AVERAGED Fp(INCH/HR) =  0.80  AREA-AVERAGED Ap =  0.27
  TOTAL AREA(ACRES) =      3.30        PEAK FLOW RATE(CFS) =       7.44

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.48   HALFSTREET FLOOD WIDTH(FEET) =  16.03
  FLOW VELOCITY(FEET/SEC.) =  2.70   DEPTH*VELOCITY(FT*FT/SEC.) =   1.29
  LONGEST FLOWPATH FROM NODE      1.00 TO NODE      5.00 =  1820.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      5.00 TO NODE     10.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   760.50  DOWNSTREAM(FEET) =   754.60
  FLOW LENGTH(FEET) =    50.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   5.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  15.80
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      7.44
  PIPE TRAVEL TIME(MIN.) =   0.05    Tc(MIN.) =  19.19
  LONGEST FLOWPATH FROM NODE      1.00 TO NODE     10.00 =  1870.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     10.00 TO NODE     10.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  19.19
  RAINFALL INTENSITY(INCH/HR) =   2.72
  AREA-AVERAGED Fm(INCH/HR) =  0.21
  AREA-AVERAGED Fp(INCH/HR) =  0.80
  AREA-AVERAGED Ap =  0.27
  EFFECTIVE STREAM AREA(ACRES) =     3.30
  TOTAL STREAM AREA(ACRES) =     3.30
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      7.44

****************************************************************************
  FLOW PROCESS FROM NODE      7.00 TO NODE      9.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   850.00
  ELEVATION DATA: UPSTREAM(FEET) =    773.30  DOWNSTREAM(FEET) =    762.30

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   13.782
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.311
  SUBAREA Tc AND LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp        Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"        A        4.18      0.80      0.50    52   13.78
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.80
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
  SUBAREA RUNOFF(CFS) =     10.96
  TOTAL AREA(ACRES) =      4.18   PEAK FLOW RATE(CFS) =     10.96

****************************************************************************
  FLOW PROCESS FROM NODE      9.00 TO NODE     10.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   755.30  DOWNSTREAM(FEET) =   754.60
  FLOW LENGTH(FEET) =   190.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  16.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.75
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     10.96
  PIPE TRAVEL TIME(MIN.) =   0.67    Tc(MIN.) =  14.45
  LONGEST FLOWPATH FROM NODE      7.00 TO NODE     10.00 =  1040.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     10.00 TO NODE     10.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  14.45
  RAINFALL INTENSITY(INCH/HR) =   3.22
  AREA-AVERAGED Fm(INCH/HR) =  0.40
  AREA-AVERAGED Fp(INCH/HR) =  0.80
  AREA-AVERAGED Ap =  0.50
  EFFECTIVE STREAM AREA(ACRES) =     4.18
  TOTAL STREAM AREA(ACRES) =     4.18
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     10.96
```

```
  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1      7.44  19.19    2.715  0.80( 0.21) 0.27     3.3       1.00
      2     10.96  14.45    3.219  0.80( 0.40) 0.50     4.2       7.00

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     17.69  14.45    3.219  0.80( 0.33) 0.41     6.7       7.00
      2     16.45  19.19    2.715  0.80( 0.32) 0.40     7.5       1.00

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     17.69    Tc(MIN.) =    14.45
  EFFECTIVE AREA(ACRES) =     6.67   AREA-AVERAGED Fm(INCH/HR) =  0.33
  AREA-AVERAGED Fp(INCH/HR) =  0.80  AREA-AVERAGED Ap =  0.41
  TOTAL AREA(ACRES) =      7.48
  LONGEST FLOWPATH FROM NODE      1.00 TO NODE     10.00 =  1870.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     10.00 TO NODE     10.10 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   754.60  DOWNSTREAM(FEET) =   752.10
  FLOW LENGTH(FEET) =   690.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  21.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.21
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     17.69
  PIPE TRAVEL TIME(MIN.) =   2.21    Tc(MIN.) =  16.66
  LONGEST FLOWPATH FROM NODE      1.00 TO NODE     10.10 =  2560.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     10.10 TO NODE     10.10 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  16.66
  RAINFALL INTENSITY(INCH/HR) =   2.96
  AREA-AVERAGED Fm(INCH/HR) =  0.33
  AREA-AVERAGED Fp(INCH/HR) =  0.80
  AREA-AVERAGED Ap =  0.41
  EFFECTIVE STREAM AREA(ACRES) =     6.67
  TOTAL STREAM AREA(ACRES) =     7.48
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     17.69

****************************************************************************
  FLOW PROCESS FROM NODE     10.30 TO NODE     10.20 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   900.00
  ELEVATION DATA: UPSTREAM(FEET) =    765.20  DOWNSTREAM(FEET) =    760.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   16.569
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.965
  SUBAREA Tc AND LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A        2.52      0.80      0.50    52   16.57
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.80
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
  SUBAREA RUNOFF(CFS) =      5.82
  TOTAL AREA(ACRES) =      2.52   PEAK FLOW RATE(CFS) =      5.82

****************************************************************************
  FLOW PROCESS FROM NODE     10.20 TO NODE     10.10 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   753.00  DOWNSTREAM(FEET) =   752.10
  FLOW LENGTH(FEET) =    70.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   9.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.58
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      5.82
  PIPE TRAVEL TIME(MIN.) =   0.18    Tc(MIN.) =  16.75
  LONGEST FLOWPATH FROM NODE     10.30 TO NODE     10.10 =   970.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     10.10 TO NODE     10.10 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  16.75
  RAINFALL INTENSITY(INCH/HR) =   2.95
  AREA-AVERAGED Fm(INCH/HR) =  0.40
  AREA-AVERAGED Fp(INCH/HR) =  0.80
```

```
  AREA-AVERAGED Ap =  0.50
  EFFECTIVE STREAM AREA(ACRES) =     2.52
  TOTAL STREAM AREA(ACRES) =     2.52
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.82

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity  Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     17.69  16.66    2.956  0.80( 0.33) 0.41     6.7       7.00
      1     16.45  21.41    2.543  0.80( 0.32) 0.40     7.5       1.00
      2      5.82  16.75    2.946  0.80( 0.40) 0.50     2.5      10.30

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity  Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     23.51  16.66    2.956  0.80( 0.35) 0.44     9.2       7.00
      2     23.49  16.75    2.946  0.80( 0.35) 0.44     9.2      10.30
      3     21.35  21.41    2.543  0.80( 0.34) 0.42    10.0       1.00

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     23.51    Tc(MIN.) =    16.66
  EFFECTIVE AREA(ACRES) =      9.17   AREA-AVERAGED Fm(INCH/HR) =  0.35
  AREA-AVERAGED Fp(INCH/HR) =  0.80  AREA-AVERAGED Ap =  0.44
  TOTAL AREA(ACRES) =     10.00
  LONGEST FLOWPATH FROM NODE      1.00 TO NODE     10.10 =  2560.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     10.10 TO NODE     12.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   752.10  DOWNSTREAM(FEET) =   751.90
  FLOW LENGTH(FEET) =    74.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  33.0 INCH PIPE IS  24.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.09
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     23.51
  PIPE TRAVEL TIME(MIN.) =   0.24    Tc(MIN.) =  16.90
  LONGEST FLOWPATH FROM NODE      1.00 TO NODE     12.00 =  2634.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     12.00 TO NODE     12.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  16.90
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.930
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 A        1.39      0.80      0.10    52
  COMMERCIAL                 C        1.26      0.27      0.10    86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.55
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.10
  SUBAREA AREA(ACRES) =     2.65      SUBAREA RUNOFF(CFS) =     6.86
  EFFECTIVE AREA(ACRES) =     11.82   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.78  AREA-AVERAGED Ap =  0.36
  TOTAL AREA(ACRES) =     12.65       PEAK FLOW RATE(CFS) =      28.17

****************************************************************************
  FLOW PROCESS FROM NODE     12.00 TO NODE     12.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  16.90
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.930
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  PUBLIC PARK                C        0.75      0.27      0.85    86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.27
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.85
  SUBAREA AREA(ACRES) =     0.75      SUBAREA RUNOFF(CFS) =     1.82
  EFFECTIVE AREA(ACRES) =     12.57   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.71  AREA-AVERAGED Ap =  0.39
  TOTAL AREA(ACRES) =     13.40       PEAK FLOW RATE(CFS) =      29.99

****************************************************************************
  FLOW PROCESS FROM NODE     12.00 TO NODE     69.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   751.90  DOWNSTREAM(FEET) =   746.50
  FLOW LENGTH(FEET) =   550.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  19.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.87
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     29.99
  PIPE TRAVEL TIME(MIN.) =   1.03    Tc(MIN.) =  17.93
  LONGEST FLOWPATH FROM NODE      1.00 TO NODE     69.00 =  3184.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     69.00 TO NODE     69.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
```

```
  FLOW PROCESS FROM NODE     40.00 TO NODE     42.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   770.00
  ELEVATION DATA: UPSTREAM(FEET) =    768.80  DOWNSTREAM(FEET) =    760.90

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   13.878
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.298
  SUBAREA Tc AND LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A        4.05      0.80      0.50    52   13.88
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.80
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
  SUBAREA RUNOFF(CFS) =     10.57
  TOTAL AREA(ACRES) =      4.05   PEAK FLOW RATE(CFS) =     10.57

****************************************************************************
  FLOW PROCESS FROM NODE     42.00 TO NODE     42.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  13.88
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.298
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A        0.88      0.80      0.50    52
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.80
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
  SUBAREA AREA(ACRES) =    0.88      SUBAREA RUNOFF(CFS) =    2.30
  EFFECTIVE AREA(ACRES) =      4.93   AREA-AVERAGED Fm(INCH/HR) =  0.40
  AREA-AVERAGED Fp(INCH/HR) =  0.80  AREA-AVERAGED Ap =  0.50
  TOTAL AREA(ACRES) =      4.93       PEAK FLOW RATE(CFS) =      12.87

****************************************************************************
  FLOW PROCESS FROM NODE     42.00 TO NODE     42.10 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   753.90  DOWNSTREAM(FEET) =   752.80
  FLOW LENGTH(FEET) =   270.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  18.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.08
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     12.87
  PIPE TRAVEL TIME(MIN.) =   0.89    Tc(MIN.) =  14.76
  LONGEST FLOWPATH FROM NODE     40.00 TO NODE     42.10 =  1040.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     42.10 TO NODE     42.10 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  14.76
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.178
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A        1.45      0.80      0.50    52
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       C        0.17      0.27      0.50    86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
  SUBAREA AREA(ACRES) =    1.62      SUBAREA RUNOFF(CFS) =    4.09
  EFFECTIVE AREA(ACRES) =      6.55   AREA-AVERAGED Fm(INCH/HR) =  0.39
  AREA-AVERAGED Fp(INCH/HR) =  0.78  AREA-AVERAGED Ap =  0.50
  TOTAL AREA(ACRES) =      6.55       PEAK FLOW RATE(CFS) =      16.43

****************************************************************************
  FLOW PROCESS FROM NODE     42.10 TO NODE     42.20 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   752.80  DOWNSTREAM(FEET) =   751.40
  FLOW LENGTH(FEET) =    35.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  12.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  12.88
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     16.43
  PIPE TRAVEL TIME(MIN.) =   0.05    Tc(MIN.) =  14.81
  LONGEST FLOWPATH FROM NODE     40.00 TO NODE     42.20 =  1075.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     42.10 TO NODE     42.10 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  14.81
  RAINFALL INTENSITY(INCH/HR) =   3.17
  AREA-AVERAGED Fm(INCH/HR) =  0.39
  AREA-AVERAGED Fp(INCH/HR) =  0.78
  AREA-AVERAGED Ap =  0.50
```

```
  EFFECTIVE STREAM AREA(ACRES) =     6.55
  TOTAL STREAM AREA(ACRES) =     6.55
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     16.43

****************************************************************************
  FLOW PROCESS FROM NODE     43.00 TO NODE     43.10 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   630.00
  ELEVATION DATA: UPSTREAM(FEET) =    770.20  DOWNSTREAM(FEET) =    763.90

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.873
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.450
  SUBAREA Tc AND LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A        4.00      0.80      0.50    52   12.87
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.80
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
  SUBAREA RUNOFF(CFS) =     10.99
  TOTAL AREA(ACRES) =      4.00   PEAK FLOW RATE(CFS) =      10.99

****************************************************************************
  FLOW PROCESS FROM NODE     43.10 TO NODE     43.20 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  763.90  DOWNSTREAM ELEVATION(FEET) =  762.80
  STREET LENGTH(FEET) =   240.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      12.02
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.49
    HALFSTREET FLOOD WIDTH(FEET) =   16.47
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.07
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.01
  STREET FLOW TRAVEL TIME(MIN.) =   1.93   Tc(MIN.) =  14.80
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.172
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A        0.83      0.80      0.50    52
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.80
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
  SUBAREA AREA(ACRES) =    0.83      SUBAREA RUNOFF(CFS) =     2.07
  EFFECTIVE AREA(ACRES) =      4.83    AREA-AVERAGED Fm(INCH/HR) =  0.40
  AREA-AVERAGED Fp(INCH/HR) =  0.80  AREA-AVERAGED Ap =  0.50
  TOTAL AREA(ACRES) =      4.83        PEAK FLOW RATE(CFS) =      12.06

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.49   HALFSTREET FLOOD WIDTH(FEET) =  16.53
  FLOW VELOCITY(FEET/SEC.) =  2.06   DEPTH*VELOCITY(FT*FT/SEC.) =   1.01
  LONGEST FLOWPATH FROM NODE     43.00 TO NODE     43.20 =   870.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     42.30 TO NODE     42.30 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  14.80
  RAINFALL INTENSITY(INCH/HR) =   3.17
  AREA-AVERAGED Fm(INCH/HR) =  0.40
  AREA-AVERAGED Fp(INCH/HR) =  0.80
  AREA-AVERAGED Ap =  0.50
  EFFECTIVE STREAM AREA(ACRES) =     4.83
  TOTAL STREAM AREA(ACRES) =     4.83
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     12.06

  ** CONFLUENCE DATA **
   STREAM     Q      Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     16.43  14.81    3.172  0.78( 0.39) 0.50     6.6      40.00
      2     12.06  14.80    3.172  0.80( 0.40) 0.50     4.8      43.00

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q      Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     28.48  14.80    3.172  0.79( 0.39) 0.50    11.4      43.00
      2     28.48  14.81    3.172  0.79( 0.39) 0.50    11.4      40.00

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     28.48    Tc(MIN.) =    14.80
  EFFECTIVE AREA(ACRES) =    11.38   AREA-AVERAGED Fm(INCH/HR) =  0.39
```

```
  AREA-AVERAGED Fp(INCH/HR) =  0.79  AREA-AVERAGED Ap =  0.50
  TOTAL AREA(ACRES) =     11.38
  LONGEST FLOWPATH FROM NODE     40.00 TO NODE     42.30 =  1075.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     43.20 TO NODE     43.20 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  14.80
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.172
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A        1.77      0.80      0.50    52
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.80
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
  SUBAREA AREA(ACRES) =    1.77      SUBAREA RUNOFF(CFS) =    4.42
  EFFECTIVE AREA(ACRES) =     13.15   AREA-AVERAGED Fm(INCH/HR) =  0.39
  AREA-AVERAGED Fp(INCH/HR) =  0.79  AREA-AVERAGED Ap =  0.50
  TOTAL AREA(ACRES) =     13.15       PEAK FLOW RATE(CFS) =      32.87

****************************************************************************
  FLOW PROCESS FROM NODE     43.20 TO NODE     43.30 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  762.80  DOWNSTREAM ELEVATION(FEET) =  761.10
  STREET LENGTH(FEET) =   238.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      34.59
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
         NOTE: STREET FLOW EXCEEDS TOP OF CURB.
         THE FOLLOWING STREET FLOW RESULTS ARE BASED ON THE ASSUMPTION
         THAT NEGLIBLE FLOW OCCURS OUTSIDE OF THE STREET CHANNEL.
         THAT IS, ALL FLOW ALONG THE PARKWAY, ETC., IS NEGLECTED.
    STREET FLOW DEPTH(FEET) =  0.60
    HALFSTREET FLOOD WIDTH(FEET) =   18.00
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.47
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.10
  STREET FLOW TRAVEL TIME(MIN.) =   1.14   Tc(MIN.) =  15.95
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.034
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A        1.45      0.80      0.50    52
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.80
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
  SUBAREA AREA(ACRES) =    1.45      SUBAREA RUNOFF(CFS) =    3.44
  EFFECTIVE AREA(ACRES) =     14.60    AREA-AVERAGED Fm(INCH/HR) =  0.39
  AREA-AVERAGED Fp(INCH/HR) =  0.79  AREA-AVERAGED Ap =  0.50
  TOTAL AREA(ACRES) =     14.60        PEAK FLOW RATE(CFS) =      34.67

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.60   HALFSTREET FLOOD WIDTH(FEET) = 18.00
  FLOW VELOCITY(FEET/SEC.) =  3.48   DEPTH*VELOCITY(FT*FT/SEC.) =   2.10
  LONGEST FLOWPATH FROM NODE     40.00 TO NODE     43.30 =  1313.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     43.30 TO NODE     42.20 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   754.10  DOWNSTREAM(FEET) =   751.40
  FLOW LENGTH(FEET) =   270.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  21.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.17
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     34.67
  PIPE TRAVEL TIME(MIN.) =   0.49    Tc(MIN.) =  16.44
  LONGEST FLOWPATH FROM NODE     40.00 TO NODE     42.20 =  1583.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     42.20 TO NODE     42.30 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   751.40  DOWNSTREAM(FEET) =   750.40
  FLOW LENGTH(FEET) =   250.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  25.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.52
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     34.67
  PIPE TRAVEL TIME(MIN.) =   0.64    Tc(MIN.) =  17.08
  LONGEST FLOWPATH FROM NODE     40.00 TO NODE     42.30 =  1833.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     42.30 TO NODE     42.30 IS CODE =  81
----------------------------------------------------------------------------
```

```
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========================================================================
  MAINLINE Tc(MIN) =  17.08
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.912
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A        1.09      0.80      0.50    52
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       C        0.49      0.27      0.50    86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.63
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
  SUBAREA AREA(ACRES) =    1.58      SUBAREA RUNOFF(CFS) =    3.69
  EFFECTIVE AREA(ACRES) =     16.18   AREA-AVERAGED Fm(INCH/HR) =  0.39
  AREA-AVERAGED Fp(INCH/HR) =  0.77  AREA-AVERAGED Ap =  0.50
  TOTAL AREA(ACRES) =     16.18       PEAK FLOW RATE(CFS) =      36.76

**************************************************************************
  FLOW PROCESS FROM NODE     42.30 TO NODE     56.00 IS CODE =  31
--------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   750.40  DOWNSTREAM(FEET) =   749.50
  FLOW LENGTH(FEET) =   210.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  25.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.78
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     36.76
  PIPE TRAVEL TIME(MIN.) =   0.52    Tc(MIN.) =  17.59
  LONGEST FLOWPATH FROM NODE     40.00 TO NODE     56.00 =  2043.00 FEET.

**************************************************************************
  FLOW PROCESS FROM NODE     56.00 TO NODE     56.00 IS CODE =  81
--------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========================================================================
  MAINLINE Tc(MIN) =  17.59
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.860
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       C        3.62      0.27      0.50    86
  PUBLIC PARK                C        1.30      0.27      0.85    86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.27
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.59
  SUBAREA AREA(ACRES) =    4.92      SUBAREA RUNOFF(CFS) =   11.95
  EFFECTIVE AREA(ACRES) =     21.10   AREA-AVERAGED Fm(INCH/HR) =  0.33
  AREA-AVERAGED Fp(INCH/HR) =  0.64  AREA-AVERAGED Ap =  0.52
  TOTAL AREA(ACRES) =     21.10       PEAK FLOW RATE(CFS) =      47.96

**************************************************************************
  FLOW PROCESS FROM NODE     56.00 TO NODE     59.00 IS CODE =  31
--------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   749.50  DOWNSTREAM(FEET) =   747.10
  FLOW LENGTH(FEET) =   620.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  39.0 INCH PIPE IS  30.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.87
  ESTIMATED PIPE DIAMETER(INCH) =  39.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     47.96
  PIPE TRAVEL TIME(MIN.) =   1.50    Tc(MIN.) =  19.10
  LONGEST FLOWPATH FROM NODE     40.00 TO NODE     59.00 =  2663.00 FEET.

**************************************************************************
  FLOW PROCESS FROM NODE     59.00 TO NODE     59.00 IS CODE =   1
--------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==========================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  19.10
  RAINFALL INTENSITY(INCH/HR) =   2.72
  AREA-AVERAGED Fm(INCH/HR) =  0.33
  AREA-AVERAGED Fp(INCH/HR) =  0.64
  AREA-AVERAGED Ap =  0.52
  EFFECTIVE STREAM AREA(ACRES) =    21.10
  TOTAL STREAM AREA(ACRES) =    21.10
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     47.96

**************************************************************************
  FLOW PROCESS FROM NODE     58.00 TO NODE     59.00 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   620.00
  ELEVATION DATA: UPSTREAM(FEET) =    761.50  DOWNSTREAM(FEET) =    759.60

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   17.162
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.903
  SUBAREA Tc AND LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       C        3.49      0.27      0.60    86   17.16
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.27
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
```

```
  SUBAREA RUNOFF(CFS) =      8.61
  TOTAL AREA(ACRES) =      3.49   PEAK FLOW RATE(CFS) =      8.61

****************************************************************************
  FLOW PROCESS FROM NODE     59.00 TO NODE     59.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  17.16
  RAINFALL INTENSITY(INCH/HR) =   2.90
  AREA-AVERAGED Fm(INCH/HR) =  0.16
  AREA-AVERAGED Fp(INCH/HR) =  0.27
  AREA-AVERAGED Ap =  0.60
  EFFECTIVE STREAM AREA(ACRES) =     3.49
  TOTAL STREAM AREA(ACRES) =     3.49
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      8.61

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     47.96  19.10    2.723  0.64( 0.33) 0.52    21.1      43.00
      1     47.95  19.10    2.723  0.64( 0.33) 0.52    21.1      40.00
      2      8.61  17.16    2.903  0.27( 0.16) 0.60     3.5      58.00

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     54.96  17.16    2.903  0.58( 0.31) 0.53    22.5      58.00
      2     56.00  19.10    2.723  0.58( 0.31) 0.53    24.6      43.00
      3     55.99  19.10    2.723  0.58( 0.31) 0.53    24.6      40.00

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     56.00    Tc(MIN.) =    19.10
  EFFECTIVE AREA(ACRES) =     24.59   AREA-AVERAGED Fm(INCH/HR) =  0.31
  AREA-AVERAGED Fp(INCH/HR) =  0.58  AREA-AVERAGED Ap =  0.53
  TOTAL AREA(ACRES) =     24.59
  LONGEST FLOWPATH FROM NODE     40.00 TO NODE     59.00 =  2663.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     59.00 TO NODE     67.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   747.70  DOWNSTREAM(FEET) =   747.00
  FLOW LENGTH(FEET) =    45.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  33.0 INCH PIPE IS  23.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  12.20
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     56.00
  PIPE TRAVEL TIME(MIN.) =   0.06    Tc(MIN.) =  19.16
  LONGEST FLOWPATH FROM NODE     40.00 TO NODE     67.00 =  2708.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     67.00 TO NODE     67.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE     60.00 TO NODE     62.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   300.00
  ELEVATION DATA: UPSTREAM(FEET) =    764.00  DOWNSTREAM(FEET) =    759.70

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.429
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.158
  SUBAREA Tc AND LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       C        2.25      0.27      0.60    86    9.43
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.27
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA RUNOFF(CFS) =      8.09
  TOTAL AREA(ACRES) =      2.25   PEAK FLOW RATE(CFS) =      8.09

****************************************************************************
  FLOW PROCESS FROM NODE     62.00 TO NODE     66.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   752.70  DOWNSTREAM(FEET) =   752.10
  FLOW LENGTH(FEET) =   165.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  15.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.36
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      8.09
  PIPE TRAVEL TIME(MIN.) =   0.63    Tc(MIN.) =  10.06
  LONGEST FLOWPATH FROM NODE     60.00 TO NODE     66.00 =   465.00 FEET.

****************************************************************************
```

```
  FLOW PROCESS FROM NODE     66.00 TO NODE     66.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  10.06
  RAINFALL INTENSITY(INCH/HR) =   4.00
  AREA-AVERAGED Fm(INCH/HR) =  0.16
  AREA-AVERAGED Fp(INCH/HR) =  0.27
  AREA-AVERAGED Ap =  0.60
  EFFECTIVE STREAM AREA(ACRES) =     2.25
  TOTAL STREAM AREA(ACRES) =     2.25
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      8.09

****************************************************************************
  FLOW PROCESS FROM NODE     63.00 TO NODE     65.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   270.00
  ELEVATION DATA: UPSTREAM(FEET) =    763.60  DOWNSTREAM(FEET) =    760.30

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    8.812
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.331
  SUBAREA Tc AND LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       C        1.38      0.27      0.50    86    8.81
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.27
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
  SUBAREA RUNOFF(CFS) =      5.21
  TOTAL AREA(ACRES) =      1.38   PEAK FLOW RATE(CFS) =      5.21

****************************************************************************
  FLOW PROCESS FROM NODE     65.00 TO NODE     66.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   753.30  DOWNSTREAM(FEET) =   752.10
  FLOW LENGTH(FEET) =   300.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  12.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.08
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      5.21
  PIPE TRAVEL TIME(MIN.) =   1.23    Tc(MIN.) =  10.04
  LONGEST FLOWPATH FROM NODE     63.00 TO NODE     66.00 =   570.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     66.00 TO NODE     66.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  10.04
  RAINFALL INTENSITY(INCH/HR) =   4.01
  AREA-AVERAGED Fm(INCH/HR) =  0.14
  AREA-AVERAGED Fp(INCH/HR) =  0.27
  AREA-AVERAGED Ap =  0.50
  EFFECTIVE STREAM AREA(ACRES) =     1.38
  TOTAL STREAM AREA(ACRES) =     1.38
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.21

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1      8.09  10.06    4.000  0.27( 0.16) 0.60     2.2      60.00
      2      5.21  10.04    4.005  0.27( 0.14) 0.50     1.4      63.00

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     13.29  10.04    4.005  0.27( 0.15) 0.56     3.6      63.00
      2     13.29  10.06    4.000  0.27( 0.15) 0.56     3.6      60.00

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     13.29    Tc(MIN.) =    10.04
  EFFECTIVE AREA(ACRES) =      3.63   AREA-AVERAGED Fm(INCH/HR) =  0.15
  AREA-AVERAGED Fp(INCH/HR) =  0.27  AREA-AVERAGED Ap =  0.56
  TOTAL AREA(ACRES) =      3.63
  LONGEST FLOWPATH FROM NODE     63.00 TO NODE     66.00 =   570.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     66.00 TO NODE     67.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   752.10  DOWNSTREAM(FEET) =   747.00
  FLOW LENGTH(FEET) =   140.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  11.89
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     13.29
```

```
  PIPE TRAVEL TIME(MIN.) =   0.20    Tc(MIN.) =  10.23
  LONGEST FLOWPATH FROM NODE     63.00 TO NODE     67.00 =   710.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     67.00 TO NODE     67.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity  Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)      (ACRES)    NODE
      1     13.29  10.23    3.959  0.27( 0.15) 0.56    3.6      63.00
      2     13.29  10.26    3.954  0.27( 0.15) 0.56    3.6      60.00
  LONGEST FLOWPATH FROM NODE     63.00 TO NODE     67.00 =   710.00 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity  Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)      (ACRES)    NODE
      1     54.96  17.22    2.897  0.58( 0.31) 0.53   22.5      58.00
      2     56.00  19.16    2.718  0.58( 0.31) 0.53   24.6      43.00
      3     55.99  19.16    2.717  0.58( 0.31) 0.53   24.6      40.00
  LONGEST FLOWPATH FROM NODE     40.00 TO NODE     67.00 =  2708.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity  Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)      (ACRES)    NODE
      1     59.35  10.23    3.959  0.51( 0.27) 0.54   17.0      63.00
      2     59.38  10.26    3.954  0.51( 0.27) 0.54   17.0      60.00
      3     64.56  17.22    2.897  0.53( 0.29) 0.54   26.1      58.00
      4     64.97  19.16    2.718  0.54( 0.29) 0.54   28.2      43.00
      5     64.96  19.16    2.717  0.54( 0.29) 0.54   28.2      40.00
    TOTAL AREA(ACRES) =     28.22

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       64.97  Tc(MIN.) =   19.157
  EFFECTIVE AREA(ACRES) =     28.22  AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.54  AREA-AVERAGED Ap =  0.54
  TOTAL AREA(ACRES) =     28.22
  LONGEST FLOWPATH FROM NODE     40.00 TO NODE     67.00 =  2708.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     67.00 TO NODE     69.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   747.00  DOWNSTREAM(FEET) =   746.50
  FLOW LENGTH(FEET) =  150.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  45.0 INCH PIPE IS  35.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.01
  ESTIMATED PIPE DIAMETER(INCH) =  45.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     64.97
  PIPE TRAVEL TIME(MIN.) =   0.36    Tc(MIN.) =  19.51
  LONGEST FLOWPATH FROM NODE     40.00 TO NODE     69.00 =  2858.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     69.00 TO NODE     69.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity  Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)      (ACRES)    NODE
      1     59.35  10.59    3.878  0.51( 0.27) 0.54   17.0      63.00
      2     59.38  10.62    3.873  0.51( 0.27) 0.54   17.0      60.00
      3     64.56  17.58    2.861  0.53( 0.29) 0.54   26.1      58.00
      4     64.97  19.51    2.688  0.54( 0.29) 0.54   28.2      43.00
      5     64.96  19.52    2.687  0.54( 0.29) 0.54   28.2      40.00
  LONGEST FLOWPATH FROM NODE     40.00 TO NODE     69.00 =  2858.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity  Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)      (ACRES)    NODE
      1     29.99  17.93    2.828  0.71( 0.28) 0.39   12.6       7.00
      2     29.96  18.02    2.819  0.71( 0.28) 0.39   12.6      10.30
      3     27.13  22.73    2.453  0.72( 0.28) 0.38   13.4       1.00
  LONGEST FLOWPATH FROM NODE      1.00 TO NODE     69.00 =  3184.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity  Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)      (ACRES)    NODE
      1     84.37  10.59    3.878  0.56( 0.28) 0.49   24.4      63.00
      2     84.42  10.62    3.873  0.56( 0.28) 0.49   24.4      60.00
      3     94.35  17.58    2.861  0.58( 0.28) 0.49   38.4      58.00
      4     94.63  17.93    2.828  0.58( 0.28) 0.49   39.0       7.00
      5     94.61  18.02    2.819  0.58( 0.28) 0.49   39.2      10.30
      6     94.03  19.51    2.688  0.58( 0.29) 0.49   41.1      43.00
      7     94.02  19.52    2.687  0.58( 0.29) 0.49   41.1      40.00
      8     85.74  22.73    2.453  0.59( 0.29) 0.49   41.6       1.00
    TOTAL AREA(ACRES) =     41.62

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       94.63  Tc(MIN.) =   17.932
  EFFECTIVE AREA(ACRES) =     39.04  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.58  AREA-AVERAGED Ap =  0.49
  TOTAL AREA(ACRES) =     41.62
  LONGEST FLOWPATH FROM NODE      1.00 TO NODE     69.00 =  3184.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     69.00 TO NODE     69.00 IS CODE =  10
----------------------------------------------------------------------------
```

```
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE     24.00 TO NODE     25.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   950.00
  ELEVATION DATA: UPSTREAM(FEET) =    771.70  DOWNSTREAM(FEET) =    765.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   16.269
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.998
  SUBAREA Tc AND LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       C        3.84      0.27      0.50    86   16.27
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.27
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
  SUBAREA RUNOFF(CFS) =      9.89
  TOTAL AREA(ACRES) =      3.84   PEAK FLOW RATE(CFS) =      9.89

****************************************************************************
  FLOW PROCESS FROM NODE     25.00 TO NODE     25.10 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   758.00  DOWNSTREAM(FEET) =   756.90
  FLOW LENGTH(FEET) =   245.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  16.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.90
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      9.89
  PIPE TRAVEL TIME(MIN.) =   0.83    Tc(MIN.) =  17.10
  LONGEST FLOWPATH FROM NODE     24.00 TO NODE     25.10 =  1195.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     25.10 TO NODE     25.10 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  17.10
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.909
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       C        3.18      0.27      0.50    86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.27
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
  SUBAREA AREA(ACRES) =    3.18      SUBAREA RUNOFF(CFS) =    7.94
  EFFECTIVE AREA(ACRES) =      7.02   AREA-AVERAGED Fm(INCH/HR) =  0.14
  AREA-AVERAGED Fp(INCH/HR) =  0.27  AREA-AVERAGED Ap =  0.50
  TOTAL AREA(ACRES) =      7.02       PEAK FLOW RATE(CFS) =      17.52

****************************************************************************
  FLOW PROCESS FROM NODE     25.10 TO NODE     25.10 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  17.10
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.909
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A        0.78      0.80      0.50    52
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       C        1.00      0.27      0.50    86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
  SUBAREA AREA(ACRES) =    1.78      SUBAREA RUNOFF(CFS) =    4.26
  EFFECTIVE AREA(ACRES) =      8.80   AREA-AVERAGED Fm(INCH/HR) =  0.16
  AREA-AVERAGED Fp(INCH/HR) =  0.32  AREA-AVERAGED Ap =  0.50
  TOTAL AREA(ACRES) =      8.80       PEAK FLOW RATE(CFS) =      21.78

****************************************************************************
  FLOW PROCESS FROM NODE     25.10 TO NODE     29.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   756.90  DOWNSTREAM(FEET) =   755.90
  FLOW LENGTH(FEET) =   295.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  23.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.39
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     21.78
  PIPE TRAVEL TIME(MIN.) =   0.91    Tc(MIN.) =  18.02
  LONGEST FLOWPATH FROM NODE     24.00 TO NODE     29.00 =  1490.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     29.00 TO NODE     29.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  18.02
```

```
  RAINFALL INTENSITY(INCH/HR) =   2.82
  AREA-AVERAGED Fm(INCH/HR) =  0.16
  AREA-AVERAGED Fp(INCH/HR) =  0.32
  AREA-AVERAGED Ap =  0.50
  EFFECTIVE STREAM AREA(ACRES) =     8.80
  TOTAL STREAM AREA(ACRES) =     8.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     21.78

****************************************************************************
  FLOW PROCESS FROM NODE     20.00 TO NODE     22.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   995.00
  ELEVATION DATA: UPSTREAM(FEET) =    773.30  DOWNSTREAM(FEET) =    766.10

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   16.488
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.974
  SUBAREA Tc AND LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp        Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A        1.67      0.80      0.50    52   16.49
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       C        0.78      0.27      0.50    86   16.49
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.63
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
  SUBAREA RUNOFF(CFS) =      5.86
  TOTAL AREA(ACRES) =      2.45   PEAK FLOW RATE(CFS) =      5.86

****************************************************************************
  FLOW PROCESS FROM NODE     22.00 TO NODE     29.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  766.10  DOWNSTREAM ELEVATION(FEET) =  762.90
  STREET LENGTH(FEET) =   630.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       8.71
    ***STREET FLOW SPLITS OVER STREET-CROWN***
    FULL DEPTH(FEET) =    0.52   FLOOD WIDTH(FEET) =   18.00
    FULL HALF-STREET VELOCITY(FEET/SEC.) =     2.29
    SPLIT DEPTH(FEET) =    0.29   SPLIT FLOOD WIDTH(FEET) =    6.41
    SPLIT FLOW(CFS) =    0.85   SPLIT VELOCITY(FEET/SEC.) =    1.41
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
         NOTE: STREET FLOW EXCEEDS TOP OF CURB.
         THE FOLLOWING STREET FLOW RESULTS ARE BASED ON THE ASSUMPTION
         THAT NEGLIBLE FLOW OCCURS OUTSIDE OF THE STREET CHANNEL.
         THAT IS, ALL FLOW ALONG THE PARKWAY, ETC., IS NEGLECTED.
    STREET FLOW DEPTH(FEET) =  0.52
    HALFSTREET FLOOD WIDTH(FEET) =   18.00
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.29
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.19
  STREET FLOW TRAVEL TIME(MIN.) =    4.58   Tc(MIN.) =  21.07
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.567
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp        Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       C        2.60      0.27      0.50    86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.27
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
  SUBAREA AREA(ACRES) =     2.60      SUBAREA RUNOFF(CFS) =     5.69
  EFFECTIVE AREA(ACRES) =      5.05    AREA-AVERAGED Fm(INCH/HR) =  0.22
  AREA-AVERAGED Fp(INCH/HR) =  0.45  AREA-AVERAGED Ap =  0.50
  TOTAL AREA(ACRES) =      5.05        PEAK FLOW RATE(CFS) =      10.65

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.52   HALFSTREET FLOOD WIDTH(FEET) =  18.00
  FLOW VELOCITY(FEET/SEC.) =  2.29   DEPTH*VELOCITY(FT*FT/SEC.) =   1.19
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  630.0 FT WITH ELEVATION-DROP =   3.2 FT, IS    7.1 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE     29.00
  LONGEST FLOWPATH FROM NODE     20.00 TO NODE     29.00 =  1625.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     29.00 TO NODE     29.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  21.07
  RAINFALL INTENSITY(INCH/HR) =   2.57
  AREA-AVERAGED Fm(INCH/HR) =  0.22
  AREA-AVERAGED Fp(INCH/HR) =  0.45
  AREA-AVERAGED Ap =  0.50
  EFFECTIVE STREAM AREA(ACRES) =     5.05
  TOTAL STREAM AREA(ACRES) =     5.05
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     10.65
```

```
 ** CONFLUENCE DATA **
  STREAM     Q     Tc   Intensity  Fp(Fm)     Ap   Ae     HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
     1     21.78  18.02    2.820  0.32( 0.16) 0.50     8.8      24.00
     2     10.65  21.07    2.567  0.45( 0.22) 0.50     5.0      20.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
  STREAM     Q     Tc   Intensity  Fp(Fm)     Ap   Ae     HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
     1     31.87  18.02    2.820  0.36( 0.18) 0.50    13.1      24.00
     2     30.36  21.07    2.567  0.36( 0.18) 0.50    13.9      20.00

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     31.87   Tc(MIN.) =    18.02
 EFFECTIVE AREA(ACRES) =    13.12   AREA-AVERAGED Fm(INCH/HR) =  0.18
 AREA-AVERAGED Fp(INCH/HR) =  0.36  AREA-AVERAGED Ap =  0.50
 TOTAL AREA(ACRES) =     13.85
 LONGEST FLOWPATH FROM NODE     20.00 TO NODE     29.00 =  1625.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE     29.00 TO NODE     39.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   755.90  DOWNSTREAM(FEET) =   751.00
 FLOW LENGTH(FEET) =   380.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  27.0 INCH PIPE IS  20.6 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   9.79
 ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     31.87
 PIPE TRAVEL TIME(MIN.) =   0.65    Tc(MIN.) =  18.66
 LONGEST FLOWPATH FROM NODE     20.00 TO NODE     39.00 =  2005.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE     39.00 TO NODE     39.00 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE     39.00 TO NODE     39.00 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE     39.00 TO NODE     39.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  18.66
 RAINFALL INTENSITY(INCH/HR) =   2.76
 AREA-AVERAGED Fm(INCH/HR) =  0.18
 AREA-AVERAGED Fp(INCH/HR) =  0.36
 AREA-AVERAGED Ap =  0.50
 EFFECTIVE STREAM AREA(ACRES) =    13.12
 TOTAL STREAM AREA(ACRES) =    13.85
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     31.87

****************************************************************************
 FLOW PROCESS FROM NODE     30.00 TO NODE     32.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =  1000.00
 ELEVATION DATA: UPSTREAM(FEET) =    771.70  DOWNSTREAM(FEET) =    763.40

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   16.074
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.019
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"       C        2.23      0.27      0.50    86   16.07
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.27
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
 SUBAREA RUNOFF(CFS) =      5.79
 TOTAL AREA(ACRES) =      2.23   PEAK FLOW RATE(CFS) =      5.79

****************************************************************************
 FLOW PROCESS FROM NODE     32.00 TO NODE     32.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  16.07
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.019
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"       A        1.08      0.80      0.50    52
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"       C        0.50      0.27      0.50    86
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.63
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
```

```
  SUBAREA AREA(ACRES) =    1.58      SUBAREA RUNOFF(CFS) =    3.85
  EFFECTIVE AREA(ACRES) =      3.81   AREA-AVERAGED Fm(INCH/HR) =  0.21
  AREA-AVERAGED Fp(INCH/HR) =  0.42  AREA-AVERAGED Ap =  0.50
  TOTAL AREA(ACRES) =      3.81       PEAK FLOW RATE(CFS) =      9.63

****************************************************************************
  FLOW PROCESS FROM NODE     32.00 TO NODE     32.10 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   756.40  DOWNSTREAM(FEET) =   754.00
  FLOW LENGTH(FEET) =   270.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  14.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.23
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      9.63
  PIPE TRAVEL TIME(MIN.) =   0.72    Tc(MIN.) =  16.80
  LONGEST FLOWPATH FROM NODE     30.00 TO NODE     32.10 =  1270.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     32.10 TO NODE     32.10 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  16.80
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.941
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A        2.36      0.80      0.50    52
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       C        0.89      0.27      0.50    86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.65
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
  SUBAREA AREA(ACRES) =    3.25      SUBAREA RUNOFF(CFS) =    7.65
  EFFECTIVE AREA(ACRES) =      7.06   AREA-AVERAGED Fm(INCH/HR) =  0.26
  AREA-AVERAGED Fp(INCH/HR) =  0.53  AREA-AVERAGED Ap =  0.50
  TOTAL AREA(ACRES) =      7.06       PEAK FLOW RATE(CFS) =     17.01

****************************************************************************
  FLOW PROCESS FROM NODE     32.10 TO NODE     34.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   754.00  DOWNSTREAM(FEET) =   752.60
  FLOW LENGTH(FEET) =   295.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  18.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.83
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     17.01
  PIPE TRAVEL TIME(MIN.) =   0.84    Tc(MIN.) =  17.64
  LONGEST FLOWPATH FROM NODE     30.00 TO NODE     34.00 =  1565.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     34.00 TO NODE     34.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  17.64
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.856
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A        1.59      0.80      0.50    52
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       C        3.88      0.27      0.50    86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.42
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
  SUBAREA AREA(ACRES) =    5.47      SUBAREA RUNOFF(CFS) =   13.01
  EFFECTIVE AREA(ACRES) =     12.53   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.48  AREA-AVERAGED Ap =  0.50
  TOTAL AREA(ACRES) =     12.53       PEAK FLOW RATE(CFS) =     29.48

****************************************************************************
  FLOW PROCESS FROM NODE     34.00 TO NODE     39.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   752.60  DOWNSTREAM(FEET) =   751.00
  FLOW LENGTH(FEET) =   440.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  33.0 INCH PIPE IS  25.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.95
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     29.48
  PIPE TRAVEL TIME(MIN.) =   1.23    Tc(MIN.) =  18.87
  LONGEST FLOWPATH FROM NODE     30.00 TO NODE     39.00 =  2005.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     39.00 TO NODE     39.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  18.87
  RAINFALL INTENSITY(INCH/HR) =   2.74
  AREA-AVERAGED Fm(INCH/HR) =  0.24
```

```
  AREA-AVERAGED Fp(INCH/HR) =  0.48
  AREA-AVERAGED Ap =  0.50
  EFFECTIVE STREAM AREA(ACRES) =    12.53
  TOTAL STREAM AREA(ACRES) =    12.53
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     29.48

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     31.87  18.66    2.761  0.36( 0.18) 0.50    13.1      24.00
      1     30.36  21.72    2.521  0.36( 0.18) 0.50    13.9      20.00
      2     29.48  18.87    2.742  0.48( 0.24) 0.50    12.5      30.00

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     61.24  18.66    2.761  0.42( 0.21) 0.50    25.5      24.00
      2     61.25  18.87    2.742  0.42( 0.21) 0.50    25.7      30.00
      3     57.23  21.72    2.521  0.42( 0.21) 0.50    26.4      20.00

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     61.25    Tc(MIN.) =    18.87
  EFFECTIVE AREA(ACRES) =     25.70   AREA-AVERAGED Fm(INCH/HR) =  0.21
  AREA-AVERAGED Fp(INCH/HR) =  0.42  AREA-AVERAGED Ap =  0.50
  TOTAL AREA(ACRES) =     26.38
  LONGEST FLOWPATH FROM NODE      20.00 TO NODE      39.00 =  2005.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      39.00 TO NODE      69.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   751.00  DOWNSTREAM(FEET) =   746.50
  FLOW LENGTH(FEET) =   170.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  23.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  15.07
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     61.25
  PIPE TRAVEL TIME(MIN.) =    0.19    Tc(MIN.) =  19.06
  LONGEST FLOWPATH FROM NODE      20.00 TO NODE      69.00 =  2175.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      69.00 TO NODE      69.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     61.24  18.85    2.744  0.42( 0.21) 0.50    25.5      24.00
      2     61.25  19.06    2.726  0.42( 0.21) 0.50    25.7      30.00
      3     57.23  21.91    2.507  0.42( 0.21) 0.50    26.4      20.00
  LONGEST FLOWPATH FROM NODE      20.00 TO NODE      69.00 =  2175.00 FEET.

  ** MEMORY BANK #  3 CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     84.37  10.59    3.878  0.56( 0.28) 0.49    24.4      63.00
      2     84.42  10.62    3.873  0.56( 0.28) 0.49    24.4      60.00
      3     94.35  17.58    2.861  0.58( 0.28) 0.49    38.4      58.00
      4     94.63  17.93    2.828  0.58( 0.28) 0.49    39.0       7.00
      5     94.61  18.02    2.819  0.58( 0.28) 0.49    39.2      10.30
      6     94.03  19.51    2.688  0.58( 0.29) 0.49    41.1      43.00
      7     94.02  19.52    2.687  0.58( 0.29) 0.49    41.1      40.00
      8     85.74  22.73    2.453  0.59( 0.29) 0.49    41.6       1.00
  LONGEST FLOWPATH FROM NODE       1.00 TO NODE      69.00 =  3184.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    134.18  10.59    3.878  0.51( 0.25) 0.50    38.7      63.00
      2    134.27  10.62    3.873  0.51( 0.25) 0.50    38.8      60.00
      3    154.11  17.58    2.861  0.52( 0.26) 0.49    62.2      58.00
      4    154.81  17.93    2.828  0.52( 0.26) 0.49    63.3       7.00
      5    154.89  18.02    2.819  0.52( 0.26) 0.49    63.6      10.30
      6    155.53  18.85    2.744  0.52( 0.26) 0.49    65.7      24.00
      7    155.46  19.06    2.726  0.52( 0.26) 0.49    66.2      30.00
      8    154.65  19.51    2.688  0.52( 0.26) 0.49    66.9      43.00
      9    154.63  19.52    2.687  0.52( 0.26) 0.49    66.9      40.00
     10    145.09  21.91    2.507  0.52( 0.26) 0.49    67.9      20.00
     11    141.61  22.73    2.453  0.52( 0.26) 0.49    68.0       1.00
    TOTAL AREA(ACRES) =     68.00

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      155.53  Tc(MIN.) =   18.850
  EFFECTIVE AREA(ACRES) =     65.74  AREA-AVERAGED Fm(INCH/HR) =  0.26
  AREA-AVERAGED Fp(INCH/HR) =  0.51  AREA-AVERAGED Ap =  0.50
  TOTAL AREA(ACRES) =     68.00
  LONGEST FLOWPATH FROM NODE       1.00 TO NODE      69.00 =  3184.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      69.00 TO NODE      70.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   746.50  DOWNSTREAM(FEET) =   744.50
  FLOW LENGTH(FEET) =   490.00   MANNING'S N =  0.013
```

```
  DEPTH OF FLOW IN  60.0 INCH PIPE IS  47.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.40
  ESTIMATED PIPE DIAMETER(INCH) =  60.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    155.53
  PIPE TRAVEL TIME(MIN.) =   0.87    Tc(MIN.) =  19.72
  LONGEST FLOWPATH FROM NODE      1.00 TO NODE     70.00 =  3674.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     70.00 TO NODE     70.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  19.72
  RAINFALL INTENSITY(INCH/HR) =   2.67
  AREA-AVERAGED Fm(INCH/HR) =  0.26
  AREA-AVERAGED Fp(INCH/HR) =  0.52
  AREA-AVERAGED Ap =  0.49
  EFFECTIVE STREAM AREA(ACRES) =    65.74
  TOTAL STREAM AREA(ACRES) =    68.00
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    155.53

****************************************************************************
  FLOW PROCESS FROM NODE     70.10 TO NODE     70.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   928.00
  ELEVATION DATA: UPSTREAM(FEET) =    766.30  DOWNSTREAM(FEET) =    755.80

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   11.459
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.699
  SUBAREA Tc AND LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       C        0.64      0.27      0.50    86   14.66
  COMMERCIAL                 C        2.98      0.27      0.10    86   11.46
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.27
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.17
  SUBAREA RUNOFF(CFS) =     11.90
  TOTAL AREA(ACRES) =      3.62   PEAK FLOW RATE(CFS) =     11.90

****************************************************************************
  FLOW PROCESS FROM NODE     70.00 TO NODE     70.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  11.46
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.699
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  PUBLIC PARK                C        1.07      0.27      0.85    86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.27
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.85
  SUBAREA AREA(ACRES) =    1.07      SUBAREA RUNOFF(CFS) =    3.34
  EFFECTIVE AREA(ACRES) =      4.69   AREA-AVERAGED Fm(INCH/HR) =  0.09
  AREA-AVERAGED Fp(INCH/HR) =  0.27  AREA-AVERAGED Ap =  0.33
  TOTAL AREA(ACRES) =      4.69       PEAK FLOW RATE(CFS) =      15.24

****************************************************************************
  FLOW PROCESS FROM NODE     70.00 TO NODE     70.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  11.46
  RAINFALL INTENSITY(INCH/HR) =   3.70
  AREA-AVERAGED Fm(INCH/HR) =  0.09
  AREA-AVERAGED Fp(INCH/HR) =  0.27
  AREA-AVERAGED Ap =  0.33
  EFFECTIVE STREAM AREA(ACRES) =     4.69
  TOTAL STREAM AREA(ACRES) =     4.69
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     15.24

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    134.18  11.49    3.693  0.51( 0.25) 0.50    38.7      63.00
      1    134.27  11.52    3.688  0.51( 0.25) 0.50    38.8      60.00
      1    154.11  18.45    2.780  0.52( 0.26) 0.49    62.2      58.00
      1    154.81  18.80    2.749  0.52( 0.26) 0.49    63.3       7.00
      1    154.89  18.89    2.741  0.52( 0.26) 0.49    63.6      10.30
      1    155.53  19.72    2.671  0.52( 0.26) 0.49    65.7      24.00
      1    155.46  19.93    2.654  0.52( 0.26) 0.49    66.2      30.00
      1    154.65  20.38    2.619  0.52( 0.26) 0.49    66.9      43.00
      1    154.63  20.39    2.618  0.52( 0.26) 0.49    66.9      40.00
      1    145.09  22.78    2.449  0.52( 0.26) 0.49    67.9      20.00
      1    141.61  23.61    2.398  0.52( 0.26) 0.49    68.0       1.00
      2     15.24  11.46    3.699  0.27( 0.09) 0.33     4.7      70.10

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
```

```
     1    149.28  11.46    3.699  0.49( 0.23) 0.48    43.3      70.10
     2    149.39  11.49    3.693  0.49( 0.23) 0.48    43.4      63.00
     3    149.47  11.52    3.688  0.49( 0.23) 0.48    43.5      60.00
     4    165.47  18.45    2.780  0.51( 0.24) 0.48    66.9      58.00
     5    166.03  18.80    2.749  0.51( 0.24) 0.48    68.0       7.00
     6    166.09  18.89    2.741  0.51( 0.24) 0.48    68.2      10.30
     7    166.43  19.72    2.671  0.51( 0.24) 0.48    70.4      24.00
     8    166.29  19.93    2.654  0.51( 0.25) 0.48    70.9      30.00
     9    165.32  20.38    2.619  0.51( 0.25) 0.48    71.6      43.00
    10    165.30  20.39    2.618  0.51( 0.25) 0.48    71.6      40.00
    11    155.05  22.78    2.449  0.51( 0.25) 0.48    72.6      20.00
    12    151.35  23.61    2.398  0.51( 0.25) 0.48    72.7       1.00

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    166.43    Tc(MIN.) =    19.72
  EFFECTIVE AREA(ACRES) =     70.43   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.51  AREA-AVERAGED Ap =  0.48
  TOTAL AREA(ACRES) =     72.69
  LONGEST FLOWPATH FROM NODE      1.00 TO NODE     70.00 =  3674.00 FEET.

+--------------------------------------------------------------------------+
| South-West Area                                                          |
|                                                                          |
|                                                                          |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE    100.00 TO NODE    102.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   960.00
  ELEVATION DATA: UPSTREAM(FEET) =    764.00  DOWNSTREAM(FEET) =    755.70

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   16.613
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.960
  SUBAREA Tc AND LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        2.32      0.80      0.60    52   16.61
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       C        5.06      0.27      0.60    86   16.61
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.44
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA RUNOFF(CFS) =     17.92
  TOTAL AREA(ACRES) =      7.38   PEAK FLOW RATE(CFS) =     17.92

****************************************************************************
  FLOW PROCESS FROM NODE    102.00 TO NODE    102.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  16.61
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.960
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        2.14      0.80      0.60    52
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.80
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    2.14      SUBAREA RUNOFF(CFS) =    4.78
  EFFECTIVE AREA(ACRES) =      9.52   AREA-AVERAGED Fm(INCH/HR) =  0.31
  AREA-AVERAGED Fp(INCH/HR) =  0.52  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =      9.52       PEAK FLOW RATE(CFS) =      22.70

****************************************************************************
  FLOW PROCESS FROM NODE    102.00 TO NODE    103.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   748.70  DOWNSTREAM(FEET) =   746.80
  FLOW LENGTH(FEET) =   480.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  22.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.80
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     22.70
  PIPE TRAVEL TIME(MIN.) =   1.38    Tc(MIN.) =  17.99
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    103.00 =  1440.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    103.00 TO NODE    103.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  17.99
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.822
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A        1.44      0.80      0.50    52
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       C        1.82      0.27      0.50    86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
  SUBAREA AREA(ACRES) =    3.26      SUBAREA RUNOFF(CFS) =    7.54
  EFFECTIVE AREA(ACRES) =     12.78   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.51  AREA-AVERAGED Ap =  0.57
```

```
  TOTAL AREA(ACRES) =     12.78       PEAK FLOW RATE(CFS) =      29.06

****************************************************************************
  FLOW PROCESS FROM NODE    103.00 TO NODE    109.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   746.80  DOWNSTREAM(FEET) =   745.90
  FLOW LENGTH(FEET) =   230.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  33.0 INCH PIPE IS  24.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.14
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     29.06
  PIPE TRAVEL TIME(MIN.) =   0.62    Tc(MIN.) =  18.62
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    109.00 =  1670.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    109.00 TO NODE    109.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  18.62
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.765
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A        1.81      0.80       0.50    52
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.80
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
  SUBAREA AREA(ACRES) =    1.81      SUBAREA RUNOFF(CFS) =    3.86
  EFFECTIVE AREA(ACRES) =     14.59   AREA-AVERAGED Fm(INCH/HR) =  0.31
  AREA-AVERAGED Fp(INCH/HR) =  0.55  AREA-AVERAGED Ap =  0.57
  TOTAL AREA(ACRES) =     14.59       PEAK FLOW RATE(CFS) =      32.26

****************************************************************************
  FLOW PROCESS FROM NODE    109.00 TO NODE    109.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  18.62
  RAINFALL INTENSITY(INCH/HR) =   2.76
  AREA-AVERAGED Fm(INCH/HR) =  0.31
  AREA-AVERAGED Fp(INCH/HR) =  0.55
  AREA-AVERAGED Ap =  0.57
  EFFECTIVE STREAM AREA(ACRES) =    14.59
  TOTAL STREAM AREA(ACRES) =    14.59
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     32.26

****************************************************************************
  FLOW PROCESS FROM NODE    104.00 TO NODE    105.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   710.00
  ELEVATION DATA: UPSTREAM(FEET) =    761.80  DOWNSTREAM(FEET) =    756.60

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   15.221
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.120
  SUBAREA Tc AND LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       C        2.45      0.27       0.60    86   15.22
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.27
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA RUNOFF(CFS) =       6.52
  TOTAL AREA(ACRES) =      2.45   PEAK FLOW RATE(CFS) =      6.52

****************************************************************************
  FLOW PROCESS FROM NODE    105.00 TO NODE    109.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  756.60  DOWNSTREAM ELEVATION(FEET) =  753.00
  STREET LENGTH(FEET) =   600.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      10.68
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.46
    HALFSTREET FLOOD WIDTH(FEET) =  14.84
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.23
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.02
  STREET FLOW TRAVEL TIME(MIN.) =   4.48   Tc(MIN.) =  19.70
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.672
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
```

```
  "3-4 DWELLINGS/ACRE"       A        2.55      0.80      0.60    52
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       C        1.44      0.27      0.60    86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.61
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    3.99      SUBAREA RUNOFF(CFS) =    8.29
  EFFECTIVE AREA(ACRES) =      6.44    AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.48  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =      6.44        PEAK FLOW RATE(CFS) =      13.82

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.49   HALFSTREET FLOOD WIDTH(FEET) =  16.53
  FLOW VELOCITY(FEET/SEC.) =  2.36   DEPTH*VELOCITY(FT*FT/SEC.) =   1.16
  LONGEST FLOWPATH FROM NODE    104.00 TO NODE    109.00 =  1310.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    109.00 TO NODE    109.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  19.70
  RAINFALL INTENSITY(INCH/HR) =   2.67
  AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.48
  AREA-AVERAGED Ap =  0.60
  EFFECTIVE STREAM AREA(ACRES) =     6.44
  TOTAL STREAM AREA(ACRES) =     6.44
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     13.82

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity  Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     32.26  18.62    2.765  0.55( 0.31) 0.57    14.6     100.00
      2     13.82  19.70    2.672  0.48( 0.29) 0.60     6.4     104.00

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity  Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     45.82  18.62    2.765  0.53( 0.30) 0.58    20.7     100.00
      2     44.86  19.70    2.672  0.52( 0.30) 0.58    21.0     104.00

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     45.82    Tc(MIN.) =    18.62
  EFFECTIVE AREA(ACRES) =     20.67   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.53  AREA-AVERAGED Ap =  0.58
  TOTAL AREA(ACRES) =     21.03
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    109.00 =  1670.00 FEET.

+--------------------------------------------------------------------------+
| South-East Area                                                          |
|                                                                          |
|                                                                          |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE    200.00 TO NODE    202.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   810.00
  ELEVATION DATA: UPSTREAM(FEET) =    764.00  DOWNSTREAM(FEET) =    757.70

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   14.968
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.151
  SUBAREA Tc AND LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp        Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A        4.60      0.80      0.50    52   14.97
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       C        4.60      0.27      0.50    86   14.97
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.53
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
  SUBAREA RUNOFF(CFS) =     23.88
  TOTAL AREA(ACRES) =      9.20   PEAK FLOW RATE(CFS) =     23.88

****************************************************************************
  FLOW PROCESS FROM NODE    202.00 TO NODE    203.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   750.70  DOWNSTREAM(FEET) =   748.70
  FLOW LENGTH(FEET) =   250.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  19.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.67
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     23.88
  PIPE TRAVEL TIME(MIN.) =   0.54    Tc(MIN.) =  15.51
  LONGEST FLOWPATH FROM NODE    200.00 TO NODE    203.00 =  1060.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    203.00 TO NODE    203.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
```

```
============================================================================
 MAINLINE Tc(MIN) =  15.51
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.085
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       A        1.38      0.80      0.60    52
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"       C        0.70      0.27      0.50    86
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.64
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.57
 SUBAREA AREA(ACRES) =    2.08      SUBAREA RUNOFF(CFS) =    5.10
 EFFECTIVE AREA(ACRES) =     11.28   AREA-AVERAGED Fm(INCH/HR) =  0.28
 AREA-AVERAGED Fp(INCH/HR) =  0.56  AREA-AVERAGED Ap =  0.51
 TOTAL AREA(ACRES) =     11.28       PEAK FLOW RATE(CFS) =      28.43

****************************************************************************
 FLOW PROCESS FROM NODE    203.00 TO NODE    207.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   748.70  DOWNSTREAM(FEET) =   747.80
 FLOW LENGTH(FEET) =   210.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  33.0 INCH PIPE IS  23.2 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   6.37
 ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     28.43
 PIPE TRAVEL TIME(MIN.) =   0.55    Tc(MIN.) =  16.06
 LONGEST FLOWPATH FROM NODE    200.00 TO NODE    207.00 =  1270.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    207.00 TO NODE    207.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  16.06
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.021
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"       A        2.64      0.80      0.50    52
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.80
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
 SUBAREA AREA(ACRES) =    2.64      SUBAREA RUNOFF(CFS) =    6.23
 EFFECTIVE AREA(ACRES) =     13.92   AREA-AVERAGED Fm(INCH/HR) =  0.31
 AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.51
 TOTAL AREA(ACRES) =     13.92       PEAK FLOW RATE(CFS) =      34.01

****************************************************************************
 FLOW PROCESS FROM NODE    207.00 TO NODE    207.10 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   747.80  DOWNSTREAM(FEET) =   745.90
 FLOW LENGTH(FEET) =   320.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  33.0 INCH PIPE IS  23.5 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   7.51
 ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     34.01
 PIPE TRAVEL TIME(MIN.) =   0.71    Tc(MIN.) =  16.77
 LONGEST FLOWPATH FROM NODE    200.00 TO NODE    207.10 =  1590.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    207.10 TO NODE    207.10 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  16.77
 RAINFALL INTENSITY(INCH/HR) =   2.94
 AREA-AVERAGED Fm(INCH/HR) =  0.31
 AREA-AVERAGED Fp(INCH/HR) =  0.60
 AREA-AVERAGED Ap =  0.51
 EFFECTIVE STREAM AREA(ACRES) =    13.92
 TOTAL STREAM AREA(ACRES) =    13.92
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     34.01

****************************************************************************
 FLOW PROCESS FROM NODE    204.00 TO NODE    204.10 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   900.00
 ELEVATION DATA: UPSTREAM(FEET) =    761.20  DOWNSTREAM(FEET) =    754.20

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   15.613
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.073
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"       A        2.70      0.80      0.50    52   15.61
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"       C        0.70      0.27      0.50    86   15.61
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.69
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
```

```
  SUBAREA RUNOFF(CFS) =      8.35
  TOTAL AREA(ACRES) =      3.40   PEAK FLOW RATE(CFS) =      8.35

****************************************************************************
  FLOW PROCESS FROM NODE    204.10 TO NODE    207.10 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  754.20  DOWNSTREAM ELEVATION(FEET) =  752.90
  STREET LENGTH(FEET) =  200.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       9.39
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.44
    HALFSTREET FLOOD WIDTH(FEET) =   13.84
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.23
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.97
  STREET FLOW TRAVEL TIME(MIN.) =   1.50   Tc(MIN.) =  17.11
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.909
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       C        0.83      0.27      0.50    86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.27
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
  SUBAREA AREA(ACRES) =    0.83      SUBAREA RUNOFF(CFS) =    2.07
  EFFECTIVE AREA(ACRES) =      4.23    AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.61  AREA-AVERAGED Ap =  0.50
  TOTAL AREA(ACRES) =      4.23        PEAK FLOW RATE(CFS) =       9.92

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.44   HALFSTREET FLOOD WIDTH(FEET) =  14.16
  FLOW VELOCITY(FEET/SEC.) =  2.26   DEPTH*VELOCITY(FT*FT/SEC.) =   1.00
  LONGEST FLOWPATH FROM NODE    204.00 TO NODE    207.10 =  1100.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    207.10 TO NODE    207.10 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  17.11
  RAINFALL INTENSITY(INCH/HR) =   2.91
  AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.61
  AREA-AVERAGED Ap =  0.50
  EFFECTIVE STREAM AREA(ACRES) =     4.23
  TOTAL STREAM AREA(ACRES) =     4.23
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      9.92

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     34.01  16.77    2.944  0.60( 0.31) 0.51    13.9     200.00
      2      9.92  17.11    2.909  0.61( 0.30) 0.50     4.2     204.00

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     43.86  16.77    2.944  0.60( 0.31) 0.51    18.1     200.00
      2     43.48  17.11    2.909  0.60( 0.31) 0.51    18.1     204.00

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     43.86    Tc(MIN.) =    16.77
  EFFECTIVE AREA(ACRES) =     18.07   AREA-AVERAGED Fm(INCH/HR) =  0.31
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.51
  TOTAL AREA(ACRES) =     18.15
  LONGEST FLOWPATH FROM NODE    200.00 TO NODE    207.10 =  1590.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    207.10 TO NODE    220.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  16.77
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.944
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        3.79      0.80      0.60    52
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.80
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    3.79      SUBAREA RUNOFF(CFS) =    8.41
  EFFECTIVE AREA(ACRES) =     21.86   AREA-AVERAGED Fm(INCH/HR) =  0.34
  AREA-AVERAGED Fp(INCH/HR) =  0.64  AREA-AVERAGED Ap =  0.52
  TOTAL AREA(ACRES) =     21.94       PEAK FLOW RATE(CFS) =      51.31
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    220.00 TO NODE    220.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  16.77
  RAINFALL INTENSITY(INCH/HR) =   2.94
  AREA-AVERAGED Fm(INCH/HR) =  0.34
  AREA-AVERAGED Fp(INCH/HR) =  0.64
  AREA-AVERAGED Ap =  0.52
  EFFECTIVE STREAM AREA(ACRES) =    21.86
  TOTAL STREAM AREA(ACRES) =    21.94
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     51.31

****************************************************************************
  FLOW PROCESS FROM NODE    217.00 TO NODE    218.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   995.00
  ELEVATION DATA: UPSTREAM(FEET) =    764.30  DOWNSTREAM(FEET) =    756.50

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   16.226
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.002
  SUBAREA Tc AND LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A        1.71      0.80      0.50    52   16.23
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       C        1.30      0.27      0.50    86   16.23
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.57
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
  SUBAREA RUNOFF(CFS) =      7.36
  TOTAL AREA(ACRES) =      3.01   PEAK FLOW RATE(CFS) =      7.36

****************************************************************************
  FLOW PROCESS FROM NODE    218.00 TO NODE    220.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  756.50  DOWNSTREAM ELEVATION(FEET) =  750.70
  STREET LENGTH(FEET) =   835.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      12.78
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.47
    HALFSTREET FLOOD WIDTH(FEET) =   15.53
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.46
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.15
  STREET FLOW TRAVEL TIME(MIN.) =   5.66   Tc(MIN.) =  21.89
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.509
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        5.90      0.80      0.60    52
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.80
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =     5.90      SUBAREA RUNOFF(CFS) =   10.79
  EFFECTIVE AREA(ACRES) =      8.91    AREA-AVERAGED Fm(INCH/HR) =  0.41
  AREA-AVERAGED Fp(INCH/HR) =  0.73  AREA-AVERAGED Ap =  0.57
  TOTAL AREA(ACRES) =      8.91        PEAK FLOW RATE(CFS) =      16.81

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.51   HALFSTREET FLOOD WIDTH(FEET) =  17.34
  FLOW VELOCITY(FEET/SEC.) =  2.63   DEPTH*VELOCITY(FT*FT/SEC.) =   1.33
  LONGEST FLOWPATH FROM NODE    217.00 TO NODE    220.00 =  1830.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    220.00 TO NODE    220.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  21.89
  RAINFALL INTENSITY(INCH/HR) =   2.51
  AREA-AVERAGED Fm(INCH/HR) =  0.41
  AREA-AVERAGED Fp(INCH/HR) =  0.73
  AREA-AVERAGED Ap =  0.57
  EFFECTIVE STREAM AREA(ACRES) =     8.91
  TOTAL STREAM AREA(ACRES) =     8.91
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     16.81

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     51.31  16.77    2.944  0.64( 0.34) 0.52    21.9     200.00
```

```
     1     50.81  17.11    2.909  0.64( 0.34) 0.52    21.9     204.00
     2     16.81  21.89    2.509  0.73( 0.41) 0.57     8.9     217.00

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
     1     66.86  16.77    2.944  0.66( 0.35) 0.53    28.7     200.00
     2     66.46  17.11    2.909  0.66( 0.35) 0.53    28.9     204.00
     3     59.73  21.89    2.509  0.67( 0.36) 0.54    30.8     217.00

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     66.86    Tc(MIN.) =    16.77
  EFFECTIVE AREA(ACRES) =    28.68   AREA-AVERAGED Fm(INCH/HR) =  0.35
  AREA-AVERAGED Fp(INCH/HR) =  0.66  AREA-AVERAGED Ap =  0.53
  TOTAL AREA(ACRES) =     30.85
  LONGEST FLOWPATH FROM NODE    217.00 TO NODE    220.00 =  1830.00 FEET.

+--------------------------------------------------------------------------+
| North-East Area                                                          |
|                                                                          |
|                                                                          |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE    308.00 TO NODE    309.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   830.00
  ELEVATION DATA: UPSTREAM(FEET) =    774.10  DOWNSTREAM(FEET) =    767.10

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   14.872
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.164
  SUBAREA Tc AND LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A        3.73      0.80      0.50    52   14.87
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.80
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
  SUBAREA RUNOFF(CFS) =      9.28
  TOTAL AREA(ACRES) =       3.73   PEAK FLOW RATE(CFS) =      9.28

****************************************************************************
  FLOW PROCESS FROM NODE    309.00 TO NODE    310.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  767.10  DOWNSTREAM ELEVATION(FEET) =  763.50
  STREET LENGTH(FEET) =   600.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      12.01
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.47
    HALFSTREET FLOOD WIDTH(FEET) =   15.59
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.29
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.08
  STREET FLOW TRAVEL TIME(MIN.) =   4.36   Tc(MIN.) =  19.24
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.711
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A        2.62      0.80      0.50    52
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.80
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
  SUBAREA AREA(ACRES) =     2.62      SUBAREA RUNOFF(CFS) =     5.45
  EFFECTIVE AREA(ACRES) =       6.35    AREA-AVERAGED Fm(INCH/HR) =  0.40
  AREA-AVERAGED Fp(INCH/HR) =  0.80  AREA-AVERAGED Ap =  0.50
  TOTAL AREA(ACRES) =       6.35        PEAK FLOW RATE(CFS) =      13.22

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.48   HALFSTREET FLOOD WIDTH(FEET) =  16.22
  FLOW VELOCITY(FEET/SEC.) =  2.34   DEPTH*VELOCITY(FT*FT/SEC.) =   1.13
  LONGEST FLOWPATH FROM NODE    308.00 TO NODE    310.00 =  1430.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    310.00 TO NODE    310.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  19.24
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.711
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A        3.75      0.80      0.50    52
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.80
```

```
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
  SUBAREA AREA(ACRES) =    3.75      SUBAREA RUNOFF(CFS) =    7.81
  EFFECTIVE AREA(ACRES) =     10.10   AREA-AVERAGED Fm(INCH/HR) =  0.40
  AREA-AVERAGED Fp(INCH/HR) =  0.80  AREA-AVERAGED Ap =  0.50
  TOTAL AREA(ACRES) =     10.10       PEAK FLOW RATE(CFS) =      21.03

****************************************************************************
  FLOW PROCESS FROM NODE    310.00 TO NODE    310.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  19.24
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.711
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A        0.93      0.80      0.50    52
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.80
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
  SUBAREA AREA(ACRES) =    0.93      SUBAREA RUNOFF(CFS) =    1.94
  EFFECTIVE AREA(ACRES) =     11.03   AREA-AVERAGED Fm(INCH/HR) =  0.40
  AREA-AVERAGED Fp(INCH/HR) =  0.80  AREA-AVERAGED Ap =  0.50
  TOTAL AREA(ACRES) =     11.03       PEAK FLOW RATE(CFS) =      22.96

****************************************************************************
  FLOW PROCESS FROM NODE    310.00 TO NODE    313.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   756.50  DOWNSTREAM(FEET) =   755.20
  FLOW LENGTH(FEET) =   330.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  22.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.80
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     22.96
  PIPE TRAVEL TIME(MIN.) =   0.95    Tc(MIN.) =  20.18
  LONGEST FLOWPATH FROM NODE    308.00 TO NODE    313.00 =  1760.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    313.00 TO NODE    313.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  20.18
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.634
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A        3.87      0.80      0.50    52
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.80
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
  SUBAREA AREA(ACRES) =    3.87      SUBAREA RUNOFF(CFS) =    7.79
  EFFECTIVE AREA(ACRES) =     14.90   AREA-AVERAGED Fm(INCH/HR) =  0.40
  AREA-AVERAGED Fp(INCH/HR) =  0.80  AREA-AVERAGED Ap =  0.50
  TOTAL AREA(ACRES) =     14.90       PEAK FLOW RATE(CFS) =      29.98

****************************************************************************
  FLOW PROCESS FROM NODE    313.00 TO NODE    317.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   755.20  DOWNSTREAM(FEET) =   754.40
  FLOW LENGTH(FEET) =   250.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  24.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.80
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     29.98
  PIPE TRAVEL TIME(MIN.) =   0.72    Tc(MIN.) =  20.90
  LONGEST FLOWPATH FROM NODE    308.00 TO NODE    317.00 =  2010.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    317.00 TO NODE    317.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  20.90
  RAINFALL INTENSITY(INCH/HR) =   2.58
  AREA-AVERAGED Fm(INCH/HR) =  0.40
  AREA-AVERAGED Fp(INCH/HR) =  0.80
  AREA-AVERAGED Ap =  0.50
  EFFECTIVE STREAM AREA(ACRES) =    14.90
  TOTAL STREAM AREA(ACRES) =    14.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     29.98

****************************************************************************
  FLOW PROCESS FROM NODE    315.00 TO NODE    316.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   665.00
  ELEVATION DATA: UPSTREAM(FEET) =    774.10  DOWNSTREAM(FEET) =    767.70

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   13.256
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.390
  SUBAREA Tc AND LOSS RATE DATA(AMC III):
```

```
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
RESIDENTIAL
"5-7 DWELLINGS/ACRE"       A        2.32      0.80      0.50    52   13.26
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.80
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
SUBAREA RUNOFF(CFS) =      6.25
TOTAL AREA(ACRES) =      2.32   PEAK FLOW RATE(CFS) =      6.25

****************************************************************************
  FLOW PROCESS FROM NODE    316.00 TO NODE    317.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  767.70  DOWNSTREAM ELEVATION(FEET) =  763.70
  STREET LENGTH(FEET) =   550.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      11.80
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.46
    HALFSTREET FLOOD WIDTH(FEET) =   14.91
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.45
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.12
  STREET FLOW TRAVEL TIME(MIN.) =    3.75   Tc(MIN.) =  17.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.920
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A        4.88      0.80      0.50    52
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.80
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
  SUBAREA AREA(ACRES) =    4.88      SUBAREA RUNOFF(CFS) =   11.07
  EFFECTIVE AREA(ACRES) =      7.20    AREA-AVERAGED Fm(INCH/HR) =  0.40
  AREA-AVERAGED Fp(INCH/HR) =  0.80  AREA-AVERAGED Ap =  0.50
  TOTAL AREA(ACRES) =      7.20        PEAK FLOW RATE(CFS) =      16.34

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.50   HALFSTREET FLOOD WIDTH(FEET) = 17.03
  FLOW VELOCITY(FEET/SEC.) =  2.64   DEPTH*VELOCITY(FT*FT/SEC.) =   1.32
  LONGEST FLOWPATH FROM NODE    315.00 TO NODE    317.00 =  1215.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    317.00 TO NODE    317.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  17.00
  RAINFALL INTENSITY(INCH/HR) =   2.92
  AREA-AVERAGED Fm(INCH/HR) =  0.40
  AREA-AVERAGED Fp(INCH/HR) =  0.80
  AREA-AVERAGED Ap =  0.50
  EFFECTIVE STREAM AREA(ACRES) =     7.20
  TOTAL STREAM AREA(ACRES) =     7.20
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     16.34

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     29.98  20.90    2.579  0.80( 0.40) 0.50    14.9     308.00
      2     16.34  17.00    2.920  0.80( 0.40) 0.50     7.2     315.00

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     44.53  17.00    2.920  0.80( 0.40) 0.50    19.3     315.00
      2     44.12  20.90    2.579  0.80( 0.40) 0.50    22.1     308.00

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     44.53    Tc(MIN.) =    17.00
  EFFECTIVE AREA(ACRES) =    19.32   AREA-AVERAGED Fm(INCH/HR) =  0.40
  AREA-AVERAGED Fp(INCH/HR) =  0.80  AREA-AVERAGED Ap =  0.50
  TOTAL AREA(ACRES) =     22.10
  LONGEST FLOWPATH FROM NODE    308.00 TO NODE    317.00 =  2010.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    317.00 TO NODE    325.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   763.70  DOWNSTREAM(FEET) =   752.60
  FLOW LENGTH(FEET) =   445.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  20.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  13.62
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     44.53
  PIPE TRAVEL TIME(MIN.) =   0.54    Tc(MIN.) =  17.55
```

```
  LONGEST FLOWPATH FROM NODE    308.00 TO NODE    325.00 =  2455.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    325.00 TO NODE    325.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  17.55
  RAINFALL INTENSITY(INCH/HR) =   2.86
  AREA-AVERAGED Fm(INCH/HR) =  0.40
  AREA-AVERAGED Fp(INCH/HR) =  0.80
  AREA-AVERAGED Ap =  0.50
  EFFECTIVE STREAM AREA(ACRES) =    19.32
  TOTAL STREAM AREA(ACRES) =    22.10
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     44.53

****************************************************************************
  FLOW PROCESS FROM NODE    320.00 TO NODE    321.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   650.00
  ELEVATION DATA: UPSTREAM(FEET) =    783.80  DOWNSTREAM(FEET) =    778.90

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.779
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.838
  SUBAREA Tc AND LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  COMMERCIAL                 A        1.14      0.80       0.10    52   10.78
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.80
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.10
  SUBAREA RUNOFF(CFS) =      3.86
  TOTAL AREA(ACRES) =      1.14   PEAK FLOW RATE(CFS) =      3.86

****************************************************************************
  FLOW PROCESS FROM NODE    321.00 TO NODE    323.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  778.90  DOWNSTREAM ELEVATION(FEET) =  778.70
  STREET LENGTH(FEET) =   395.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  27.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.36
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.53
    HALFSTREET FLOOD WIDTH(FEET) =   18.55
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    0.74
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.39
  STREET FLOW TRAVEL TIME(MIN.) =    8.92   Tc(MIN.) =  19.70
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.673
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 A        1.28      0.80       0.10    52
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.80
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.10
  SUBAREA AREA(ACRES) =    1.28      SUBAREA RUNOFF(CFS) =    2.99
  EFFECTIVE AREA(ACRES) =      2.42    AREA-AVERAGED Fm(INCH/HR) =  0.08
  AREA-AVERAGED Fp(INCH/HR) =  0.80  AREA-AVERAGED Ap =  0.10
  TOTAL AREA(ACRES) =      2.42        PEAK FLOW RATE(CFS) =       5.65

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.54   HALFSTREET FLOOD WIDTH(FEET) =  18.96
  FLOW VELOCITY(FEET/SEC.) =  0.75   DEPTH*VELOCITY(FT*FT/SEC.) =   0.40
  LONGEST FLOWPATH FROM NODE    320.00 TO NODE    323.00 =  1045.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    323.00 TO NODE    325.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   766.70  DOWNSTREAM(FEET) =   752.60
  FLOW LENGTH(FEET) =    50.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   3.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  19.89
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       5.65
  PIPE TRAVEL TIME(MIN.) =    0.04    Tc(MIN.) =  19.74
  LONGEST FLOWPATH FROM NODE    320.00 TO NODE    325.00 =  1095.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    325.00 TO NODE    325.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
```

```
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  19.74
  RAINFALL INTENSITY(INCH/HR) =   2.67
  AREA-AVERAGED Fm(INCH/HR) =  0.08
  AREA-AVERAGED Fp(INCH/HR) =  0.80
  AREA-AVERAGED Ap =  0.10
  EFFECTIVE STREAM AREA(ACRES) =     2.42
  TOTAL STREAM AREA(ACRES) =     2.42
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.65

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity  Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     44.53  17.55    2.865  0.80( 0.40) 0.50    19.3     315.00
      1     44.12  21.45    2.540  0.80( 0.40) 0.50    22.1     308.00
      2      5.65  19.74    2.669  0.80( 0.08) 0.10     2.4     320.00

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity  Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     49.93  17.55    2.865  0.80( 0.37) 0.46    21.5     315.00
      2     49.95  19.74    2.669  0.80( 0.36) 0.46    23.3     320.00
      3     49.48  21.45    2.540  0.80( 0.37) 0.46    24.5     308.00

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     49.95    Tc(MIN.) =    19.74
  EFFECTIVE AREA(ACRES) =     23.30   AREA-AVERAGED Fm(INCH/HR) =  0.36
  AREA-AVERAGED Fp(INCH/HR) =  0.80  AREA-AVERAGED Ap =  0.46
  TOTAL AREA(ACRES) =     24.52
  LONGEST FLOWPATH FROM NODE    308.00 TO NODE    325.00 =  2455.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    325.00 TO NODE    326.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   752.60  DOWNSTREAM(FEET) =   326.00
  FLOW LENGTH(FEET) =   640.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  49.39
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     49.95
  PIPE TRAVEL TIME(MIN.) =   0.22    Tc(MIN.) =  19.96
  LONGEST FLOWPATH FROM NODE    308.00 TO NODE    326.00 =  3095.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    326.00 TO NODE    326.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  19.96
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.652
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A       13.00      0.80      0.50    52
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.80
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
  SUBAREA AREA(ACRES) =   13.00      SUBAREA RUNOFF(CFS) =   26.37
  EFFECTIVE AREA(ACRES) =     36.30   AREA-AVERAGED Fm(INCH/HR) =  0.38
  AREA-AVERAGED Fp(INCH/HR) =  0.80  AREA-AVERAGED Ap =  0.47
  TOTAL AREA(ACRES) =     37.52       PEAK FLOW RATE(CFS) =      74.34

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity  Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     76.50  17.76    2.844  0.80( 0.38) 0.48    34.5     315.00
      2     74.34  19.96    2.652  0.80( 0.38) 0.47    36.3     320.00
      3     72.50  21.66    2.524  0.80( 0.38) 0.47    37.5     308.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =     76.50  Tc(MIN.) =  17.76
  AREA-AVERAGED Fm(INCH/HR) =  0.38  AREA-AVERAGED Fp(INCH/HR) =  0.80
  AREA-AVERAGED Ap =  0.48  EFFECTIVE AREA(ACRES) =     34.47

****************************************************************************
  FLOW PROCESS FROM NODE    326.00 TO NODE    326.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  17.76
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.844
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 A        2.00      0.80      0.10    52
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.80
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.10
  SUBAREA AREA(ACRES) =    2.00      SUBAREA RUNOFF(CFS) =    4.98
  EFFECTIVE AREA(ACRES) =     36.47   AREA-AVERAGED Fm(INCH/HR) =  0.36
  AREA-AVERAGED Fp(INCH/HR) =  0.80  AREA-AVERAGED Ap =  0.45
  TOTAL AREA(ACRES) =     39.52       PEAK FLOW RATE(CFS) =      81.47

****************************************************************************
  FLOW PROCESS FROM NODE    326.00 TO NODE    327.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
```

```
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   750.00  DOWNSTREAM(FEET) =   749.90
  FLOW LENGTH(FEET) =    50.00   MANNING'S N = 0.013
  DEPTH OF FLOW IN  54.0 INCH PIPE IS  42.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.13
  ESTIMATED PIPE DIAMETER(INCH) =  54.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     81.47
  PIPE TRAVEL TIME(MIN.) =   0.14    Tc(MIN.) =  17.90
  LONGEST FLOWPATH FROM NODE    308.00 TO NODE    327.00 =  3145.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    327.00 TO NODE    327.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  17.90
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.831
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 A       1.00      0.80      0.10    52
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.80
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.10
  SUBAREA AREA(ACRES) =    1.00      SUBAREA RUNOFF(CFS) =    2.48
  EFFECTIVE AREA(ACRES) =     37.47   AREA-AVERAGED Fm(INCH/HR) =  0.35
  AREA-AVERAGED Fp(INCH/HR) =  0.80  AREA-AVERAGED Ap =  0.45
  TOTAL AREA(ACRES) =     40.52       PEAK FLOW RATE(CFS) =      83.52

****************************************************************************
  FLOW PROCESS FROM NODE    327.00 TO NODE    328.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   749.90  DOWNSTREAM(FEET) =   746.40
  FLOW LENGTH(FEET) =   860.00   MANNING'S N = 0.013
  DEPTH OF FLOW IN  48.0 INCH PIPE IS  36.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.08
  ESTIMATED PIPE DIAMETER(INCH) =  48.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     83.52
  PIPE TRAVEL TIME(MIN.) =   1.77    Tc(MIN.) =  19.67
  LONGEST FLOWPATH FROM NODE    308.00 TO NODE    328.00 =  4005.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    328.00 TO NODE    328.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  19.67
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.675
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  SCHOOL                     A       9.70      0.80      0.60    52
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.80
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    9.70      SUBAREA RUNOFF(CFS) =   19.18
  EFFECTIVE AREA(ACRES) =     47.17   AREA-AVERAGED Fm(INCH/HR) =  0.38
  AREA-AVERAGED Fp(INCH/HR) =  0.80  AREA-AVERAGED Ap =  0.48
  TOTAL AREA(ACRES) =     50.22       PEAK FLOW RATE(CFS) =      97.44

****************************************************************************
  FLOW PROCESS FROM NODE    328.00 TO NODE    328.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  19.67
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.675
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 A       2.60      0.80      0.10    52
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.80
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.10
  SUBAREA AREA(ACRES) =    2.60      SUBAREA RUNOFF(CFS) =    6.07
  EFFECTIVE AREA(ACRES) =     49.77   AREA-AVERAGED Fm(INCH/HR) =  0.36
  AREA-AVERAGED Fp(INCH/HR) =  0.80  AREA-AVERAGED Ap =  0.46
  TOTAL AREA(ACRES) =     52.82       PEAK FLOW RATE(CFS) =     103.51

****************************************************************************
  FLOW PROCESS FROM NODE    328.00 TO NODE    329.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   746.40  DOWNSTREAM(FEET) =   746.30
  FLOW LENGTH(FEET) =    50.00   MANNING'S N = 0.013
  DEPTH OF FLOW IN  60.0 INCH PIPE IS  45.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.55
  ESTIMATED PIPE DIAMETER(INCH) =  60.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    103.51
  PIPE TRAVEL TIME(MIN.) =   0.13    Tc(MIN.) =  19.80
  LONGEST FLOWPATH FROM NODE    308.00 TO NODE    329.00 =  4055.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    329.00 TO NODE    329.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  19.80
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.665
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
```

```
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                A        0.95      0.80      0.10    52
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.80
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.10
 SUBAREA AREA(ACRES) =    0.95      SUBAREA RUNOFF(CFS) =    2.21
 EFFECTIVE AREA(ACRES) =     50.72   AREA-AVERAGED Fm(INCH/HR) =  0.36
 AREA-AVERAGED Fp(INCH/HR) =  0.80  AREA-AVERAGED Ap =  0.45
 TOTAL AREA(ACRES) =     53.77       PEAK FLOW RATE(CFS) =     105.26

****************************************************************************
 FLOW PROCESS FROM NODE    329.00 TO NODE    330.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   746.30  DOWNSTREAM(FEET) =   744.00
 FLOW LENGTH(FEET) =   500.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  51.0 INCH PIPE IS  39.4 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   8.95
 ESTIMATED PIPE DIAMETER(INCH) =  51.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =    105.26
 PIPE TRAVEL TIME(MIN.) =   0.93    Tc(MIN.) =  20.73
 LONGEST FLOWPATH FROM NODE    308.00 TO NODE    330.00 =  4555.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    330.00 TO NODE    330.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  20.73
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.592
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                A        1.65      0.80      0.10    52
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.80
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.10
 SUBAREA AREA(ACRES) =    1.65      SUBAREA RUNOFF(CFS) =    3.73
 EFFECTIVE AREA(ACRES) =     52.37   AREA-AVERAGED Fm(INCH/HR) =  0.35
 AREA-AVERAGED Fp(INCH/HR) =  0.80  AREA-AVERAGED Ap =  0.44
 TOTAL AREA(ACRES) =     55.42       PEAK FLOW RATE(CFS) =     105.68

****************************************************************************
 FLOW PROCESS FROM NODE    330.00 TO NODE    330.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  20.73
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.592
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"       A        5.54      0.80      0.50    52
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.80
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
 SUBAREA AREA(ACRES) =    5.54      SUBAREA RUNOFF(CFS) =   10.94
 EFFECTIVE AREA(ACRES) =     57.91   AREA-AVERAGED Fm(INCH/HR) =  0.35
 AREA-AVERAGED Fp(INCH/HR) =  0.80  AREA-AVERAGED Ap =  0.45
 TOTAL AREA(ACRES) =     60.96       PEAK FLOW RATE(CFS) =     116.62

+--------------------------------------------------------------------------+
| Chino Avenue                                                             |
|                                                                          |
|                                                                          |
+--------------------------------------------------------------------------+

****************************************************************************
 FLOW PROCESS FROM NODE    524.00 TO NODE    522.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   700.00
 ELEVATION DATA: UPSTREAM(FEET) =    754.20  DOWNSTREAM(FEET) =    751.40

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.604
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.494
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 COMMERCIAL                A        0.92      0.80      0.10    52   12.60
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.80
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.10
 SUBAREA RUNOFF(CFS) =      2.83
 TOTAL AREA(ACRES) =      0.92   PEAK FLOW RATE(CFS) =      2.83

****************************************************************************
 FLOW PROCESS FROM NODE    522.00 TO NODE    522.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  12.60
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.494
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 PUBLIC PARK               A        0.78      0.80      0.85    52
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.80
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.85
 SUBAREA AREA(ACRES) =    0.78      SUBAREA RUNOFF(CFS) =    1.98
 EFFECTIVE AREA(ACRES) =      1.70   AREA-AVERAGED Fm(INCH/HR) =  0.35
```

```
  AREA-AVERAGED Fp(INCH/HR) =  0.80  AREA-AVERAGED Ap =  0.44
  TOTAL AREA(ACRES) =      1.70       PEAK FLOW RATE(CFS) =      4.80

****************************************************************************
  FLOW PROCESS FROM NODE    522.00 TO NODE    523.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  820.00
  ELEVATION DATA: UPSTREAM(FEET) =    755.00  DOWNSTREAM(FEET) =    748.20

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   11.605
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.671
  SUBAREA Tc AND LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp        Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  COMMERCIAL                  A        0.80      0.80      0.10    52   11.61
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.80
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.10
  SUBAREA RUNOFF(CFS) =      2.59
  TOTAL AREA(ACRES) =      0.80   PEAK FLOW RATE(CFS) =      2.59

****************************************************************************
  FLOW PROCESS FROM NODE    523.00 TO NODE    524.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  748.20  DOWNSTREAM ELEVATION(FEET) =  747.70
  STREET LENGTH(FEET) =   565.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  27.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.46
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.53
    HALFSTREET FLOOD WIDTH(FEET) =   18.38
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    0.97
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.51
  STREET FLOW TRAVEL TIME(MIN.) =    9.71   Tc(MIN.) =  21.32
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.549
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp        Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                  A        0.78      0.80      0.10    52
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.80
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.10
  SUBAREA AREA(ACRES) =    0.78      SUBAREA RUNOFF(CFS) =    1.73
  EFFECTIVE AREA(ACRES) =      1.58   AREA-AVERAGED Fm(INCH/HR) =  0.08
  AREA-AVERAGED Fp(INCH/HR) =  0.80  AREA-AVERAGED Ap =  0.10
  TOTAL AREA(ACRES) =      1.58        PEAK FLOW RATE(CFS) =      3.51

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.53   HALFSTREET FLOOD WIDTH(FEET) =  18.49
  FLOW VELOCITY(FEET/SEC.) =  0.97   DEPTH*VELOCITY(FT*FT/SEC.) =  0.51
  LONGEST FLOWPATH FROM NODE    522.00 TO NODE    524.00 =  1385.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    524.00 TO NODE    524.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  21.32
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.549
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp        Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  PUBLIC PARK                 A        1.37      0.80      0.85    52
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.80
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.85
  SUBAREA AREA(ACRES) =    1.37      SUBAREA RUNOFF(CFS) =    2.31
  EFFECTIVE AREA(ACRES) =      2.95   AREA-AVERAGED Fm(INCH/HR) =  0.36
  AREA-AVERAGED Fp(INCH/HR) =  0.80  AREA-AVERAGED Ap =  0.45
  TOTAL AREA(ACRES) =      2.95       PEAK FLOW RATE(CFS) =      5.82

****************************************************************************
  FLOW PROCESS FROM NODE    520.00 TO NODE    518.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  683.00
  ELEVATION DATA: UPSTREAM(FEET) =    758.20  DOWNSTREAM(FEET) =    745.20

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.136
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.238
  SUBAREA Tc AND LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp        Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  COMMERCIAL                  A        0.84      0.80      0.10    52    9.14
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.80
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.10
  SUBAREA RUNOFF(CFS) =      3.14
  TOTAL AREA(ACRES) =      0.84   PEAK FLOW RATE(CFS) =      3.14
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    518.00 TO NODE    518.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =   9.14
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.238
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  PUBLIC PARK                A        0.56      0.80      0.85    52
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.80
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.85
  SUBAREA AREA(ACRES) =    0.56      SUBAREA RUNOFF(CFS) =    1.79
  EFFECTIVE AREA(ACRES) =      1.40   AREA-AVERAGED Fm(INCH/HR) =  0.32
  AREA-AVERAGED Fp(INCH/HR) =  0.80  AREA-AVERAGED Ap =  0.40
  TOTAL AREA(ACRES) =      1.40       PEAK FLOW RATE(CFS) =      4.94

****************************************************************************
  FLOW PROCESS FROM NODE    514.00 TO NODE    516.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   705.00
  ELEVATION DATA: UPSTREAM(FEET) =    760.00  DOWNSTREAM(FEET) =    745.80

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.148
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.235
  SUBAREA Tc AND LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  COMMERCIAL                 A        1.50      0.80      0.10    52    9.15
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.80
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.10
  SUBAREA RUNOFF(CFS) =      5.61
  TOTAL AREA(ACRES) =      1.50   PEAK FLOW RATE(CFS) =      5.61

****************************************************************************
  FLOW PROCESS FROM NODE    510.00 TO NODE    512.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   600.00
  ELEVATION DATA: UPSTREAM(FEET) =    753.00  DOWNSTREAM(FEET) =    752.40

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   15.636
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.070
  SUBAREA Tc AND LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  COMMERCIAL                 A        1.50      0.80      0.10    52   15.64
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.80
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.10
  SUBAREA RUNOFF(CFS) =      4.04
  TOTAL AREA(ACRES) =      1.50   PEAK FLOW RATE(CFS) =      4.04

+--------------------------------------------------------------------------+
| East riverside Drive                                                     |
|                                                                          |
|                                                                          |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE    500.00 TO NODE    502.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   758.00
  ELEVATION DATA: UPSTREAM(FEET) =    774.10  DOWNSTREAM(FEET) =    769.10

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   11.773
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.640
  SUBAREA Tc AND LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  COMMERCIAL                 A        0.91      0.80      0.10    52   11.77
  COMMERCIAL                 C        0.39      0.27      0.10    86   11.77
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.64
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.10
  SUBAREA RUNOFF(CFS) =      4.18
  TOTAL AREA(ACRES) =      1.30   PEAK FLOW RATE(CFS) =      4.18

****************************************************************************
  FLOW PROCESS FROM NODE    502.00 TO NODE    502.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  11.77
  RAINFALL INTENSITY(INCH/HR) =   3.64
  AREA-AVERAGED Fm(INCH/HR) =  0.06
  AREA-AVERAGED Fp(INCH/HR) =  0.64
  AREA-AVERAGED Ap =  0.10
  EFFECTIVE STREAM AREA(ACRES) =     1.30
  TOTAL STREAM AREA(ACRES) =     1.30
```

```
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.18

****************************************************************************
  FLOW PROCESS FROM NODE    501.00 TO NODE    502.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   452.00
  ELEVATION DATA: UPSTREAM(FEET) =    773.30  DOWNSTREAM(FEET) =    769.10

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    8.939
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.294
  SUBAREA Tc AND LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  COMMERCIAL                 A       0.55      0.80       0.10    52    8.94
  COMMERCIAL                 C       0.22      0.27       0.10    86    8.94
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.65
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.10
  SUBAREA RUNOFF(CFS) =      2.93
  TOTAL AREA(ACRES) =      0.77   PEAK FLOW RATE(CFS) =      2.93

****************************************************************************
  FLOW PROCESS FROM NODE    502.00 TO NODE    502.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   8.94
  RAINFALL INTENSITY(INCH/HR) =   4.29
  AREA-AVERAGED Fm(INCH/HR) =  0.06
  AREA-AVERAGED Fp(INCH/HR) =  0.65
  AREA-AVERAGED Ap =  0.10
  EFFECTIVE STREAM AREA(ACRES) =     0.77
  TOTAL STREAM AREA(ACRES) =     0.77
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.93

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1      4.18  11.77    3.640  0.64( 0.06) 0.10     1.3     500.00
      2      2.93   8.94    4.294  0.65( 0.06) 0.10     0.8     501.00

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1      6.69   8.94    4.294  0.64( 0.06) 0.10     1.8     501.00
      2      6.66  11.77    3.640  0.64( 0.06) 0.10     2.1     500.00

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      6.69    Tc(MIN.) =      8.94
  EFFECTIVE AREA(ACRES) =      1.76   AREA-AVERAGED Fm(INCH/HR) =  0.06
  AREA-AVERAGED Fp(INCH/HR) =  0.64  AREA-AVERAGED Ap =  0.10
  TOTAL AREA(ACRES) =      2.07
  LONGEST FLOWPATH FROM NODE    500.00 TO NODE    502.00 =   758.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    505.00 TO NODE    507.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   572.00
  ELEVATION DATA: UPSTREAM(FEET) =    773.30  DOWNSTREAM(FEET) =    761.90

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    8.432
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.447
  SUBAREA Tc AND LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  COMMERCIAL                 A       1.11      0.80       0.10    52    8.43
  PUBLIC PARK                A       0.34      0.80       0.85    52   13.40
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.80
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.28
  SUBAREA RUNOFF(CFS) =      5.52
  TOTAL AREA(ACRES) =      1.45   PEAK FLOW RATE(CFS) =      5.52
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =      1.45  TC(MIN.) =      8.43
  EFFECTIVE AREA(ACRES) =      1.45  AREA-AVERAGED Fm(INCH/HR)=  0.22
  AREA-AVERAGED Fp(INCH/HR) =  0.80  AREA-AVERAGED Ap =  0.28
  PEAK FLOW RATE(CFS)   =      5.52
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

D. Hydrologic Soils Group Map
Point Precipitation Frequency, NOAA Atlas 14, Vol. 6, Ver. 2

Hydrologic Soil Group

Hydrologic Soil Group— Summary by Map Unit — San Bernardino County Southwestern Part, California (CA677)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
Db	Delhi fine sand	A	152.1	74.3%
Hr	Hilmar loamy fine sand	C	52.5	25.7%
Totals for Area of Interest			**204.7**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

NOAA Atlas 14, Volume 6, Version 2
Location name: Ontario, California, US*
Latitude: 34.0130°, Longitude: -117.6050°
Elevation: 755 ft*
* source: Google Maps

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

PF tabular | PF graphical | Maps & aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches/hour)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	1.37 (1.14-1.66)	1.81 (1.51-2.20)	2.36 (1.97-2.87)	2.80 (2.30-3.43)	3.37 (2.69-4.28)	3.80 (2.96-4.93)	4.22 (3.22-5.63)	4.66 (3.43-6.38)	5.22 (3.68-7.48)	5.65 (3.85-8.38)
10-min	0.984 (0.822-1.19)	1.30 (1.08-1.57)	1.69 (1.41-2.06)	2.00 (1.66-2.46)	2.42 (1.93-3.07)	2.72 (2.12-3.53)	3.03 (2.30-4.03)	3.34 (2.46-4.57)	3.74 (2.64-5.35)	4.05 (2.75-6.01)
15-min	0.792 (0.660-0.956)	1.04 (0.872-1.26)	1.36 (1.14-1.66)	1.62 (1.33-1.98)	1.95 (1.55-2.48)	2.20 (1.71-2.85)	2.44 (1.86-3.25)	2.69 (1.98-3.69)	3.02 (2.13-4.32)	3.26 (2.22-4.84)
30-min	0.598 (0.500-0.724)	0.790 (0.660-0.958)	1.03 (0.858-1.25)	1.22 (1.01-1.50)	1.48 (1.17-1.87)	1.66 (1.30-2.16)	1.85 (1.40-2.46)	2.04 (1.50-2.79)	2.28 (1.61-3.27)	2.47 (1.68-3.66)
60-min	0.443 (0.370-0.536)	0.585 (0.488-0.709)	0.764 (0.635-0.928)	0.906 (0.746-1.11)	1.09 (0.869-1.39)	1.23 (0.958-1.60)	1.37 (1.04-1.82)	1.51 (1.11-2.06)	1.69 (1.19-2.42)	1.83 (1.24-2.71)
2-hr	0.329 (0.275-0.398)	0.433 (0.361-0.525)	0.563 (0.468-0.684)	0.664 (0.548-0.814)	0.796 (0.634-1.01)	0.892 (0.694-1.16)	0.986 (0.749-1.31)	1.08 (0.796-1.48)	1.20 (0.848-1.72)	1.29 (0.880-1.92)
3-hr	0.274 (0.228-0.331)	0.360 (0.300-0.436)	0.466 (0.388-0.566)	0.549 (0.453-0.673)	0.656 (0.522-0.833)	0.735 (0.572-0.953)	0.811 (0.616-1.08)	0.887 (0.654-1.22)	0.984 (0.695-1.41)	1.06 (0.720-1.57)
6-hr	0.193 (0.161-0.233)	0.253 (0.211-0.306)	0.327 (0.272-0.397)	0.385 (0.317-0.472)	0.459 (0.365-0.583)	0.513 (0.400-0.666)	0.566 (0.430-0.754)	0.618 (0.456-0.847)	0.685 (0.484-0.981)	0.735 (0.500-1.09)
12-hr	0.124 (0.104-0.150)	0.163 (0.136-0.197)	0.211 (0.176-0.257)	0.249 (0.205-0.305)	0.298 (0.237-0.378)	0.334 (0.260-0.433)	0.368 (0.280-0.490)	0.403 (0.297-0.552)	0.447 (0.316-0.640)	0.480 (0.327-0.713)
24-hr	0.082 (0.073-0.095)	0.108 (0.096-0.125)	0.142 (0.125-0.164)	0.168 (0.147-0.196)	0.202 (0.171-0.244)	0.228 (0.189-0.280)	0.252 (0.204-0.318)	0.277 (0.219-0.359)	0.310 (0.234-0.418)	0.334 (0.245-0.466)
2-day	0.049 (0.043-0.056)	0.066 (0.058-0.076)	0.088 (0.077-0.101)	0.105 (0.092-0.123)	0.128 (0.109-0.155)	0.146 (0.121-0.180)	0.164 (0.132-0.206)	0.181 (0.143-0.235)	0.205 (0.155-0.277)	0.224 (0.164-0.312)
3-day	0.035 (0.031-0.040)	0.048 (0.042-0.055)	0.064 (0.057-0.074)	0.078 (0.068-0.090)	0.096 (0.081-0.115)	0.110 (0.091-0.135)	0.124 (0.100-0.156)	0.138 (0.109-0.179)	0.157 (0.119-0.212)	0.172 (0.126-0.241)
4-day	0.028 (0.025-0.032)	0.039 (0.034-0.045)	0.053 (0.046-0.061)	0.064 (0.056-0.074)	0.079 (0.067-0.095)	0.091 (0.075-0.112)	0.103 (0.083-0.130)	0.115 (0.091-0.149)	0.132 (0.100-0.178)	0.145 (0.106-0.202)
7-day	0.019 (0.017-0.022)	0.026 (0.023-0.030)	0.036 (0.031-0.041)	0.043 (0.038-0.051)	0.054 (0.046-0.065)	0.062 (0.052-0.077)	0.071 (0.057-0.089)	0.079 (0.063-0.103)	0.091 (0.069-0.123)	0.100 (0.074-0.140)
10-day	0.014 (0.013-0.016)	0.020 (0.018-0.023)	0.027 (0.024-0.032)	0.033 (0.029-0.039)	0.042 (0.035-0.050)	0.048 (0.040-0.059)	0.055 (0.044-0.069)	0.062 (0.049-0.080)	0.071 (0.054-0.096)	0.078 (0.057-0.109)
20-day	0.009 (0.008-0.010)	0.012 (0.011-0.014)	0.017 (0.015-0.019)	0.021 (0.018-0.024)	0.026 (0.022-0.031)	0.030 (0.025-0.037)	0.035 (0.028-0.044)	0.039 (0.031-0.051)	0.046 (0.035-0.062)	0.051 (0.037-0.071)
30-day	0.007 (0.006-0.008)	0.009 (0.008-0.011)	0.013 (0.012-0.015)	0.016 (0.014-0.019)	0.021 (0.018-0.025)	0.024 (0.020-0.030)	0.028 (0.023-0.035)	0.032 (0.025-0.041)	0.037 (0.028-0.050)	0.042 (0.030-0.058)
45-day	0.005 (0.005-0.006)	0.008 (0.007-0.009)	0.010 (0.009-0.012)	0.013 (0.011-0.015)	0.017 (0.014-0.020)	0.020 (0.016-0.024)	0.023 (0.018-0.028)	0.026 (0.020-0.034)	0.031 (0.023-0.041)	0.034 (0.025-0.048)
60-day	0.005 (0.004-0.005)	0.007 (0.006-0.008)	0.009 (0.008-0.011)	0.011 (0.010-0.013)	0.014 (0.012-0.017)	0.017 (0.014-0.021)	0.020 (0.016-0.025)	0.023 (0.018-0.029)	0.027 (0.020-0.036)	0.030 (0.022-0.042)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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PF graphical

NOAA Atlas 14, Volume 6, Version 2
Location name: Ontario, California, US*
Latitude: 34.0130°, Longitude: -117.6050°
Elevation: 755 ft*
* source: Google Maps

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

PF tabular | PF graphical | Maps & aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.114 (0.095-0.138)	0.151 (0.126-0.183)	0.197 (0.164-0.239)	0.233 (0.192-0.286)	0.281 (0.224-0.357)	0.317 (0.247-0.411)	0.352 (0.268-0.469)	0.388 (0.286-0.532)	0.435 (0.307-0.623)	0.471 (0.321-0.698)
10-min	0.164 (0.137-0.198)	0.216 (0.180-0.262)	0.282 (0.235-0.343)	0.334 (0.276-0.410)	0.403 (0.321-0.512)	0.454 (0.354-0.589)	0.505 (0.383-0.672)	0.556 (0.410-0.762)	0.624 (0.440-0.892)	0.675 (0.459-1.00)
15-min	0.198 (0.165-0.239)	0.261 (0.218-0.316)	0.341 (0.284-0.415)	0.404 (0.333-0.496)	0.488 (0.388-0.619)	0.550 (0.428-0.713)	0.611 (0.464-0.813)	0.673 (0.496-0.922)	0.754 (0.532-1.08)	0.816 (0.556-1.21)
30-min	0.299 (0.250-0.362)	0.395 (0.330-0.479)	0.516 (0.429-0.627)	0.612 (0.504-0.750)	0.738 (0.587-0.936)	0.832 (0.648-1.08)	0.925 (0.702-1.23)	1.02 (0.750-1.40)	1.14 (0.806-1.63)	1.24 (0.841-1.83)
60-min	0.443 (0.370-0.536)	0.585 (0.488-0.709)	0.764 (0.635-0.928)	0.906 (0.746-1.11)	1.09 (0.869-1.39)	1.23 (0.958-1.60)	1.37 (1.04-1.82)	1.51 (1.11-2.06)	1.69 (1.19-2.42)	1.83 (1.24-2.71)
2-hr	0.658 (0.550-0.797)	0.866 (0.722-1.05)	1.13 (0.936-1.37)	1.33 (1.10-1.63)	1.59 (1.27-2.02)	1.78 (1.39-2.32)	1.97 (1.50-2.63)	2.16 (1.59-2.96)	2.40 (1.70-3.44)	2.59 (1.76-3.84)
3-hr	0.822 (0.686-0.995)	1.08 (0.900-1.31)	1.40 (1.16-1.70)	1.65 (1.36-2.02)	1.97 (1.57-2.50)	2.21 (1.72-2.86)	2.44 (1.85-3.24)	2.66 (1.96-3.65)	2.96 (2.09-4.23)	3.17 (2.16-4.71)
6-hr	1.15 (0.963-1.40)	1.51 (1.26-1.83)	1.96 (1.63-2.38)	2.30 (1.90-2.82)	2.75 (2.19-3.49)	3.07 (2.39-3.99)	3.39 (2.57-4.51)	3.70 (2.73-5.07)	4.10 (2.90-5.87)	4.40 (3.00-6.53)
12-hr	1.50 (1.25-1.81)	1.96 (1.64-2.38)	2.55 (2.12-3.10)	3.00 (2.47-3.68)	3.59 (2.86-4.56)	4.02 (3.13-5.21)	4.44 (3.37-5.91)	4.85 (3.58-6.65)	5.39 (3.81-7.71)	5.79 (3.94-8.59)
24-hr	1.97 (1.74-2.27)	2.60 (2.30-3.00)	3.40 (3.00-3.94)	4.03 (3.53-4.70)	4.85 (4.11-5.85)	5.46 (4.53-6.72)	6.06 (4.91-7.63)	6.66 (5.25-8.62)	7.44 (5.63-10.0)	8.02 (5.87-11.2)
2-day	2.35 (2.08-2.71)	3.16 (2.80-3.65)	4.21 (3.71-4.87)	5.05 (4.41-5.89)	6.16 (5.22-7.43)	7.01 (5.81-8.62)	7.85 (6.36-9.90)	8.71 (6.87-11.3)	9.86 (7.46-13.3)	10.7 (7.85-15.0)
3-day	2.51 (2.22-2.89)	3.43 (3.03-3.95)	4.62 (4.07-5.35)	5.58 (4.88-6.52)	6.89 (5.83-8.30)	7.89 (6.54-9.70)	8.90 (7.21-11.2)	9.93 (7.83-12.9)	11.3 (8.58-15.3)	12.4 (9.08-17.3)
4-day	2.70 (2.39-3.11)	3.71 (3.28-4.29)	5.04 (4.44-5.84)	6.12 (5.36-7.14)	7.59 (6.43-9.15)	8.72 (7.24-10.7)	9.87 (8.00-12.4)	11.1 (8.71-14.3)	12.7 (9.58-17.1)	13.9 (10.2-19.4)
7-day	3.15 (2.79-3.64)	4.37 (3.86-5.04)	5.97 (5.26-6.91)	7.28 (6.37-8.50)	9.07 (7.68-10.9)	10.5 (8.68-12.9)	11.9 (9.61-15.0)	13.3 (10.5-17.3)	15.3 (11.6-20.7)	16.9 (12.4-23.6)
10-day	3.43 (3.03-3.95)	4.77 (4.21-5.50)	6.54 (5.77-7.57)	8.00 (6.99-9.33)	10.0 (8.46-12.0)	11.5 (9.58-14.2)	13.1 (10.6-16.6)	14.8 (11.7-19.2)	17.0 (12.9-23.0)	18.8 (13.8-26.3)
20-day	4.12 (3.65-4.75)	5.80 (5.13-6.70)	8.05 (7.10-9.32)	9.93 (8.68-11.6)	12.5 (10.6-15.1)	14.6 (12.1-17.9)	16.7 (13.5-21.1)	18.9 (14.9-24.5)	22.0 (16.7-29.7)	24.5 (17.9-34.2)
30-day	4.81 (4.25-5.54)	6.79 (6.00-7.84)	9.48 (8.36-11.0)	11.7 (10.3-13.7)	14.9 (12.6-18.0)	17.4 (14.5-21.5)	20.1 (16.3-25.3)	22.9 (18.0-29.6)	26.8 (20.3-36.1)	29.9 (21.9-41.7)
45-day	5.76 (5.09-6.64)	8.11 (7.17-9.36)	11.3 (9.99-13.1)	14.1 (12.3-16.4)	18.0 (15.2-21.7)	21.1 (17.5-26.0)	24.4 (19.8-30.8)	28.0 (22.0-36.2)	33.0 (24.9-44.5)	37.0 (27.1-51.7)
60-day	6.71 (5.94-7.74)	9.37 (8.29-10.8)	13.1 (11.5-15.1)	16.2 (14.2-18.9)	20.8 (17.6-25.0)	24.5 (20.3-30.1)	28.4 (23.0-35.8)	32.6 (25.7-42.2)	38.7 (29.2-52.1)	43.6 (31.9-60.8)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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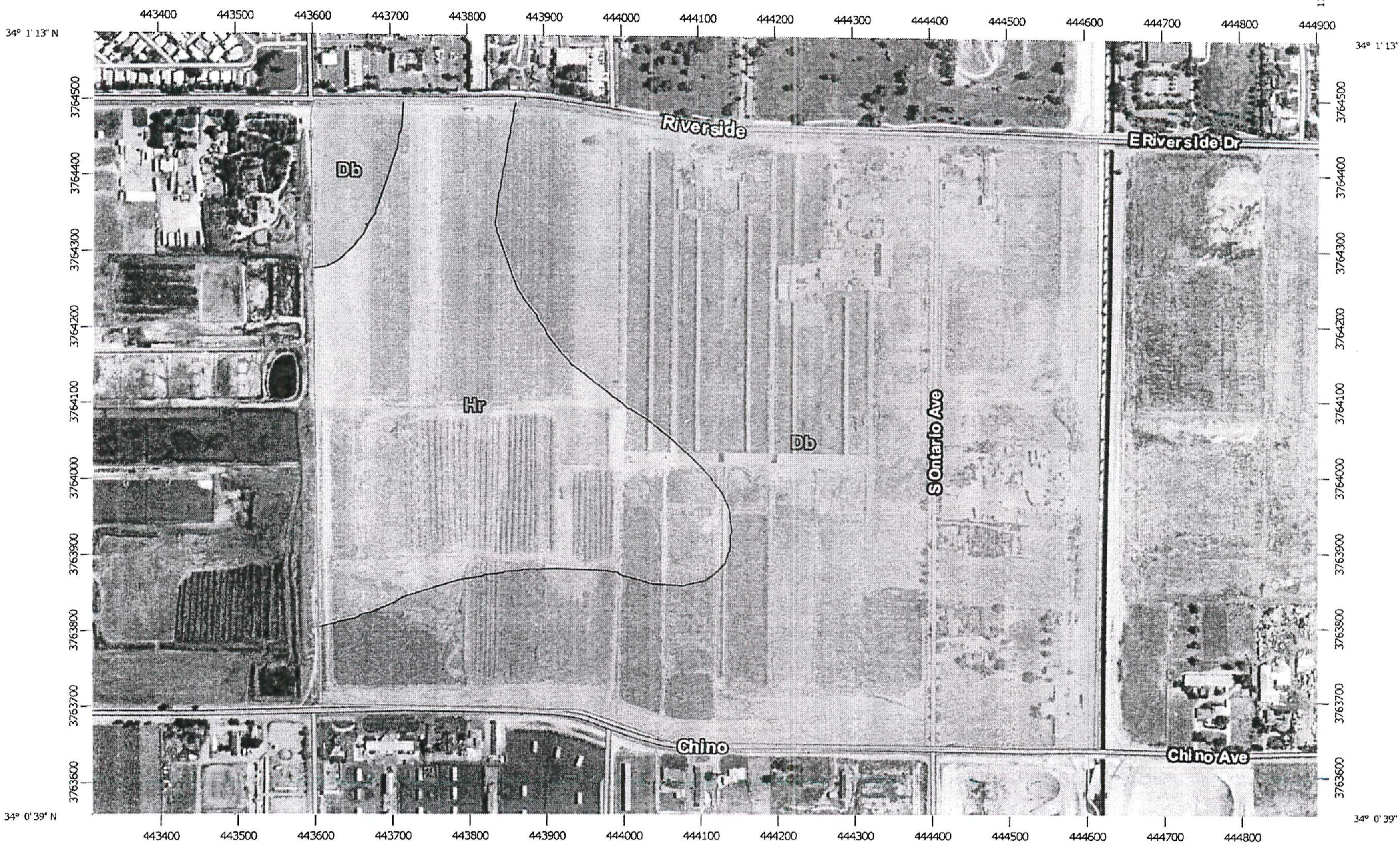
PF graphical

Hydrologic Soil Group—San Bernardino County Southwestern Part, California



Map Scale: 1:7,260 if printed on A landscape (11" x 8.5") sheet.

Meters: 0, 100, 200, 400, 600

Feet: 0, 350, 700, 1400, 2100

N

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features

Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

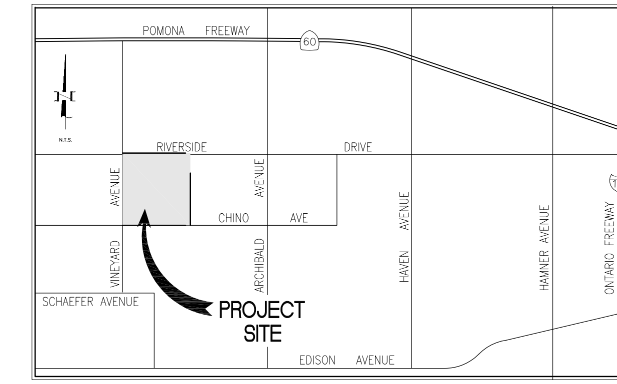
This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: San Bernardino County Southwestern Part, California
Survey Area Data: Version 6, Sep 26, 2014

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 3, 2010—Jul 3, 2010

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.



VICINITY MAP
N.T.S.

LAND USE

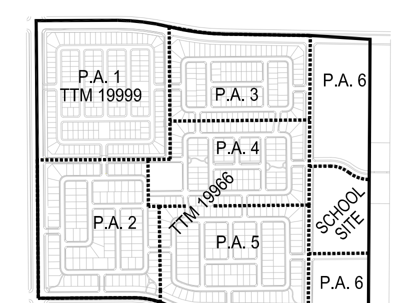
				LOT COUNT
P.A. 1		80x50	(4,000 SF)	192 LOTS
P.A. 2		65x105	(6,825 SF)	113 LOTS
P.A. 3		50x90	(4,500 SF)	125 LOTS
P.A. 4		55x95	(5,225 SF)	114 LOTS
P.A. 5		60x100	(6,000 SF)	128 LOTS
P.A. 6				
		SCHOOL SITE		
				672 LOTS TOTAL

TTM 19966 PARK TABLE

LOT "A"	0.36 AC PARKLET	
LOT "B"	0.36 AC PARKLET	
LOT "C"	0.37 AC PARKLET	
SUBTOTAL	1.09 AC	
LOT "A"	0.50 AC PARKLET	
LOT "B"	0.28 AC PARKLET	
SUBTOTAL	0.78 AC	
LOT "A"	0.48 AC PARKLET	
LOT "B"	0.48 AC PARKLET	
SUBTOTAL	0.96 AC	
LOT "A"	0.30 AC PARKLET	
LOT "B"	0.31 AC PARKLET	
SUBTOTAL	0.61 AC	
ARMSTRONG PARK	2.06 AC PARK	
	5.50 AC TOTAL	
	3.67 AC REQUIRED	

PARCEL OWNERS

P.A. 1 - NELSON PARCEL
P.A. 2 - CV COMMUNITIES
P.A. 3 - CV COMMUNITIES
P.A. 4 - CV COMMUNITIES
P.A. 5 - CV COMMUNITIES



PLANNING AREAS

PREPARED FOR:

CV Communities

PREPARED BY:

MDS CONSULTING
PLANNERS ENGINEERS SURVEYORS

DATE PREPARED: NOVEMBER 04, 2015

TENTATIVE TRACT NO. 19966
SITE PLAN
DE BOER PARCELS
ARMSTRONG RANCH SPECIFIC PLAN

NEW MODEL COLONY
CITY OF ONTARIO, COUNTY OF SAN BERNARDINO, STATE OF CALIFORNIA

DATE:	NO.	REVISIONS

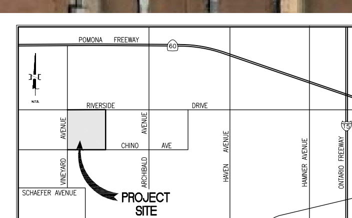
PREPARED FOR:

CV Communities

PREPARED BY:

MDS CONSULTING

PLANNERS ENGINEERS SURVEYORS



VICINITY MAP

NORTH

0 60 120 240 480

DATE:	NO.	REVISIONS

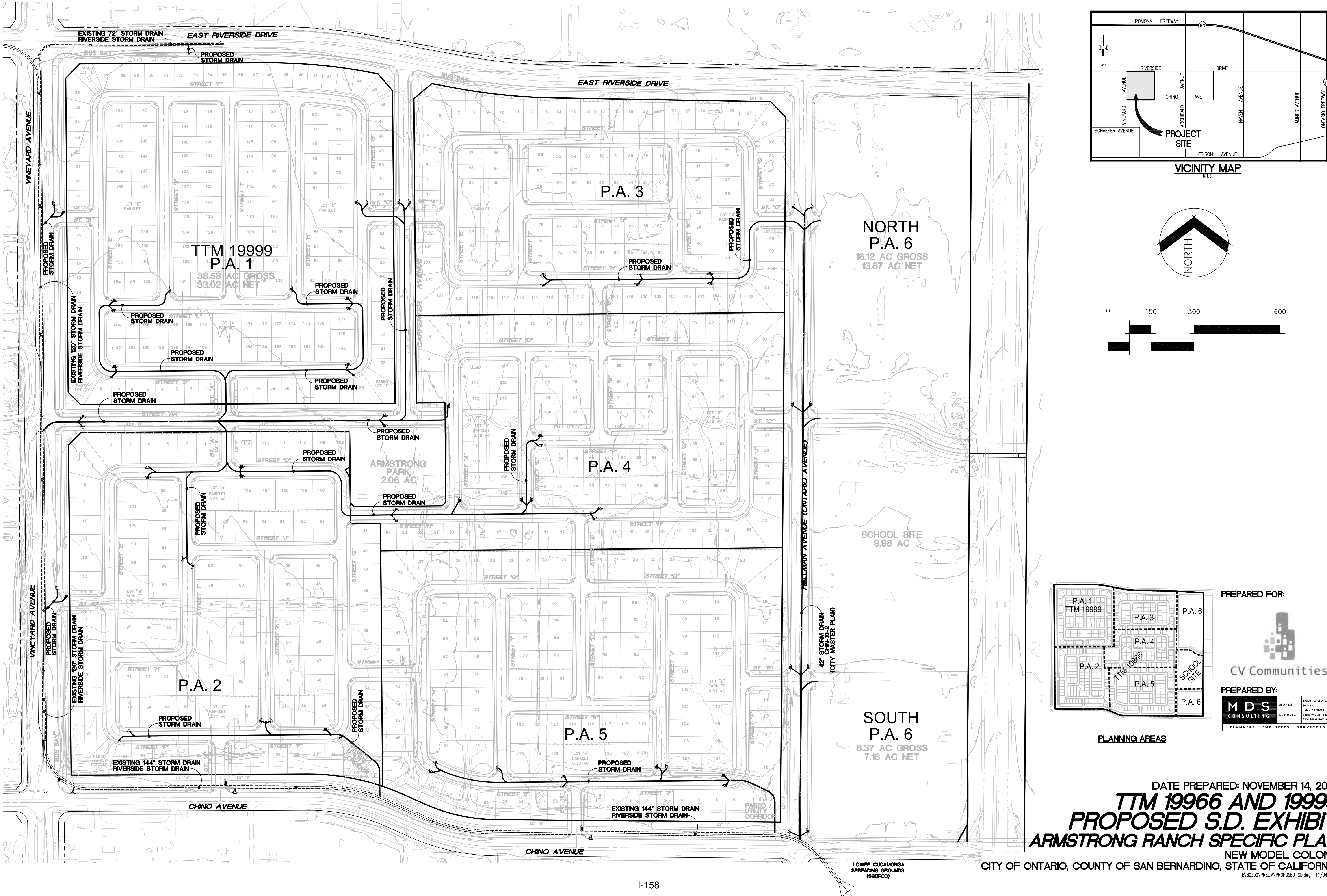
DATE PREPARED: NOVEMBER 04, 2015

TENTATIVE TRACT NO. 19966
ALT. PARK SITE - AERIAL EXHIBIT
DE BOER PARCELS
ARMSTRONG RANCH SPECIFIC PLAN

NEW MODEL COLONY

CITY OF ONTARIO, COUNTY OF SAN BERNARDINO, STATE OF CALIFORNIA


EXISTING 72" STORM DRAIN
RIVERSIDE STORM DRAIN
EAST RIVERSIDE DRIVE
VINEYARD AVENUE
TTM 19999
P.A. 1
38.58 AC GROSS
33.02 AC NET
EXISTING 120" STORM DRAIN
RIVERSIDE STORM DRAIN
P.A. 3
P.A. 4
P.A. 2
P.A. 5
CARPENTER AVENUE
ARMSTRONG PARK
2.06 AC
NORTH
P.A. 6
16.12 AC GROSS
13.87 AC NET
SCHOOL SITE
9.98 AC
SOUTH
P.A. 6
8.37 AC GROSS
7.16 AC NET
HELLMAN AVENUE (ONTARIO AVENUE)
EXISTING 144" STORM DRAIN
RIVERSIDE STORM DRAIN
CHINO AVENUE
LOWER CUCAMONGA SPREADING GROUNDS (SBCFCD)
VICINITY MAP
N.T.S.
POMONA FREEWAY
RIVERSIDE
DRIVE
CHINO
AVE
SCHAEFER AVENUE
EDISON AVENUE
VINEYARD AVENUE
ARCHIBALD AVENUE
HAVEN AVENUE
HAMNER AVENUE
ONTARIO FREEWAY
PROJECT SITE
NORTH
0
150
300
600
PLANNING AREAS
P.A. 1
TTM 19999
P.A. 3
P.A. 4
P.A. 2
P.A. 5
TTM 19966
SCHOOL SITE
P.A. 6
PREPARED FOR:
CV Communities
PREPARED BY:
MDS CONSULTING
PLANNERS ENGINEERS SURVEYORS
DATE PREPARED: NOVEMBER 14, 2015
TTM 19966 AND 19999
EXISTING S.D. EXHIBIT
ARMSTRONG RANCH SPECIFIC PLAN
NEW MODEL COLONY
CITY OF ONTARIO, COUNTY OF SAN BERNARDINO, STATE OF CALIFORNIA



PREPARED FOR:

CV Communities

PREPARED BY:

MDS CONSULTING — PLANNERS ENGINEERS SURVEYORS

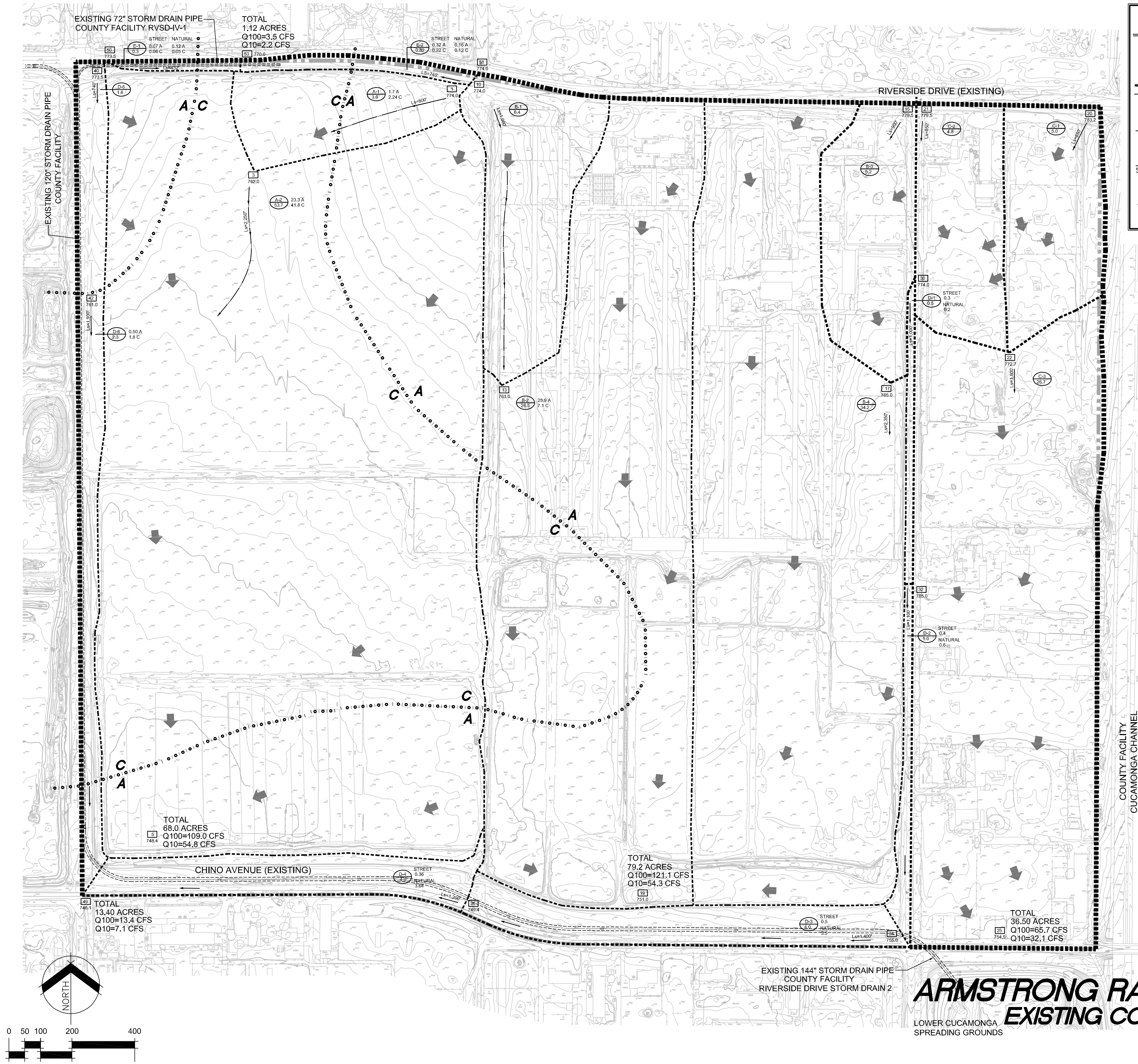
DATE PREPARED: NOVEMBER 14, 2015

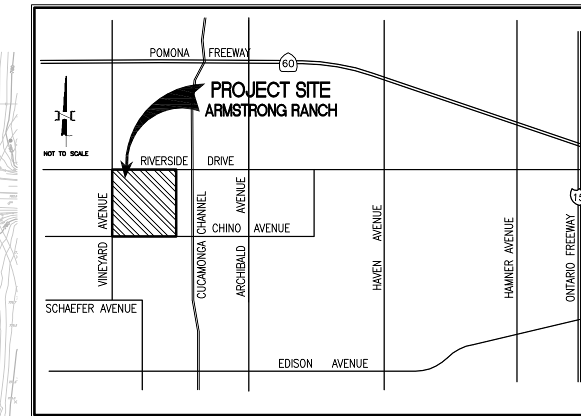
TTM 19966 AND 19999 PROPOSED S.D. EXHIBIT

ARMSTRONG RANCH SPECIFIC PLAN

NEW MODEL COLONY

CITY OF ONTARIO, COUNTY OF SAN BERNARDINO, STATE OF CALIFORNIA





VICINITY MAP

NOT TO SCALE

NOTES

1. SOIL TYPE "A" AND TYPE "C"
2. PROJECT SITE IS WITHIN HYDROLOGIC CONDITIONS OF CONCERN (HCOC) EXEMPT AREAS.

LEGEND

- TRACT BOUNDARY
- DRAINAGE AREA BOUNDARY
- SUB-AREA BOUNDARY
- SUB-AREA DESIGNATION AREA (acres) — A-1 / 0.49
- DIRECTION OF SURFACE FLOW FLOW LENGTH (feet) — L=XX'
- NODE NUMBER FINISH SURFACE ELEVATION INVERT ELEVATION — Q= Tc= XX XX.X XX.X
- SOIL TYPE BOUNDARY LINE — A C

TOTAL PRE-DEVELOPED PEAK FLOW

Q10 = 151 CFS
Q100 = 313 CFS

PREPARED FOR:

CV Communities

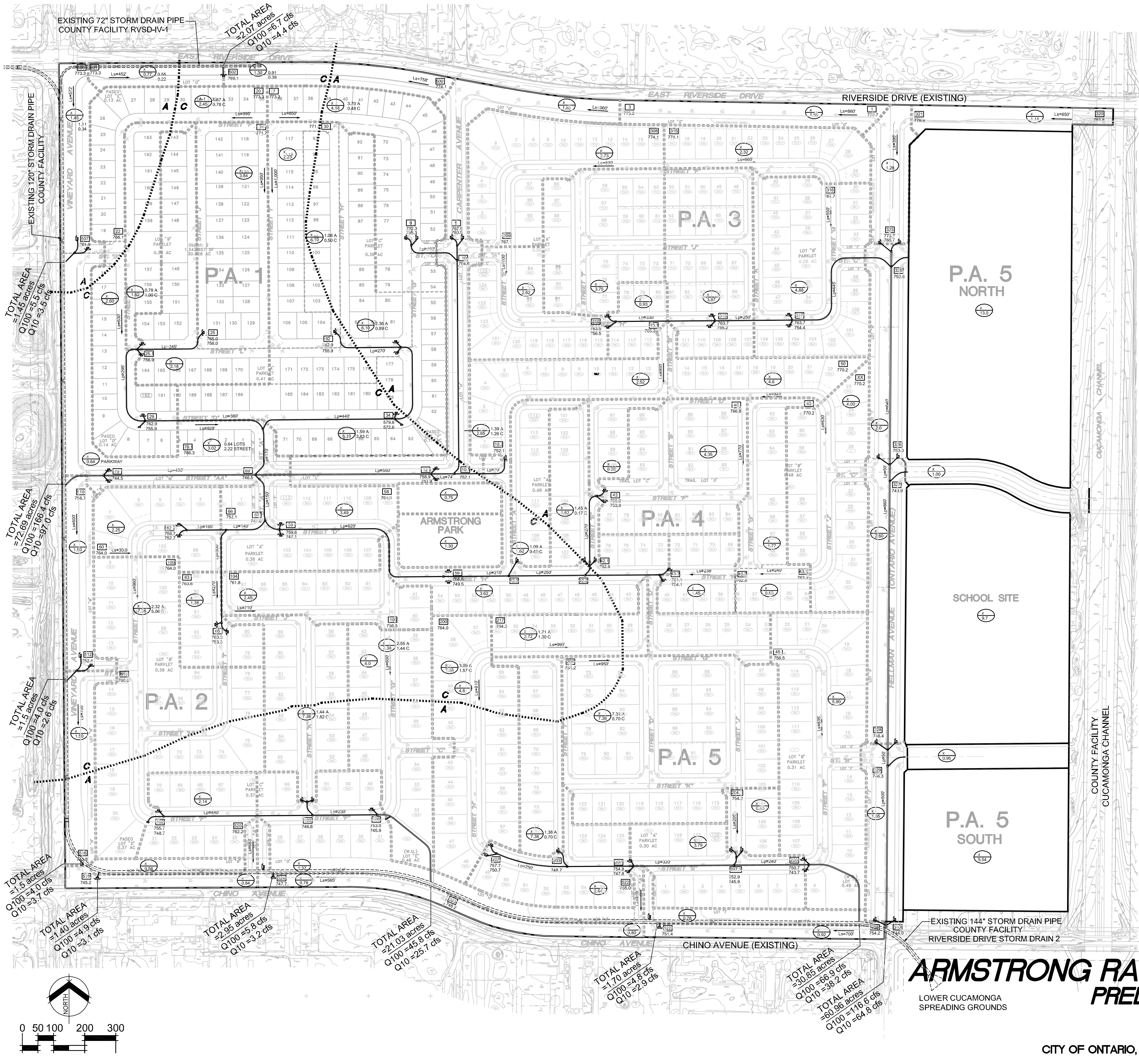
PREPARED BY:

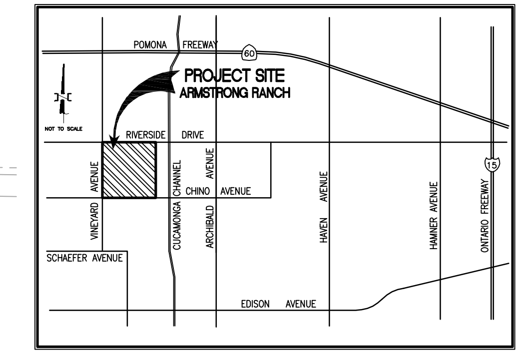
MDS CONSULTING — PLANNERS ENGINEERS SURVEYORS

DATE PREPARED: OCTOBER 8, 2015

ARMSTRONG RANCH SPECIFIC PLAN
EXISTING CONDITION HYDROLOGY MAP
DE BOER PARCELS

NEW MODEL COLONY
CITY OF ONTARIO, COUNTY OF SAN BERNARDINO, STATE OF CALIFORNIA





VICINITY MAP
NOT TO SCALE

NOTES

1. SOIL TYPE "A" AND TYPE "C"
2. PROJECT SITE IS WITHIN HYDROLOGIC CONDITIONS OF CONCERN (HCOC) EXEMPT AREAS.

LEGEND

TRACT BOUNDARY	
DRAINAGE AREA BOUNDARY	
SUB-AREA BOUNDARY	
SUB-AREA DESIGNATION AREA (acres)	A-1 / 0.49
DIRECTION OF SURFACE FLOW	
FLOW LENGTH (feet)	L=XX'
NODE NUMBER	Q= Tc= XX
FINISH SURFACE ELEVATION	XX.X
INVERT ELEVATION	XX.X
SOIL TYPE BOUNDARY LINE	A / C

TOTAL POST-DEVELOPED PEAK FLOW

Q10 = 249 CFS
Q100 = 431 CFS

PREPARED FOR:

CV Communities

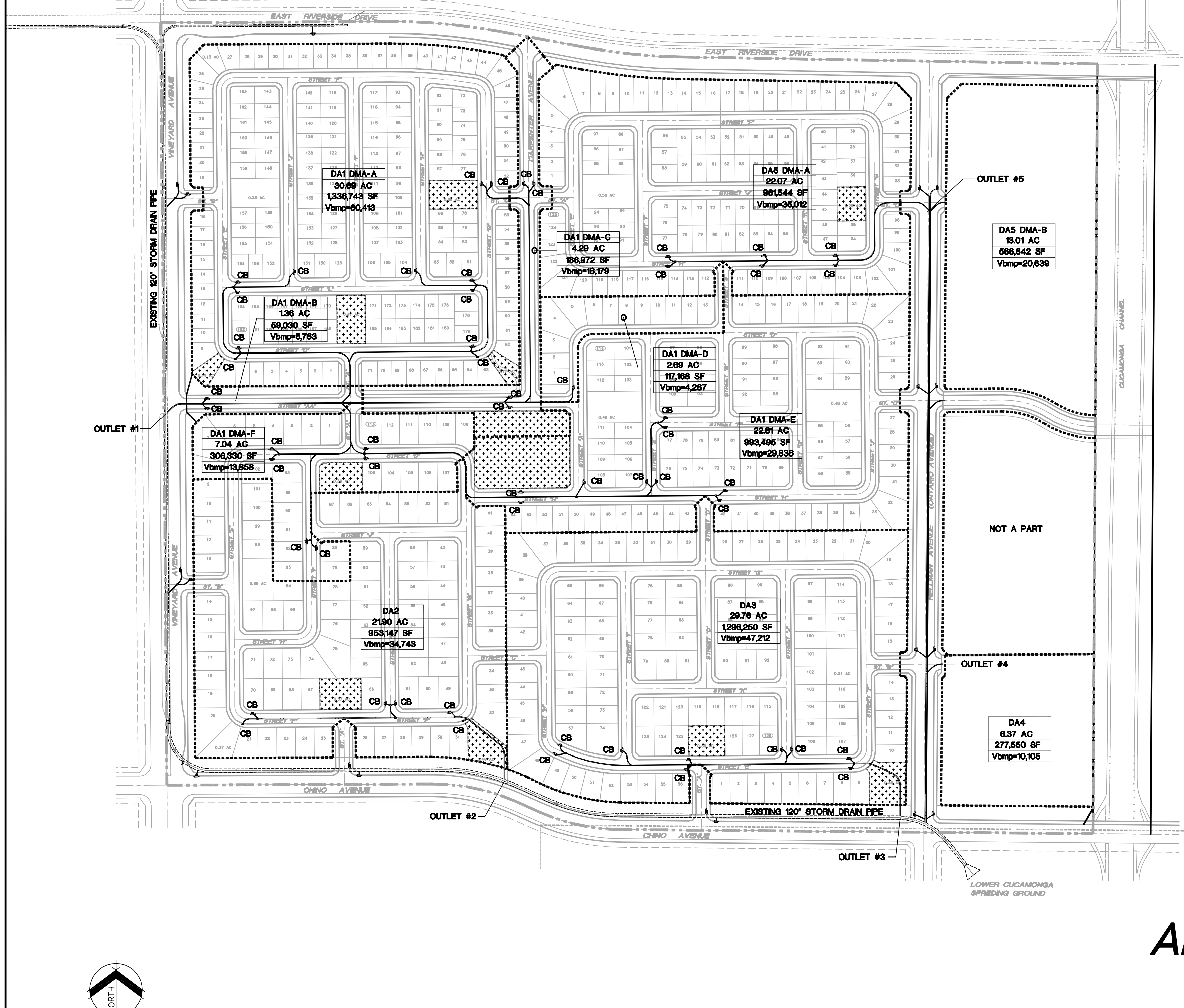
PREPARED BY:

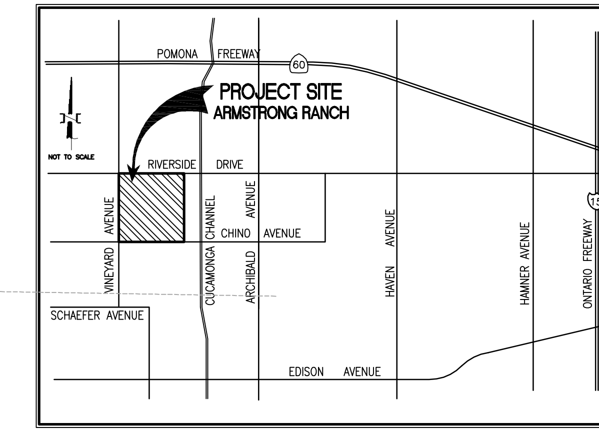
MDS CONSULTING
PLANNERS ENGINEERS SURVEYORS

DATE PREPARED: OCTOBER 8, 2015

ARMSTRONG RANCH SPECIFIC PLAN
PRELIMINARY HYDROLOGY MAP
DE BOER PARCELS

NEW MODEL COLONY
CITY OF ONTARIO, COUNTY OF SAN BERNARDINO, STATE OF CALIFORNIA





VICINITY MAP

NOT TO SCALE

LEGEND

— · — · —	PROJECT BOUNDARY
▪▪▪▪▪▪▪▪	DRAINAGE AREA BOUNDARY
DA1 / DMA-A	DRAINAGE AREA / DRAINAGE MANAGEMENT AREA
13.01 AC	AREA IN ACRES
566,642 SF	AREA IN SQUARE FEET
Vbmp= 13,000	VOLUME BMP IN CUBIC FEET
(dotted pattern)	LOCATION OF UNDERGROUND INFILTRATION BASIN

PREPARED FOR:

CV Communities

PREPARED BY:

MDS CONSULTING — MORSE SCHULTZ
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Voice: 949-251-8821
FAX: 949-251-0516
PLANNERS ENGINEERS SURVEYORS

DATE PREPARED: OCTOBER 2015

ARMSTRONG RANCH SPECIFIC PLAN

PRELIMINARY WQMP

DE BOER PARCELS

NEW MODEL COLONY

CITY OF ONTARIO, COUNTY OF SAN BERNARDINO, STATE OF CALIFORNIA

I:\80350\HYDRO\Pwqmp.dwg 10/12/15

Appendix J1 Construction Noise

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The Ontario Regional Sports Complex EIR

Construction Noise and Vibration

Technical Report

HMMH Project Number 23-0251A
March 2024

Prepared for:
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Contents

Figures

Tables

Attachments

1. Summary

This technical appendix includes the noise and vibration analyses for planned construction activities for The Ontario Regional Sports Complex project (ORSC or "proposed project"). The noise and vibration analyses were prepared in support of the Environmental Impact Report, pursuant to the requirements of the California Environmental Quality Act (CEQA). The technical appendix is divided into sections that address anticipated construction noise and vibration associated with development of the site, roadway improvements and modifications for site access, and construction-related vehicular trips (i.e., related to worker vehicles, delivery, and haul trucks). Details include planned construction activities, equipment types and quantities, and projected vehicular trips. Supportive calculations and files are included within **Attachment A** and **Attachment B**.

To predict construction noise levels, a detailed geometric model of the noise study area was initially developed using Geographic Information System (GIS) software and the proposed ORSC site plan. SoundPLAN GmbH was subsequently used for computing the equivalent sound level (L_{eq}) from planned construction activities at neighboring residences and other noise-sensitive uses[1] throughout the surrounding adjacent community. For construction-related vibration, a spreadsheet model was developed to estimate vibration levels at adjacent sensitive receptors and structures.

The loudest periods of on-site construction are predicted to occur at sensitive receptors in the beginning of the project, from September 2024 through January 2025 as well as May 2025. These loud periods are due to manure hauling, rough and fine grading, and utilities trenching on the project site and along the roadways surrounding the project site. Construction noise levels are not predicted to exceed the allowable daytime noise threshold of 80 dBA $L_{eq,8h}$. However, should construction activity be required during the overnight hours, predicted construction noise levels would exceed the allowable 5 dBA increase in ambient conditions. Construction-related truck trips are not anticipated to cause significant noise impact during the construction of the project. No construction-related vibration impacts are predicted.

1 Noise-sensitive uses are places that might contain noise-sensitive equipment; individuals who are particularly susceptible to noise stimuli, such as children or the elderly; or accommodations for people to sleep. Such uses include residences, hospitals, hotels, and schools.

2. Environmental Setting

2.1 Noise

2.1.1 Noise Descriptors

Noise levels are presented on a logarithmic scale to account for the large pressure response range of the human ear. This logarithmic scale is expressed in units of decibels (dB). A decibel is defined as the ratio between a measured value and a reference value usually corresponding to the lower threshold of human hearing. The lower threshold of human hearing is defined as 20 micropascals. Typically, a noise analysis examines 11 octave (or 33 1/3 octave) bands ranging from 16 hertz (low) to 16,000 hertz (high). This octave band encompasses the human audible frequency range. The human ear does not perceive every frequency with equal loudness; therefore, spectrally varying sounds are often adjusted with a weighting filter. The A weighted filter is applied to compensate for the frequency response of the human auditory system, known as a dBA. The A-weighted sound level is commonly used when measuring environmental noise and is widely accepted by acousticians as a proper unit for describing environmental noise.

An inherent property of the logarithmic dB scale is that the sound pressure levels of two separate sources are not directly additive. For example, if a sound of 50 dBA is added to another sound of 50 dBA in the proximity, the result is a 3 dB increase, which is a total of 53 dBA and not an arithmetic doubling to 100 dBA. The human ear perceives changes in sound pressure level relative to changes in "loudness." Scientific research demonstrates the following general relationships between sound level and human perception for two sound levels with the same or very similar frequency characteristics:

- One dBA is the practical limit of accuracy for sound measurement systems and corresponds to an approximate 10 percent variation in the sound pressure level. A 1-dBA increase or decrease is a non-perceptible change in sound.
- A 3-dBA increase or decrease is a doubling (or halving) of acoustic pressure level, and it corresponds to the threshold of change in loudness perceptible in a laboratory environment. In practice, the average person is not able to distinguish a 3-dBA difference in environmental sound outdoors.
- A 5-dBA increase or decrease is described as a perceptible change in sound level and is a discernible change in an outdoor environment.
- A 10-dBA increase or decrease is a tenfold increase or decrease in acoustic pressure level but is perceived as a doubling or halving in loudness (e.g., the average person would judge a 10-dBA change in sound level to be twice or half as loud).

Figure 1 depicts the estimations of common noise sources and outdoor acoustic environments and provides a comparison of relative loudness for each of these sources. Noise levels can be measured, modeled, and presented in various formats. The noise metrics that were employed in this analysis have the following definitions:

- L_{eq}: Most environmental noise fluctuates from moment to moment, and it is common practice to characterize the fluctuating level by a single number, L_{eq}. Conventionally expressed in dBA, the L_{eq} is the energy-averaged, A-weighted sound level. It is defined as the steady, continuous sound level over a specified time, which has the same acoustic energy as the actual varying sound levels over the specified period. The daytime L_{eq} is the energy-averaged sound level for the daytime period (7 AM to 10 PM), and the nighttime L_{eq} is the energy averaged sound level for the nighttime period (10 PM to 7 AM).

- L_{dn}: The L_{dn} is the average, hourly A-weighted L_{eq} for a 24-hour period, with a 10-dB penalty added to sound levels occurring during the nighttime hours (10 PM to 7 AM) to account for individuals' increased sensitivity to noise levels during nighttime hours.
- Community noise equivalent level (CNEL): The energy-average of the A-weighted sound levels occurring during a 24-hour period, with 5 dB added to the sound levels occurring during evening hours (7:00 p.m. to 10:00 p.m.) and 10 dB added to noise levels occurring during nighttime hours (10:00 p.m. to 7:00 a.m.).
- L_{90}: The L_{90} is often used to describe the quieter background sound levels that occurred, since it represents the level exceeded 90 percent of the period.

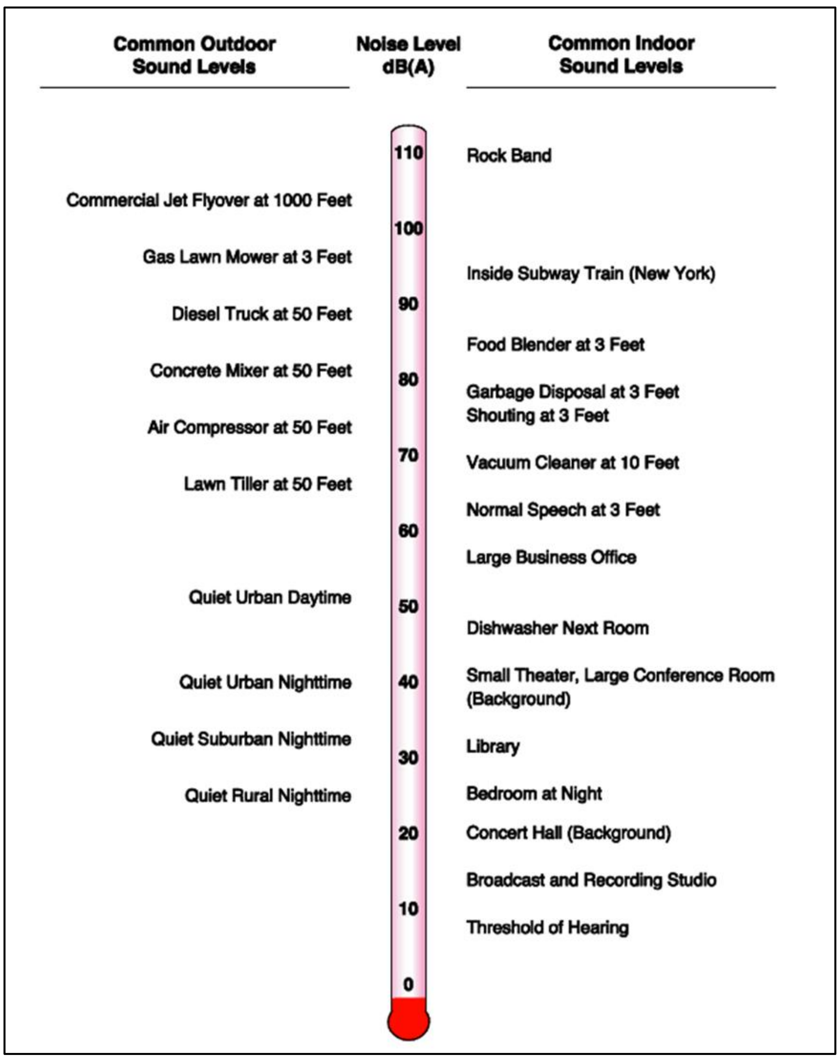

Figure 1. Sound Levels

Source: HMMH 2023

2.1.2 Noise Attenuation

Construction noise typically dissipates at a rate of approximately 6.0 dB for each doubling of distance (between the noise source and the receptor). As an example, construction equipment with mufflers (independent of background ambient noise levels) during excavation and grading may generate a noise level of approximately 86 dBA L_{eq} at 50 feet from the noise source. Based on a sound dissipation rate of 6 dB per doubling of distance, a sound level of 86 dBA at 50 feet from the noise source would be approximately 80 dBA at a distance of 100 feet, 74 dBA at a distance of 200 feet, and so on. That sound drop-off rate does not take into account any intervening shielding (including landscaping or trees) or barriers, such as structures or hills between the noise source and noise receptor. A barrier that breaks the line-of-sight between a source and a receiver will typically result in at least 5 dB of noise reduction. A higher barrier may provide as much as 20 dB of noise reduction.

2.1.3 Effects of Noise on Humans

The effects of noise on humans can be grouped into three general categories:[2]

- Subjective effects of annoyance, nuisance, dissatisfaction;
- Physiological effects such as starting hearing loss; and,
- Interference with activities such as speech, sleep, and learning.

With respect to annoyance, human response to sound is highly individualized. Many factors influence the response to noise including the character of the noise, the variability of the sound level, the presence of tones or impulses, and the time of day of the occurrence. Additionally, non-acoustical factors, such as individual opinion of the noise source, the ability to adapt to the noise, the attitude towards the source and those associated with it, and the predictability of the noise, all influence the response to noise. These factors result in the reaction to noise being highly subjective, with the perceived effect of a particular noise varying widely among individuals in a community.

Noise-induced hearing loss usually takes years to develop. Hearing loss is one of the most obvious and easily quantifiable effects of excessive exposure to noise. While the loss may be temporary at first, it can become permanent after continued exposure. When combined with hearing loss associated with aging, the amount of hearing loss directly due to the environment is difficult to quantify. Although the major cause of noise-induced hearing loss is occupational, non-occupational sources may also be a factor.

Noise can mask important sounds and disrupt communication between individuals in a variety of settings. This process can cause anything from a slight irritation to a serious safety hazard, depending on the circumstance. Noise can disrupt face-to-face communication and telephone communication, and the enjoyment of music and television in the home. Interference with communication has proved to be one of the most important components of noise-related annoyance.

Relative to noise being a source of annoyance, including sleep disturbance, and having health impacts, there are various uncertainties and debate within the scientific community regarding the exact relationship between noise and these types of impacts, particularly as related to assessing whether there would be a significant impact under CEQA.

2.2 Vibration

Ground-borne vibration is generated by "exciting" the ground or a structure (i.e., setting it in motion). Ground disturbance propagates away from the vibration source, dropping off rapidly with distance. The

[2] U.S. Environmental Protection Agency, Office of Noise Abatement and Control, *Annoyance, Loudness, and Measurement of Repetitive Type of Impulsive Noise Sources,* pg. 3-1, November 1979.

energy in vibration waves is lost with distance through geometric attenuation as well as by the material through which the waves travel. Specially, soil type, moisture content of the soil, temperature, and frequency of vibration sources all affect the resultant energy of the waves with distance. As noted in the most recent version of the Federal Transit Administration's (FTA's) *Noise and Vibration Impact Assessment* (FTA 2018), construction activities can be a source of ground-borne vibration. During the construction phase, activities such as driving piles and operating heavy equipment may cause ground borne vibration. Velocity or acceleration is typically used to describe vibration. The following two descriptors are frequently used when discussing quantification of vibration:

- Peak Particle Velocity (PPV): The maximum instantaneous positive or negative peak of the vibration signal. PPV is typically expressed in inches per second (ips or in/sec).

- Root Mean Square (RMS): The square root of the average of the squared amplitude of the vibration signal, which is typically calculated over a 1 second period.

2.2.1 Psychological and Physiological Effects of Vibration

As discussed within FTA's *Noise and Vibration Impact Assessment* (FTA 2018), there is little research on human response to vibration and annoyance with building vibration in particular. The degree of human annoyance does not necessarily correlate with magnitude of vibration, and visual effects of ground-borne vibration (e.g., movement of objects) often cause complaints, despite vibration levels below the threshold of human perception. Time of day also plays a significant role in human response to ground-borne vibration. **Table 1** summarizes both human reaction to typical vibration levels and the effects on buildings.

Table 1. Human Reaction to Typical Vibration Levels

Vibration Level, PPV (in/sec)	Human Reaction	Effects on Buildings
0.08	Vibrations readily perceptible	Recommended upper amplitude of the vibration to which ruins and ancient monuments should be subjected
0.10	Amplitude at which continuous vibrations begin to annoy people	Virtually no risk of "architectural" damage to normal dwelling – houses with plastered walls and ceilings Special types of finish such as lining of walls, flexible ceiling treatment, etc., would minimize "architectural" damage
0.20	Vibrations annoying to people in buildings (this agrees with the amplitudes established for people standing on bridges and subjected to relative short periods of vibrations)	Threshold at which there is a risk of "architectural" damage to normal dwelling – houses with plastered walls and ceilings. Special types of finish such as lining of walls, flexible ceiling treatment, etc., would minimize "architectural" damage
0.4-0.6	Vibrations considered unpleasant by people subjected to continuous vibrations and unacceptable to some people walking on bridges.	Vibrations at a greater amplitude than normally expected from traffic but would cause "architectural" damage and possibly minor structural damage.

Source: Caltrans, 2020.

3. Methodology

Construction activities typically generate noise and vibration from the operation of equipment required for demolition and construction of various facilities. Noise and vibration levels from on-site construction have been evaluated by considering the different types of construction activity, calculating the construction-related noise and vibration levels at nearby noise-sensitive receptor locations, and comparing them to applicable impact criteria. Specifically, the following steps were undertaken to calculate construction-related noise and vibration:

1. Existing noise measurements were conducted at two locations around the proposed ORSC site. Results of the noise measurements were used as representative ambient noise levels for noise-sensitive locations surrounding the project site. Existing conditions and details of the noise monitoring program are discussed within *The Ontario Regional Sports Complex EIR Traffic Noise Technical Report*.
2. Equipment lists were developed for the purpose of the project for each construction phase, including equipment type, quantity, and estimated hours of operating time per 24-hour period. Usage factors for equipment types were included in the calculations and are based on estimated hours of operation in a 24-hour period. These factors can vary depending on the work phase and nature of work planned. The list of proposed construction equipment was provided by the project team.
3. A noise prediction model was developed in SoundPLAN, using the Federal Highway Administration's (FHWA) Roadway Construction Noise Model (RCNM 2.0) source levels. **Table 2** lists the proposed construction equipment for each construction phase that was modeled for use during construction of the ORSC and the corresponding average A-weighted (dBA) maximum sound level (Lmax) at 50 feet. Features that influence noise propagation, including intervening buildings, topography, and areas of acoustically hard (water, pavement) and acoustically soft (grass) surfaces were also included in the model.
4. Noise levels for construction of the ORSC were calculated in the SoundPLAN model. The L_{eq} noise level was calculated at each noise-sensitive receptor for each proposed phase of work. As described in Section 2.1.1, the L_{eq} is an average A-weighted L_{eq} sound level over a specified period of time. To evaluate construction noise over a typical day, the 8-hour L_{eq} noise level was calculated. Since construction phases and activities are proposed to overlap throughout the lifetime of the project, resultant construction noise levels were summed together to determine the cumulative noise levels at all receptors.
5. The cumulative L_{eq} noise levels at each receptor were then compared to applicable construction noise standards to define levels of impact.
6. Construction-related vibration levels were predicted for the top three pieces of equipment that produce the most vibration when operating. The predicted levels use methods and source levels from the FTA Noise and Vibration Manual. Typical vibration levels for common construction equipment are summarized in **Table 3**. Resultant vibration levels were then compared to FTA's annoyance and structural damage criteria to determine impact.

Table 2. Source Noise Emission Levels for Construction Equipment

Proposed Equipment	Average L_{max} at 50 feet (dBA)
Backhoe	84
Compactor (Roller)	82
Concrete Pump Truck	88
Crane	76
Dozer	86
Dump Truck (Cyclical)	92
Excavator	87
Front End Loader (Cyclical)	81
Front End Loader (Passby)	71
Grader (passby)	79
Pavement Scarifier (Milling Machine)	84
Paving – Asphalt (Paver + Dump Truck)	82
Pickup Truck	75
Scraper	92
Telescopic Handler (Forklift)	88
Water Spray Truck	72

Source: FHWA Roadway Construction Noise Model, Version 2.0 Source Level Database.

Table 3. Source Vibration Levels for Construction Equipment

Equipment		PPV at 25 feet, in/sec	Approximate Lv* at 25 feet
Pile Driver (impact)	Upper Range	1.518	112
	Typical	0.644	104
Pile Driver (sonic)	Upper Range	0.734	105
	Typical	0.170	93
Clam shovel drop (slurry wall)		0.202	34
Hydromill (slurry wall)	In Soil	0.008	66
	In Rock	0.017	75
Vibratory Roller		0.210	94
Hoe Ram		0.089	87
Large Bulldozer		0.089	87
Caisson Drilling		0.089	87
Loaded Trucks		0.076	86
Jackhammer		0.035	79
Small Bulldozer		0.003	58

Notes:
* RMS velocity in decibels, VdB re 1 micro-in/sec
Source: Federal Transit Administration Transit Noise and Vibration Impact Assessment Manual, September 2018.

4. Regulatory Framework

Several federal, state, and local regulations, ordinances, and guidelines have been established to control noise and vibration and minimize effects on humans and are discussed below. The Noise Control Act of 1972 (42 United States Code Section 4901) was the first comprehensive statement of national noise policy. It declared that "it is the policy of the United States to promote an environment for all Americans free from noise that jeopardizes their health or welfare" (GSA 1972).

4.1 Federal

Federal Transit Administration

The Federal Transit Administration (FTA) *Transit Noise and Vibration Impact Assessment Manual* (FTA 2018) provides methodology and suggested impact criteria for construction-related noise and vibration. **Table 4** summarizes the suggested noise impact criteria for construction activities. Note that "Daytime" is defined as 7 AM to 10 PM and "Nighttime" is defined as 10 PM to 7 AM.

Table 4. Suggested FTA Construction Noise Assessment Guidelines

Land Use	8-Hour L_{eq} (dBA)		30-Day Average L_{dn} (dBA)
	Day	Night	
Residential	80	70	75[1]
Commercial	85	85	80[2]
Industrial	90	90	85[2]

Note:
1 – In urban areas with very high ambient noise levels (Ldn greater than 65 dB), Ldn from construction operations should not exceed existing ambient + 10 dB.
2 – 24 hour L_{eq}, not L_{dn}
3 – dBA=velocity in decibels; L_{eq}=equivalent noise level; L_{dn}=day-night average sound level
Source: FTA 2018

The FTA also provides recommended criteria for construction vibration-induced structural damage and annoyance. Structural damage is based on the PPV of the vibrations, and the criteria for assessing damage are based on building material. Vibration annoyance is evaluated based on vibration velocity levels (Lv) measured in units of VdB. Criteria for assessing annoyance due to construction-related vibrations are based on three land use categories and the number of events of the same source per day. FTA's structural damage and annoyance criteria are presented in **Table 5**, and **Table 6**, respectively. These thresholds were used to determine vibration impacts for the construction of the ORSC.

Table 5. FTA Structural Damage Criteria

Building Category	PPV (ips)	Approximate Lv (VdB)[1]
I. Reinforced-concrete, steel or timber (no plaster)	0.5	102
II. Engineered concrete and masonry (no plaster)	0.3	98
III. Non-engineered timber and masonry buildings	0.2	94
IV. Buildings extremely susceptible to vibration damage	0.12	90

Note:

9- RMS velocity in decibels (VdB) re: 1 micro-inch/second

Source: FTA 2018

Table 6. FTA Ground-borne Vibration and Noise Impact Criteria

Land Use Category	Ground-borne Vibration Impact Levels (VdB) re 1 micro inch/second)			Ground-borne Noise Impact Levels (dB re 20 micropascals)		
	Frequent Events[1]	Occasional Events[2]	Infrequent Events[3]	Frequent Events[1]	Occasional Events[2]	Infrequent Events[3]
Category 1: Buildings where vibration would interfere with interior operations	65 VdB	65 VdB	65 VdB	—[4]	—[4]	—[4]
Category 2: Residences and buildings where people normally sleep	72 VdB	75 VdB	80 VdB	35 dBA	38 dBA	43 dBA
Category 3: Institutional land uses with primarily daytime use	75 VdB	78 VdB	83 VdB	40 dBA	43 dBA	48 dBA

Notes:

This criterion limit is based on levels that are acceptable for most moderately sensitive equipment, such as optical microscopes. Vibration sensitive manufacturing or research would require detailed evaluation to define the acceptable vibration levels. Ensuring lower vibration levels in a building often requires special design of the heating, ventilation, and air conditioning systems and stiffened floors. Vibration sensitive equipment is not sensitive to ground borne noise.

1 – Frequent events are defined as more than 70 vibration events per day.

2 – Occasional events are defined as between 30 and 70 vibration events of the same source per day.

3 – Infrequent events are defined as fewer than 30 vibration events per day.

Source: FTA 2018.

4.2 State

California Department of Transportation

Caltrans generally addresses construction noise impacts within its policy and provided for informational purposes. Section 14-8.02, Noise Control, of Caltrans standard specifications provides information that can be considered in determining whether construction would result in adverse noise impacts. The specification states:

- Do not exceed 86 dBA at 50 feet from the job site activities from 9 p.m. to 6 a.m.
- Equip an internal combustion engine with the manufacturer-recommended muffler. Do not operate an internal combustion engine on the job site without the appropriate muffler.

If adverse construction noise impacts are anticipated, project plans and specifications must identify abatement measures that would minimize or eliminate adverse construction noise impacts on the community. When construction noise abatement is identified, Caltrans will consider the benefits achieved and the overall adverse social, economic, and environmental effects and costs of the construction noise abatement measures.

California Environmental Quality Act (CEQA)

According to Appendix G of the CEQA Guidelines, a proposed action would have a significant impact on noise and vibration if:

- The project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?
- The project result in generation of excessive groundborne vibration or groundborne noise levels?
- For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

4.3 Local

The City of Ontario

Noise related to construction is subject to the provisions in Section 5-29.09 within Chapter 29 of the City of Ontario Municipal Code. Pursuant to Section 5-29.09, construction activities are allowed on weekdays between the hours of 7:00 a.m. and 6:00 p.m. or on Saturday and Sunday between 9:00 a.m. and 6:00 p.m. Outside of these hours, the City's noise code is nuisance based, prohibiting "loud noise" that "disturbs" an individual working or residing nearby. Construction activities that comply with the exterior and interior noise standards established within Section 5-29.04 and Section 5-29.05, respectively, are exempt from the provisions of Section 5-29.09.

The City of Los Angeles

Since there are no measurable construction noise level limits set by the City of Ontario, thresholds from adjacent municipalities were reviewed. The City of Los Angeles has recently proposed an update to its guidance. in accordance with CEQA, for assessing impacts from construction noise and vibration. It should be noted that the City of Los Angeles recognizes the difficult condition for regulating construction noise and vibration and therefore is considering these new thresholds. The updated thresholds are as follows:

- **Daytime Construction** – For construction activities that occur between 7 AM and 7 PM Monday through Friday, and between 8 AM and 6 PM on Saturdays, would be limited to a maximum noise level of 80 dBA $L_{eq,8\text{-}hour}$ at sensitive uses (at the property line with outdoor uses or at the exterior of the building), including outdoor public recreational areas. This threshold is based on the recommended criteria within the FTA Manual.
- **Nighttime Construction** – For construction activities that occur between 7 PM and 7 AM. Monday through Friday, and between 6 PM. And 8 AM. On Saturdays, and anytime on Sundays or national holidays, noise levels at sensitive uses would not exceed 5 dBA above the ambient noise level at the receptor. Mat pour activities (and other types of concrete pour, which require an extended continuous pour beyond the allowable construction hours) that are required to occur during nighttime hours for less than five days are exempt from this provision.

4.4 Thresholds of Significance

As previously mentioned, no measurable construction noise and vibration limits are established by the City of Ontario. Therefore, the most reasonable thresholds to determine construction noise and vibration impacts are the suggested thresholds provided within the FTA *Transit Noise and Vibration Assessment* Manual and the City of Los Angeles CEQA guidance.

5. Construction Noise and Vibration Analysis

5.1 Overview of Proposed Construction

Construction of the ORSC will be completed in five phases, each comprised of various construction activities:

- Phase 1A – Mass Grading, Utilities, Vineyard Avenue Construction, and East Riverside Drive Expansion
- Phase 1B – Stadium, Retail and Hospitality, and Parking Construction
- Phase 2 – Commercial/Retail and City Park Outdoor Athletic Fields Construction
- Phase 3 – City Park Indoor Athletic Facility Construction
- Phase 4 – Community Recreation Center Construction

Construction of the ORSC is anticipated to begin in September 2024 and be completed in September 2027, for a total duration of approximately three years. Construction would occur in the hours allowed under Section 5-29.09 of the Ontario Municipal Code, Monday through Saturday, six days per week. Construction would occur on Saturdays but would be prohibited on Sundays and holidays. Construction activities are assumed to occur in eight-hour shifts with a one-hour break (e.g., 7:00 am to 4:00 pm or 8:00 am to 5:00 pm weekdays; 9:00 am to 6:00 pm on Saturdays). Nighttime construction for the stadium and parking structures may be necessary for concrete pours and infrastructure improvements.

Throughout the lifetime of the project, construction phases will overlap and result in construction occurring in more than one area. The construction noise analysis utilizes the proposed schedule to determine periods of overlap. Calculated construction noise levels for overlapping activities are summed together to determine an estimated cumulative monthly construction noise level. Construction activities that are typically the sources of the most construction noise include grading and scraping, with associated equipment generating noise levels as high as 92 dBA Lmax within 50 feet of their operation.

5.2 Overview of Analysis Locations

As shown in **Figure 2** and described in **Table 7** , noise-sensitive uses are located around the project site. All noise-sensitive receptors within approximately 1,000 feet of the project site were analyzed. **Figure 2** shows locations of the receivers around the proposed ORSC site that were evaluated in the analysis.

Table 7. Summary of Analysis Locations

Receptor Group	Location Relative to Project Site	Land Use Description	Representative Noise Monitoring Site[1]	Measured Ambient Noise Level for Nighttime Period (7 PM – 7AM)[1]
1	Northwest of Project Site	Residential use on the north and south side of East Riverside Drive, between Willow Drive and South Vineyard Avenue	LT-02	47
2	North of Project Site	Residential and institutional use (Sunrise Childcare Center) on the north side of East Riverside Drive, between Vineyard Avenue and South Whispering Lakes Lane	LT-02	47

Receptor Group	Location Relative to Project Site	Land Use Description	Representative Noise Monitoring Site[1]	Measured Ambient Noise Level for Nighttime Period (7 PM – 7AM)[1]
3	North of Project Site	Recreational use associated with the Whispering Lake Golf Course on the north side of East Riverside Drive, between South Whispering Lakes Lane and Cucamonga Channel	LT-01	48
4	Northeast of Project Site	Residential and recreational use (Westwind Community Center) on the north side of East Riverside Drive, between Cucamonga Channel and South Colonial Avenue	LT-01	48
5	East of Project Site	Residential and recreational use (Cucamonga Channel Walking Trail) bounded by the Cucamonga Channell to the west, East Riverside Drive to the north, South Colonial Avenue to the east, and Chino Avenue to the south	LT-01	48
6	South of Project Site	Residential use on the south side of Chino Avenue, between Vineyard Avenue and Ontario Avenue	LT-02	47

Note:
1- Ambient noise level is represented by the measured L90 noise level for the nighttime period (7 PM – 7AM). Refer to The Ontario Regional Sports Complex EIR Traffic Noise Technical Report for details on noise monitoring program.
Source: HMMH, 2023

5.3 Results of Construction Noise Analysis

5.3.1 On-Site Construction – Daytime

Construction noise levels were calculated for all noise-sensitive land use located within approximately 1,000 feet of the project site. Usage factors representing the percentage of time that equipment is used during a typical 8-hour day are used to calculate the construction-related L_{eq}. The usage factors are based on planned total hours of operation per day and are expressed as a percentage of time that construction activities would be active (i.e., incremental period when maximum equipment noise level would be generated). The resulting $L_{eq,8\text{-hour}}$ can be thought of as average levels for a typical day of construction activity. Construction noise levels will vary and be dependent on many factors, such as distance to work, type of work occurring, and means and methods used to complete the work. Therefore, the maximum noise level would only be expected for a shorter period.

Table 8 summarizes the results of the on-site construction noise analysis. Generally, the loudest periods of construction are predicted to occur at sensitive receptors in the beginning of the project, from September 2024 through January 2025 as well as May 2025. These loud periods are due to manure hauling, rough and fine grading, and utilities trenching on the project site and along the roadways surrounding the project site. As seen below, construction noise levels are not predicted to exceed the daytime $L_{eq,8\text{-hour}}$ noise level limit of 80 dBA. This exceedance is predicted to occur during rough grading along Riverside Drive at one residential receptor (R-244) in September 2024. Construction noise levels would be loudest when work is occurring closest to receptors and can be expected to decrease as work moves away from a given receptor or is completed. It should be noted that this analysis conservatively assumes construction activity at all sites during a given phase or activity would occur simultaneously. This is not expected to occur, as different pieces of construction equipment would be in use during different times during construction. As a result, actual noise exposure at these receptor locations would likely be lower than identified in **Table 8**. **Figure 2** shows color-coded receptor points that represent the maximum predicted daytime construction noise level from on-site construction activities occurring over the lifetime of the project. **Attachment A** includes a table that summarizes predicted construction noise levels at all analyzed receptors for all proposed work phases and activities.

Table 8. Predicted Daytime Cumulative Construction Noise Levels, $L_{eq,8\text{-}hour}$ (dBA)

Month/Year	Range of Predicted Daytime Construction Noise Levels by Receptor Group, $L_{eq,8\text{-}hour}$ (dBA)[1]					
	1	2	3	4	5	6
9/2024	51-68	49-80	62-73	59-63	44-71	50-59
10/2024	51-66	47-71	62-71	61-63	47-72	53-60
11/2024	50-64	48-73	62-69	60-63	45-70	53-59
12/2024	52-66	49-75	61-68	59-62	49-72	59-66
1/2025	51-65	49-78	62-71	59-63	48-68	54-58
2/2025	50-65	48-78	61-70	58-61	45-66	52-59
3/2025	45-59	44-65	59-66	56-59	44-65	50-54
4/2025	48-62	45-65	58-66	57-60	47-66	61-68
5/2025	47-62	44-64	56-64	55-58	46-67	62-70
6/2025	48-62	44-64	56-64	54-57	44-63	53-61
7/2025	47-59	43-64	55-63	53-57	44-62	52-60
8/2025	47-60	45-66	57-65	55-59	46-63	55-63
9/2025	47-60	44-65	58-65	56-59	46-65	53-60
10/2025	45-56	39-60	53-61	53-55	44-64	54-61
11/2025	43-55	37-59	51-58	48-52	38-57	50-58
12/2025	43-55	38-60	53-61	50-54	40-57	50-57
1/2026	44-56	39-61	53-61	50-54	40-57	50-57
2/2026	44-56	39-61	52-60	49-53	39-56	49-56
3/2026	35-48	30-53	41-45	41-43	30-53	45-54
4/2026	28-43	25-46	41-44	41-44	26-54	41-56
5/2026	32-46	30-48	44-48	44-48	31-64	44-58
6/2026	30-43	29-46	42-46	43-47	29-65	39-53

Month/Year	Range of Predicted Daytime Construction Noise Levels by Receptor Group, $L_{eq,8\text{-}hour}$ (dBA)[1]					
	1	2	3	4	5	6
7/2026	25-37	23-42	37-41	38-42	25-60	32-47
8/2026	28-41	27-45	40-44	41-45	28-63	35-50
9/2026	28-41	27-45	40-44	41-45	28-63	35-50
10/2026	25-38	24-42	37-41	38-43	25-60	32-47
11/2026	25-38	24-42	37-41	38-43	25-60	32-47
12/2026	28-40	26-45	39-44	41-45	28-63	35-49
1/2027	27-40	26-44	39-43	40-45	27-63	34-49
2/2027	27-40	26-44	39-43	40-45	27-63	34-49
3/2027	31-44	30-48	43-47	44-48	31-66	38-53
4/2027	32-45	30-48	43-48	45-49	32-67	39-53
5/2027	30-43	28-46	42-46	43-47	30-66	38-51
6/2027	23-36	22-40	35-39	36-41	23-59	31-45
7/2027	23-36	22-40	35-39	36-41	23-59	31-45
8/2027	23-36	22-40	35-39	36-41	23-59	31-45
9/2027	23-36	22-40	35-39	36-41	23-59	31-45

Notes:
1 - Construction equipment noise levels conservatively assume all equipment would be utilized at the same time and at all hours of an 8-hour period, both of which are unlikely.
2 - **Bold red** numbers indicate noise levels that exceed the daytime threshold of 80 dBA $L_{eq,8hour}$
Source: HMMH, 2023.

5.3.2 On-Site Construction – Nighttime

As stated within Section 5.1, nighttime construction for the stadium and two parking structures may be necessary for concrete pours and infrastructure improvements. Work associated with the stadium and parking structures are scheduled to occur between December 2024 through May 2026 and January 2027 through April 2027. Additionally, per the City of Los Angeles CEQA guidance, mat pour activities are exempt from the increase over ambient threshold if they last for less than five days. It should also be noted that the Project would be required to get a permit for nighttime work or an exemption from the City prior to commencement of nighttime construction activities.

Table 9 summarizes the results of the nighttime noise analysis. Since nighttime work would occur on an "as necessary" basis, the analysis assumes that each project component would be constructed individually, and multiple components would not be worked on simultaneously during nighttime hours. Should nighttime work become necessary, predicted construction noise levels during construction of the stadium and parking structures around the site are anticipated to exceed 5 dBA over ambient conditions at receptors within Receptor Group 2, Receptor Group 3, and Receptor Group 5. Section 6.2 discusses recommendations for noise mitigation and resultant construction-noise levels once mitigation measurements are implemented. Figure 3 shows color-coded receptor points that represent the maximum nighttime noise level from on-site construction predicted over the lifetime of the project. **Attachment A** includes a table that summarizes predicted nighttime construction noise levels at all analyzed receptors for all proposed work phases and activities.

Table 9. Predicted Nighttime Cumulative Construction Noise Levels

Project Component		Work Phase	Range of Predicted Nighttime (10PM – 7 AM) Construction Noise Levels by Receptor Group, L_{eq} (dBA)[1]					
			1	2	3	4	5	6
Nighttime Ambient (7PM-7AM)[2]			**47**	**47**	**48**	**48**	**48**	**47**
Impact Threshold (Cannot Exceed)			**52**	**52**	**53**	**53**	**53**	**52**
Parking Structures	Parking Structure A	Phase 1B	47–48	47–51	**50–56**	49–50	48–52	47–47
	Parking Structure B	Phase 2	47–50	47–54	48–49	48–49	48–49	47–49
Stadium	All Activities	Phase 1B	47–49	**47–53**	**49–60**	49–52	**48–54**	47–47

Notes:
1 - Construction equipment noise levels conservatively assume all equipment would be utilized at the same time and at all hours of an 8-hour period, both of which are unlikely.
2 – Long-term noise measurements were conducted in and around the site in October 2023. The ambient noise level is comprised of the measured L90. Refer to *The Ontario Regional Sports Complex EIR Traffic Noise Technical Report* for detailed information on the noise measurement program.
3 - **Bold** red numbers indicate noise levels that exceed 5 dBA over the measured ambient noise level.
Source: HMMH, 2024.

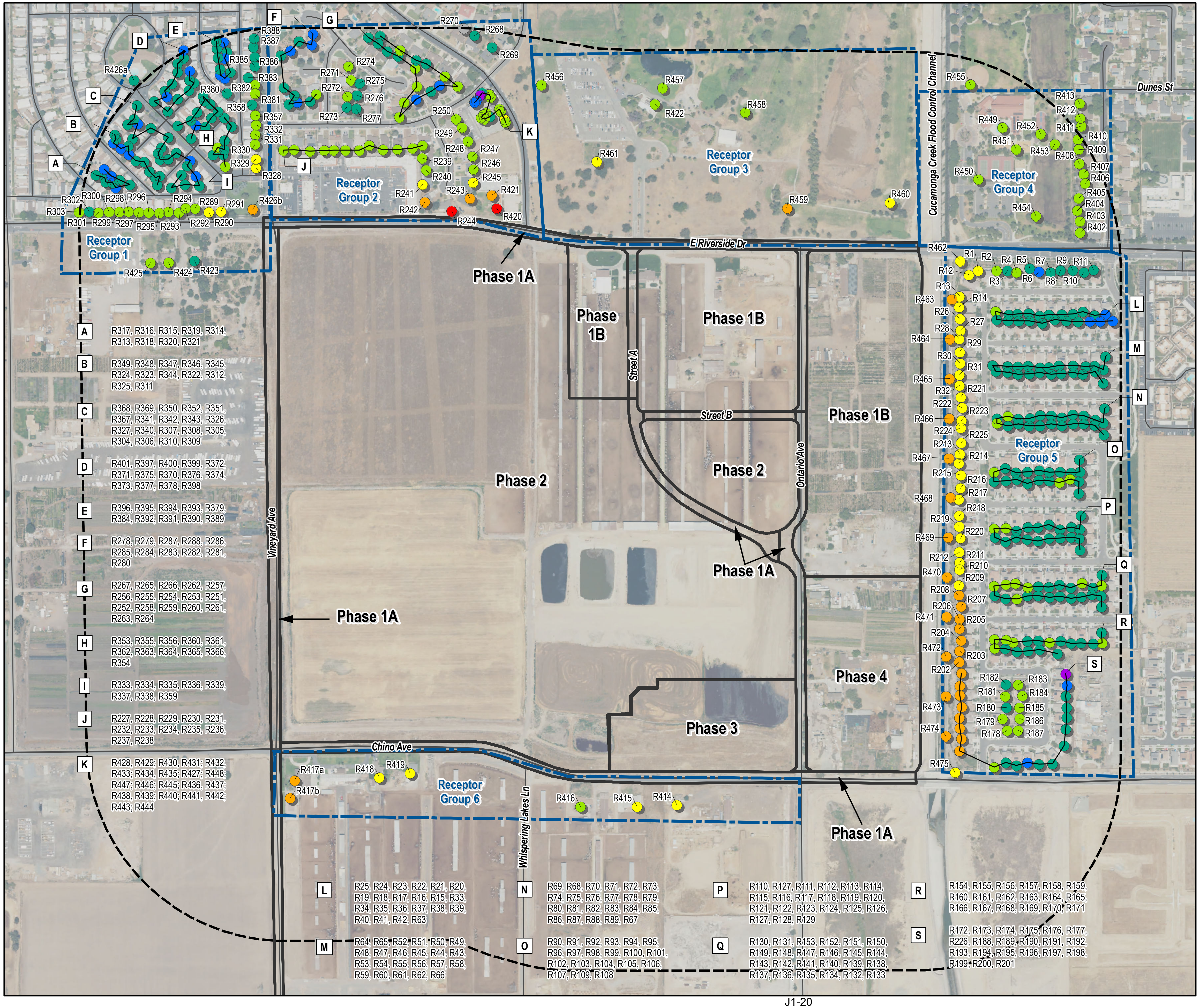

Figure 2
Maximum Predicted Daytime Construction Noise Levels On Site Construction (Leq,8-hour)

Ontario Regional Sports Complex EIR

Ontario, California

Receptor Location and Number

- 76 - 80 dBA
- 71 - 75 dBA
- 66 - 70 dBA
- 61 - 65 dBA
- 56 - 60 dBA
- 51 - 55 dBA
- 46 - 50 dBA

Top Floor Noise Prediction Result

Bottom Floor Noise Prediction Result

Note: Grouped Receptor Labels are in order of Leader Occurrence.

- Project Construction Phases and Work Area
- Receptor Group
- Study Area

0 500 1,000 Feet

hmmh

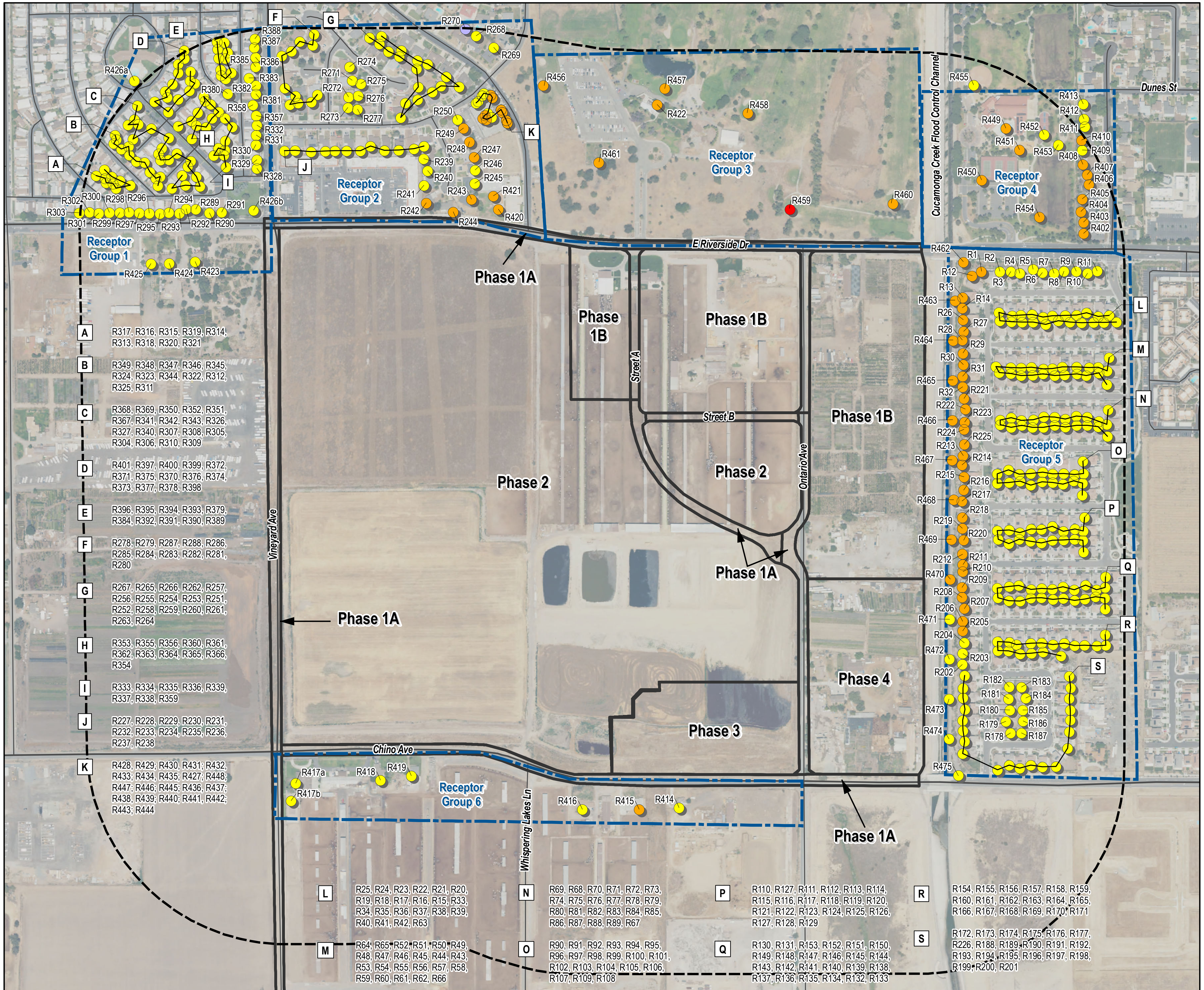

Figure 3
Maximum Predicted Nighttime Construction Noise Levels On Site Construction (7 PM-7 AM)

Ontario Regional Sports Complex EIR

Ontario, California

Receptor Location and Number

- 56 - 60 dBA
- 51 - 55 dBA
- 47 - 50 dBA

Top Floor Noise Prediction Result

Bottom Floor Noise Prediction Result

Note: Grouped Receptor Labels are in order of Leader Occurrence.

- Project Construction Phases and Work Area
- Receptor Group
- Study Area

0 500 1,000 Feet

5.3.3 Construction-Related Traffic and Haul Routes

As part of the construction of the Project, construction-related truck traffic would be generated. Heavy trucks would be required for transportation of materials and debris during building demolition (Phases 1, 2, and 4) and manure hauling (Phases 1 and 2). **Table 10** summarizes the planned truck trips during construction of the ORSC. It is assumed that all construction-related truck traffic leaving the project site would travel northward from the site to East Riverside Drive, travel east on East Riverside Drive to the designated truck route along South Archibald Avenue to Route 60, as depicted in Figure 5.17-1 of *The Ontario Plan 2050*. Trucks would then travel back to the project site along the same route. Additionally, it is assumed that all truck trips would be completed during a typical daytime shift, as detailed in Section 5.1, and would be evenly distributed throughout the work shift.

Table 10. Summary of Construction-Related Truck Trips

Activity	Phase	Number of Round Trips per Day	Number of Round Trips per Hour[1]	Total Days
Building Demolition	1	100	13	20
	2	25	3	5
	4	40	5	8
Manure Haul	1	100	13	30
	2 (PA 4)	100	13	14
	2 (PA 5)	100	13	14

Notes:

1-Round trips per hour were rounded to nearest whole number.

Source: City of Ontario, 2023

Noise levels associated with the construction truck trips were calculated using the latest version of the SoundPLAN noise model which implements TNM Version 2.5 to compute traffic noise. To determine a worst-case scenario, traffic-noise levels for the maximum hourly construction truck trips were calculated at sensitive receptors along East Riverside Avenue. Construction-related traffic noise levels were then compared to existing traffic noise levels[3] to determine if significant impact would occur. **Table 11** summarizes the results of construction-related truck trips during construction of the Project.

As seen in **Table 11**, hourly L_{eq} traffic-noise levels during construction are predicted to be 74 dBA or less at sensitive receptors. Construction-related traffic noise is predicted to increase one decibel or less over existing conditions. Therefore, no significant impact is anticipated due to construction truck trips. **Attachment A** includes a table of predicted traffic-noise levels for all analyzed receptors.

[3] Existing traffic-noise levels at noise-sensitive receptors were predicted as part of the traffic noise analysis for the Project. Additional information is detailed within *The Ontario Regional Sports Complex EIR Traffic Noise Technical Report* (January 2024).

Table 11. Predicted Construction-Related Traffic Noise Levels

Receptor Group	Range of Traffic Noise Levels by Receptor Group, $L_{eq,1\text{-}hour}$ (dBA)[1]			
	2023 Existing (Without Construction)	Construction Trips Only	2023 Existing (With Construction)	Range of Increase in Noise Levels
1	46 – 73	33 – 64	46 – 73	0 – 1
2	41 – 73	33 – 63	41 – 73	0 – 1
3	48 – 73	30 – 64	48 – 74	0 – 1
4	48 – 69	42 – 60	49 – 70	1
5	36 – 67	8 – 57	36 – 67	0 – 1
6	46 – 57	20 – 25	46 – 57	0

Source: HMMH, 2024.

5.4 Results of Construction Vibration Analysis

Construction vibration levels were analyzed at receptors and structures adjacent to the project site. The vibration analysis conservatively assumes the most vibration-sensitive structures are FTA Building Category III structures, which are structures made of non-engineered timber and masonry buildings. For vibration annoyance, land use most sensitive to construction vibration includes places where people typically sleep, such as residences.

Vibration-inducing activities that are proposed for construction of the project include the use of vibratory rollers, bulldozers, and dump trucks. The highest vibration level when evaluating for structural damage is 0.1601 PPV. This level is predicted to occur at the commercial strip mall located at 1919 East Riverside Avenue, which is approximately 32 feet away from the project site. This level is below the FTA damage impact criteria; therefore, sensitive structures located farther away would also have no damage impact from construction of the project.

Vibration annoyance predictions were calculated to estimate an approximate distance to impact for vibratory rollers, bulldozers, and dump trucks. For an annoyance impact to occur, a vibratory roller would need to be used closer than 27 feet; a large bulldozer would need to be used closer than 12 feet; and a dump truck/loaded truck would need to be used closer than 12 feet. The nearest vibration-sensitive receptor to the proposed work areas is approximately 35 feet away. Therefore, no vibration annoyance is predicted to occur during the construction of the ORSC.

Figure 4 shows the maximum calculated distances to structural and annoyance impacts for areas surrounding the project site. Construction vibration calculations and results for each receptor can be found within **Attachment B**.

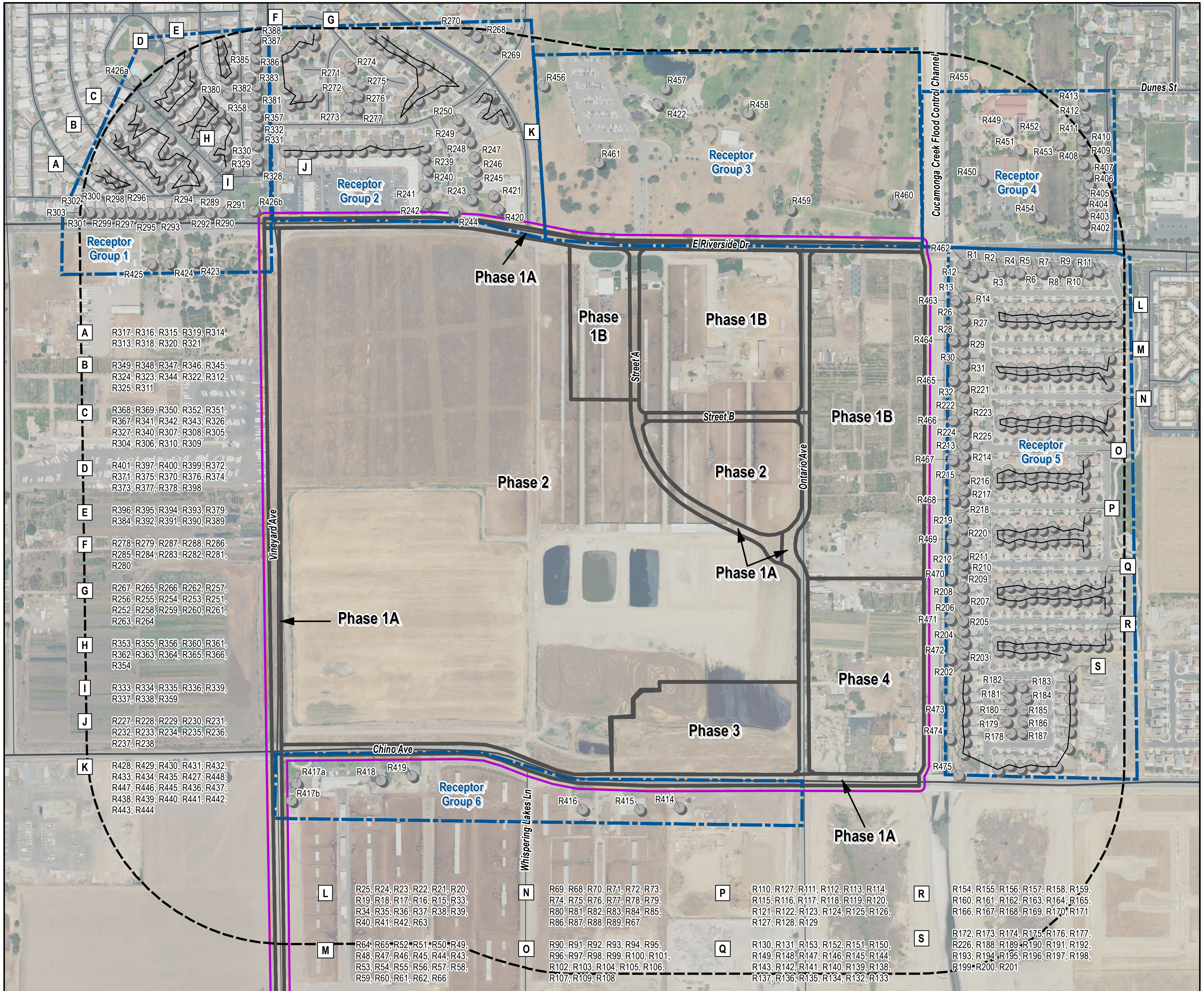

Figure 4
Maximum Distance to Vibration Impact Structural and Annoyance

Ontario Regional Sports Complex EIR

Ontario, California

Receptor Location and Number

- Receptor Impacted by Vibration
- Receptor not Impacted
- Top Floor Vibration Prediction Result
- Bottom Floor Vibration Prediction Result

Note: Grouped Receptor Labels are in order of Leader Occurrence.

- Distance to Vibration Structural Damage (FTA Building Category III)
- Distance to Vibration Annoyance (FTA Category 2)
- Project Construction Phases and Work Area
- Receptor Group
- Study Area

0 500 1,000 Feet

6. Mitigation

To minimize and reduce project construction noise and vibration during the construction of the project, the following mitigation strategies can be implemented:

- Construction activity be limited to the hours between 7:00 AM and 6:00 PM Monday through Friday and 9:00 AM and 6:00 PM Saturdays and Sundays, as listed within Section 5-29.09 of the City of Ontario Municipal Code.
- All construction equipment operating on a site shall be equipped with the appropriate manufacturer's noise reduction devices, including, but not limited to, a manufacturer's muffler (or equivalently rated material) that is free of rust, holes, and exhaust leaks.
- Noise from construction devices with internal combustion engines shall be mitigated by ensuring that the engine's housing doors are kept closed, and by using noise-insulating material mounted on the engine housing that does not interfere with the manufacturer's guidelines for engine operation or exhaust.
- Portable compressors, generators, pumps and other such devices shall be covered with noise-insulating fabric to the maximum extent possible that does not interfere with the manufacturer's guidelines for engine operation or exhaust, and shall further reduce noise by operating the device at lower engine speeds during the work to the maximum extent possible.
- Idling onsite of heavy-duty diesel vehicles with Gross Vehicle Weight Rating (GVWR) of 10,000 pounds shall be limited to no longer than five minutes while parking, standing, or stopping as per 13 CCR § 2485 Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling.
- Quieter back-up alarms on construction equipment shall be used whenever feasible.
- Construction vehicles shall be strategically positioned to minimize operation near receptors and avoiding tailgate slamming to the extent possible.

6.1 Construction Noise Impacts After Mitigation

As discussed in Section 5.3.2, nighttime construction noise impacts are predicted to occur for sensitive receptors located in Receptor Group 2, Receptor Group 3, and Receptor Group 5. To reduce construction noise impacts during nighttime hours to below the significant impact threshold, temporary noise barriers should be installed around the work site. With typical installation, temporary noise barriers can provide 5 decibels of noise level reduction to adjacent receptors. When accounting for this reduction, significant impact would be reduced or eliminated at all but five recreational receptors (R-459, R-471, R-472, R-473, and R-474) within Receptor Group 3 and Receptor Group 5. These receptors are comprised of a green at the Whispering Lakes Golf Course and a section of the Cucamonga Channel Walking Trail. The receptors are predicted to experience noise levels greater than 5 decibels over ambient conditions during construction of the commercial center parking structure in Phase 4. However, these receptor locations would not be considered sensitive during the nighttime period and would therefore not be considered impacted. **Table 12** summarizes the ranges of construction-noise levels with the implementation of temporary noise barriers. Additional mitigation measures, including positioning of equipment away from sensitive receptors and minimizing equipment idling can further reduce overall noise levels during construction activities.

Table 12. Predicted Nighttime Cumulative Construction Noise Levels After Mitigation

Project Component		Work Phase	Range of Predicted Nighttime (10PM – 7 AM) Construction Noise Levels by Receptor Group, L_{eq} (dBA)[1]					
			1	2	3	4	5	6
Nighttime Ambient (7PM-7AM)[2]			**47**	**47**	**48**	**48**	**48**	**47**
Impact Threshold (Cannot Exceed)			**52**	**52**	**53**	**53**	**53**	**52**
Parking Structures	Parking Structure A	Phase 1B	42–43	42–46	45–51	44–45	43–47	42–42
	Parking Structure B	Phase 2	42–45	42–49	43–44	43–44	43–44	42–44
Stadium	All Activities	Phase 1B	42–44	42–48	**44–55[4]**	44–47	43–49	42–42

Notes:
1 - Construction equipment noise levels conservatively assume all equipment would be utilized at the same time and at all hours of an 8-hour period, both of which are unlikely.
2 – Long-term noise measurements were conducted in and around the site in October 2023. The ambient noise level is comprised of the measured L90. Refer to *The Ontario Regional Sports Complex EIR Traffic Noise Technical Report* for detailed information on the noise measurement program.
3 - **Bold** red numbers indicate noise levels that exceed 5 dBA over the measured ambient noise level.
4 – Receptors predicted to experience nighttime construction noise levels include recreational use that would not be considered to have nighttime sensitivity (green at Whispering Lakes Golf Course and Cucamonga Channel Walking Trail). Therefore, these locations would not be considered to be impacted during nighttime construction of the project. Noise level ranges are provided for informational purposes.
Source: HMMH, 2024.

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ATTACHMENT A. PREDICTED CONSTRUCTION NOISE LEVELS

Ontario Regional Sports Complex EIR

Construction Noise Analysis, Predicted Daytime Construction Noise Levels by Month for All Receptors, 8-hour Leq

Receptor	Receptor Group	Cumulative Construction Noise Levels by Month, Maximum Hourly Leq, dBA																																				
		9/1/2024 9/30/2024	10/1/2024 10/31/2024	11/1/2024 11/30/2024	12/1/2024 12/31/2024	1/1/2025 1/31/2025	2/1/2025 2/28/2025	3/1/2025 3/31/2025	4/1/2025 4/30/2025	5/1/2025 5/31/2025	6/1/2025 6/30/2025	7/1/2025 7/31/2025	8/1/2025 8/31/2025	9/1/2025 9/30/2025	10/1/2025 10/31/2025	11/1/2025 11/30/2025	12/1/2025 12/31/2025	1/1/2026 1/31/2026	2/1/2026 2/28/2026	3/1/2026 3/31/2026	4/1/2026 4/30/2026	5/1/2026 5/31/2026	6/1/2026 6/30/2026	7/1/2026 7/31/2026	8/1/2026 8/31/2026	9/1/2026 9/30/2026	10/1/2026 10/31/2026	11/1/2026 11/30/2026	12/1/2026 12/31/2026	1/1/2027 1/31/2027	2/1/2027 2/28/2027	3/1/2027 3/31/2027	4/1/2027 4/30/2027	5/1/2027 5/31/2027	6/1/2027 6/30/2027	7/1/2027 7/31/2027	8/1/2027 8/31/2027	9/1/2027 9/30/2027
Rec_1-G	5	66.0	66.3	64.9	62.4	64.4	63.4	60.9	61.5	59.3	59.5	59.2	60.4	61.4	58.3	52.3	54.8	54.9	54.0	40.2	37.4	40.4	38.2	33.2	36.4	36.4	33.6	33.6	36.2	35.8	35.8	39.4	40.0	38.0	31.8	31.8	31.8	31.8
Rec_2-G	5	60.5	56.9	55.6	55.0	59.0	58.2	51.7	52.1	49.8	50.0	49.6	51.0	51.9	48.9	42.9	45.2	45.4	44.4	31.5	28.3	33.0	32.1	26.5	29.8	29.8	27.0	27.0	29.6	29.2	29.2	32.9	34.0	32.3	25.3	25.3	25.3	25.3
Rec_3-G	5	60.2	57.9	57.0	55.7	58.9	58.1	53.0	53.4	51.2	51.3	50.9	52.4	53.1	49.6	44.2	46.5	46.7	45.9	33.0	28.3	32.9	32.0	26.4	29.7	29.7	27.0	27.0	29.6	29.2	29.2	32.9	34.0	32.2	25.3	25.3	25.3	25.3
Rec_4-G	5	61.4	57.4	56.3	55.8	59.9	59.1	51.4	52.1	49.9	50.2	49.8	51.1	51.9	48.7	42.9	45.2	45.4	44.5	31.3	27.0	30.8	29.7	25.0	28.2	28.2	25.3	25.3	27.9	27.4	27.4	31.0	31.7	29.7	23.4	23.4	23.4	23.4
Rec_5-G	5	59.1	56.9	55.6	54.7	57.8	57.0	52.2	52.8	51.0	51.4	51.0	52.7	53.1	48.9	44.5	46.8	47.0	46.1	32.9	28.1	31.6	30.1	25.0	28.2	28.2	25.4	25.4	28.0	27.5	27.5	31.1	31.9	29.9	23.5	23.5	23.5	23.5
Rec_6-G	5	49.8	51.3	50.3	49.0	49.7	48.7	48.4	48.8	47.2	47.4	47.0	49.0	49.1	44.1	40.7	42.8	43.1	42.2	30.2	27.0	31.2	30.2	25.2	28.4	28.4	25.6	25.6	28.2	27.7	27.7	31.4	32.2	30.3	23.8	23.8	23.8	23.8
Rec_7-G	5	57.3	54.2	53.5	52.9	56.3	55.5	50.1	50.3	48.3	48.5	48.0	49.8	50.1	45.9	41.7	43.8	44.1	43.2	30.9	26.7	30.6	29.5	24.7	27.9	27.9	25.1	25.1	27.7	27.2	27.2	30.8	31.5	29.5	23.2	23.2	23.2	23.2
Rec_8-G	5	57.5	54.9	53.6	53.1	56.3	55.6	50.3	50.9	49.3	49.6	49.1	51.0	51.2	46.8	42.6	44.9	45.1	44.2	31.4	26.3	30.5	29.7	24.7	28.0	28.0	25.2	25.2	27.8	27.3	27.3	30.9	31.7	29.8	23.3	23.3	23.3	23.3
Rec_9-G	5	57.1	54.6	53.5	52.8	56.0	55.2	50.2	50.8	49.1	49.3	48.9	50.8	51.0	46.3	42.3	44.5	44.7	43.8	31.1	26.7	30.8	29.8	24.8	28.0	28.0	25.2	25.2	27.8	27.3	27.3	31.0	31.8	29.9	23.4	23.4	23.4	23.4
Rec_10-G	5	56.5	53.9	53.0	52.3	55.5	54.7	49.7	50.2	48.4	48.6	48.2	50.0	50.3	45.9	41.9	44.0	44.3	43.4	31.3	28.4	31.7	29.9	24.9	28.1	28.1	25.3	25.3	27.9	27.4	27.4	31.0	31.7	29.7	23.4	23.4	23.4	23.4
Rec_11-G	5	56.3	53.8	52.6	52.0	55.2	54.4	49.4	50.0	48.3	48.6	48.1	49.9	50.2	45.6	41.8	44.0	44.2	43.3	30.5	25.8	30.6	30.7	26.7	29.9	29.9	27.0	27.0	29.6	29.1	29.1	32.7	33.1	31.0	25.0	25.0	25.0	25.0
Rec_12-G	5	66.0	64.3	62.7	60.8	64.2	63.4	57.9	58.9	56.6	56.9	56.7	57.7	58.9	56.3	49.2	51.7	51.9	50.9	35.2	27.9	31.7	30.5	25.6	28.8	28.8	26.0	26.0	28.6	28.1	28.1	31.8	32.5	30.6	24.2	24.2	24.2	24.2
Rec_13-G	5	68.4	69.7	68.8	65.8	66.6	65.4	63.8	64.7	62.1	61.5	61.1	61.7	63.8	62.2	54.0	55.8	56.0	55.0	46.3	46.8	50.5	49.0	43.7	46.9	46.9	44.1	44.1	46.7	46.3	46.3	49.9	50.8	48.9	42.3	42.3	42.3	42.3
Rec_14-G	5	67.8	69.4	68.4	65.4	66.0	64.8	63.7	64.4	61.8	61.3	61.0	61.6	63.6	61.9	53.7	55.6	55.8	54.8	45.7	46.0	50.2	49.3	44.3	47.5	47.5	44.7	44.7	47.3	46.8	46.8	50.4	51.3	49.4	42.8	42.8	42.8	42.8
Rec_15-G	5	59.0	62.1	61.9	61.6	60.0	58.1	57.9	58.6	56.7	55.6	55.0	56.5	57.5	55.3	50.6	51.8	52.1	51.3	44.7	45.1	49.7	49.2	44.5	47.7	47.7	44.8	44.8	47.4	47.0	47.0	50.6	51.3	49.3	42.9	42.9	42.9	42.9
Rec_16-G	5	58.3	60.3	60.2	58.8	58.6	57.4	56.6	57.0	54.9	54.3	53.7	55.5	56.2	53.2	48.7	50.3	50.7	49.8	42.3	42.3	45.8	44.6	40.0	43.2	43.2	40.4	40.4	43.0	42.5	42.5	46.1	46.7	44.6	38.5	38.5	38.5	38.5
Rec_17-G	5	57.1	59.7	59.1	58.8	57.5	56.1	56.2	56.7	54.8	54.2	53.6	55.4	56.2	53.7	49.8	51.0	51.3	50.4	44.4	45.1	47.9	45.4	40.5	43.7	43.7	40.9	40.9	43.5	43.0	43.0	46.6	47.1	45.0	38.9	38.9	38.9	38.9
Rec_18-G	5	55.3	57.3	57.2	56.9	56.0	54.6	52.9	54.0	52.5	51.5	50.8	52.6	53.4	51.0	47.2	48.1	48.5	47.6	42.1	42.7	45.7	43.5	38.8	42.0	42.0	39.1	39.1	41.7	41.2	41.2	44.8	45.3	43.2	37.1	37.1	37.1	37.1
Rec_19-G	5	55.9	58.2	58.3	57.9	56.9	55.5	55.0	55.5	53.6	52.7	52.2	53.8	54.4	51.5	48.0	49.3	49.6	48.8	42.0	42.4	45.5	43.8	39.3	42.5	42.5	39.6	39.6	42.2	41.7	41.7	45.3	45.7	43.5	37.6	37.6	37.6	37.6
Rec_20-G	5	54.7	58.2	58.6	58.0	56.6	55.1	55.3	55.8	53.9	52.7	52.0	53.7	54.4	51.9	48.0	49.2	49.6	48.7	42.7	43.2	46.4	44.7	40.2	43.4	43.4	40.6	40.6	43.2	42.7	42.7	46.3	46.7	44.5	38.6	38.6	38.6	38.6
Rec_21-G	5	54.1	57.1	57.1	56.8	55.5	54.0	54.0	54.5	52.9	52.2	51.6	53.5	53.9	50.5	47.3	48.7	49.0	48.2	40.9	41.1	44.5	43.1	38.7	41.9	41.9	39.0	39.0	41.6	41.1	41.1	44.7	45.2	43.0	37.1	37.1	37.1	37.1
Rec_22-G	5	55.5	57.8	57.9	58.0	56.8	55.2	54.5	55.2	53.7	52.6	52.0	53.8	54.3	51.4	48.2	49.4	49.7	48.8	42.5	43.2	46.5	45.1	40.8	44.0	44.0	41.1	41.1	43.7	43.2	43.2	46.8	47.2	45.0	39.1	39.1	39.1	39.1
Rec_23-G	5	55.4	58.5	59.0	58.4	57.1	55.9	55.9	56.1	54.1	53.3	52.6	54.4	54.9	51.9	48.7	49.9	50.3	49.4	43.2	43.6	46.5	44.5	40.0	43.2	43.2	40.3	40.3	42.9	42.4	42.4	46.0	46.4	44.2	38.3	38.3	38.3	38.3
Rec_24-G	5	53.8	56.9	57.3	57.1	55.7	54.4	54.3	54.8	52.9	51.9	51.3	53.1	53.4	50.3	47.0	48.3	48.7	47.9	40.7	40.7	44.1	42.7	38.4	41.6	41.6	38.8	38.8	41.4	40.9	40.9	44.5	44.9	42.7	36.9	36.9	36.9	36.9
Rec_25-G	5	50.0	53.6	54.3	55.0	52.8	50.9	51.1	51.8	50.3	48.2	47.5	49.3	49.9	47.6	44.7	45.6	45.9	45.0	40.0	40.8	44.1	42.7	38.3	41.5	41.5	38.6	38.6	41.2	40.7	40.7	44.3	44.8	42.6	36.7	36.7	36.7	36.7
Rec_26-G	5	68.3	69.9	68.9	65.8	66.4	65.1	64.1	64.9	62.2	61.7	61.3	61.8	63.9	62.3	53.9	55.8	56.0	55.1	45.7	45.9	50.2	49.4	44.3	47.6	47.6	44.8	44.8	47.4	46.9	46.9	50.5	51.4	49.5	42.9	42.9	42.9	42.9
Rec_27-G	5	67.8	69.6	68.7	65.5	66.0	64.8	63.9	64.6	62.0	61.5	61.1	61.6	63.7	62.1	53.6	55.5	55.7	54.8	45.4	45.4	49.5	48.4	43.3	46.5	46.5	43.7	43.7	46.3	45.9	45.9	49.5	50.4	48.5	41.9	41.9	41.9	41.9
Rec_28-G	5	67.8	69.8	68.9	66.0	66.0	64.7	64.0	64.9	62.3	61.6	61.2	61.7	63.9	62.5	54.2	55.7	55.9	55.0	47.0	47.5	51.6	50.7	45.7	48.9	48.9	46.1	46.1	48.7	48.2	48.2	51.8	52.7	50.7	44.2	44.2	44.2	44.2
Rec_29-G	5	67.7	69.9	69.0	66.3	66.0	64.6	64.1	65.0	62.5	61.8	61.4	61.8	64.0	62.5	54.4	55.9	56.1	55.2	47.3	47.8	52.2	51.5	46.5	49.7	49.7	46.9	46.9	49.5	49.1	49.1	52.7	53.6	51.6	45.1	45.1	45.1	45.1
Rec_30-G	5	67.8	69.9	69.1	65.9	66.0	64.7	64.3	65.0	62.4	61.8	61.4	61.9	64.0	62.5	54.0	55.8	56.0	55.1	46.2	46.4	50.7	49.9	44.8	48.0	48.0	45.2	45.2	47.8	47.4	47.4	51.0	51.9	50.0	43.4	43.4	43.4	43.4
Rec_31-G	5	68.0	70.2	69.4	66.4	66.2	64.8	64.5	65.3	62.7	62.0	61.6	62.1	64.3	62.9	54.6	56.1	56.3	55.4	47.6	48.2	52.4	51.5	46.3	49.5	49.5	46.7	46.7	49.3	48.9	48.9	52.5	53.4	51.6	44.9	44.9	44.9	44.9
Rec_32-G	5	67.8	70.2	69.3	66.3	66.1	64.6	64.5	65.3	62.6	61.9	61.5	62.0	64.2	62.7	54.3	55.9	56.1	55.2	46.9	47.3	52.1	51.6	46.6	49.9	49.9	47.1	47.1	49.7	49.2	49.2	52.8	53.7	51.9	45.2	45.2	45.2	45.2
Rec_33-G	5	57.4	58.8	58.0	57.7	57.4	55.8	54.8	55.5	53.9	53.2	52.6	54.4	55.0	51.5	46.5	48.6	48.9	48.1	36.1	31.5	44.0	45.8	41.6	44.8	44.8	42.0	42.0	44.6	44.1	44.1	47.7	48.4	46.4	40.1	40.1	40.1	40.1
Rec_34-G	5	57.9	59.2	58.7	58.2	58.0	56.5	54.7	55.7	54.0	53.0	52.5	53.9	54.9	52.7	48.1	49.3	49.6	48.7	42.2	42.8	46.0	44.2	39.6	42.8	42.8	40.0	40.0	42.6	42.1	42.1	45.7	46.2	44.1	38.1	38.1	38.1	38.1
Rec_35-G	5	57.3	58.3	58.2	56.2	57.2	56.3	54.8	54.9	52.7	52.5	52.0	53.7	54.2	50.9	46.3	48.1	48.4	47.6	38.7	37.9	41.2	39.5	34.7	37.9	37.9	35.0	35.0	37.6	37.1	37.1	40.7	41.4	39.3	33.0	33.0	33.0	33.0
Rec_36-G	5	57.0	57.8	57.0	56.1	56.6	55.5	54.2	54.5	52.7	52.7	52.2	54.0	54.5	51.0	47.4	49.1	49.4	48.5	40.8	41.0	43.4	40.2	34.8	38.0	38.0	35.1	35.1	37.7	37.3	37.3	40.9	41.4	39.3	33.2	33.2	33.2	33.2
Rec_37-G	5	57.4	58.4	58.1	57.6	57.8	56.4	54.8	55.4	53.7	53.1	52.6	54.3	54.8	51.4	47.9	49.4	49.7	48.8	41.2	41.6	44.6	42.7	38.2	41.4	41.4	38.5	38.5	41.1	40.6	40.6	44.2	44.6	42.5	36.6	36.6	36.6	36.6
Rec_38-G	5	55.7	57.0	56.4	56.4	55.9	54.5	53.5	54.1	52.6	51.9	51.4	53.2	53.7	50.6	47.3	48.7	48.9	48.0	41.3	41.9	45.0	43.2	38.6	41.8	41.8	39.0	39.0	41.6	41.1	41.1	44.7	45.2	43.0	37.0	37.0	37.0	37.0
Rec_39-G	5	54.8	56.1	56.0	55.2	55.4	54.1	52.8	53.3	51.7	50.8	50.2	52.1	52.5	49.1	45.1	46.8	47.2	46.4	38.4	38.1	42.6	42.7	38.8	42.0	42.0	39.1	39.1	41.7	41.2	41.2	44.8	45.2	42.9	37.1	37.1	37.1	37.1
Rec_40-G	5	54.4	55.8	55.7	56.4	55.5	53.8	52.0	53.2	51.8	50.5	50.0	51.7	52.3	49.7	46.6	47.6	47.9	47.0	41.6	42.4	45.4	43.6	39.4	42.6	42.6	39.7	39.7	42.2	41.7	41.7	45.3	45.6	43.4	37.6	37.6	37.6	37.6
Rec_41-G	5	54.1	55.2	55.2	55.2	54.8	53.4	52.1	52.8	51.4	50.1	49.6	51.5	51.7	48.3	44.8	46.3	46.6	45.7	38.7	39.2	43.0	42.0	37.7	40.9	40.9	38.0	38.0	40.6	40.1	40.1	43.7	44.2	42.1	36.1	36.1	36.1	36.1
Rec_42-G	5	54.2	54.7	54.1	55.0	54.5	53.1	51.2	52.1	50.8	50.0	49.6	51.4	51.8	48.6	45.6	46.9	47.1	46.2	40.0	40.8	43.9	42.0	37.5	40.7	40.7	37.8	37.8	40.4	39.9	39.9	43.5	44.0	41.8	35.9	35.9	35.9	35.9
Rec_43-G	5	58.2	60.1	59.3	59.3	58.2	56.4	55.5	56.4	54.8	53.6	53.0	54.5	55.7	53.9	49.2	50.3	50.6	49.7	44.2	45.0	48.5	47.0	42.3	45.5	45.5	42.6	42.6	45.2	44.7	44.7	48.3	49.0	46.9	40.7	40.7	40.7	40.7
Rec_44-G	5	57.3	59.4	59.2	58.3	57.5	56.2	55.4	55.9	54.0	53.1	52.5	54.2	55.1	52.7	48.0	49.2	49.5	48.7	42.3	42.7	46.2	45.0	40.6	43.8	43.8	40.9	40.9	43.5	43.0	43.0	46.6	47.1	44.9	38.9	38.9	38.9	38.9
Rec_45-G	5	56.1	59.0	59.3	57.9	57.2	55.9	55.7	56.0	53.9	53.1	52.4	54.1	54.7	51.7	47.3	48.8	49.2	48.4	40.6	40.1	44.8	44.8	40.8	44.0	44.0	41.1	41.1	43.6	43.1	43.1	46.7	47.1	45.0	39.0	39.0	39.0	39.0
Rec_46-G	5	56.0	58.5	58.5	57.7	56.8	55.4	55.4	55.6	53.5	52.5	51.8	53.6	54.2	51.5	47.4	48.7	49.0	48.2	41.3	41.5	45.3	44.2	39.8	43.0	43.0	40.1	40.1	42.7	42.2	42.2	45.8	46.4	44.3	38.2	38.2	38.2	38.2
Rec_47-G	5	55.6	58.1	58.1	57.7	56.7	55.1	54.8	55.4	53.7	52.4	51.8	53.5	54.2	51.6	47.4	48.8	49.2	48.4	41.9	42.1	45.8	44.9	40.8	44.0	44.0	41.1	41.1	43.7	43.2	43.2	46.8	47.2	45.0	39.1	39.1	39.1	39.1
Rec_48-G	5	54.8	57.5	57.6	56.9	55.7	54.4	54.6	54.7	52.6	51.9	51.3	53.1	53.8	51.0	47.2	48.5	48.9	48.0	42.0	42.6	45.7	44.1	39.8	43.0	43.0	40.1	40.1	42.7	42.2	42.2	45.8	46.2	43.9	38.1	38.1	38.1	38.1
Rec_49-G	5	54.1	57.1	57.5	56.3	55.2	54.2	54.5	54.5	52.2	51.6	50.8	52.8	53.4	50.6	47.0	48.2	48.5	47.6	42.1	42.6	45.5	43.4	39.1	42.2	42.2	39.3	39.3	41.9	41.4	41.4	45.0	45.3	43.1	37.3	37.3	37.3	37.3
Rec_50-G	5	55.2	57.8	58.2	57.1	56.3	55.1	55.2	55.3	53.2	52.3	51.6	53.6	54.1	50.9	47.2	48.5	48.9	48.1	41.1	41.1	44.3	42.6	37.9	41.1	41.1	38.3	38.3	40.9	40.4	40.4	44.0	44.5	42.4	36.3	36.3	36.3	36.3
Rec_51-G	5	54.8	58.1	58.7	57.2	56.3	55.2	56.0	55.7	53.3	52.6	51.9	53.8	54.2	50.9	47.0	48.5	48.9	48.2	40.7	40.4	43.8	42.5	38.2	41.4	41.4	38.5	38.5	41.1	40.6	40.6	44.2	44.7	42.5	36.6	36.6	36.6	36.6
Rec_52-G	5	54.2	57.8	58.6	57.3	56.1	54.8	55.7	55.6	53.4	52.2	51.4	53.3	53.7	50.4	46.4	47.9	48.3	47.5	40.0	39.6	43.8	43.2	38.8	42.0	42.0	39.2	39.2	41.8	41.3	41.3	44.9	45.5	43.4	37.3	37.3	37.3	37.3
Rec_53-G	5	58.4	59.6	58.9	56.5	57.4	56.5	55.0	55.5	53.2	53.1	52.6	54.2	55.3	52.9	47.4	49.1	49.4	48.4	41.8	42.2	45.0	42.4	36.9	40.1	40.1	37.3	37.3	39.8	39.3	39.3	42.9	43.7	41.8	35.2	35.2	35.2	35.2
Rec_54-G	5	57.5	58.6	57.8	56.4	56.8	55.7	54.4	54.9	53.1	52.9	52.4	54.2	54.9	52.0	47.5	49.2	49.5	48.5	41.2	41.6	44.4	42.1	37.6	40.8	40.8	37.9	37.9	40.5	40.0	40.0	43.5	43.9	41.7	35.8	35.8	35.8	35.8
Rec_55-G	5	57.1	58.2	57.5	56.3	56.9	55.7	54.6	54.9	53.0	52.6	52.2	53.8	54.5	51.5	47.2	48.9	49.2	48.2	41.0	41.5	44.3	42.1	37.4	40.6	40.6	37.7	37.7	40.3	39.8	39.8	43.3	43.8	41.7	35.6	35.6	35.6	35.6
Rec_56-G	5	56.6	58.1	57.6	56.8	56.7	55.3	54.7	55.0	53.0	52.6	52.1	53.8	54.4	51.2	47.4	49.0	49.3	48.4	40.6	41.0	43.8	41.3	36.4	39.6	39.6	36.7	36.7	39.3	38.8	38.8	42.4	43.0	40.9	34.8	34.8	34.8	34.8
Rec_57-G	5	56.2	57.8	57.2	57.2	56.4	54.9	54.4	54.8	53.0	52.4	51.8	53.7	54.2	51.0	47.7	49.1	49.3	48.4	41.7	42.5	45.3	43.0	38.3	41.5	41.5	38.7	38.7	41.3	40.8	40.8	44.4	44.9	42.7	36.8	36.8	36.8	36.8
Rec_58-G	5	55.8	57.3	56.7	56.3	55.9	54.6	54.1	54.5	52.7	52.3	51.8	53.6	54.1	50.8	47.2	48.7	49.0	48.1	40.5	40.9	43.5	40.6	35.5	38.7	38.7	35.9	35.9	38.5	38.0	38.0	41.6	42.1	40.0	34.0	34.0	34.0	34.0
Rec_59-G	5	55.8	57.2	56.9	54.9	55.6	54.7	54.2	54.2	52.1	52.1	51.6	53.5	53.8	49.8	45.7	47.7	48.0	47.1	37.6	36.9	40.2	38.9	34.4	37.6	37.6	34.7	34.7	37.2	36.7	36.7	40.2	40.8	38.7	32.5	32.5	32.5	32.5
Rec_60-G	5	55.6	57.4	57.0	57.0	55.9	54.7	54.7	54.8	53.1	52.7	52.1	54.2	54.5	50.9	47.9	49.3	49.5	48.6	41.8	42.5	45.2	42.7	37.8	41.0	41.0	38.1	38.1	40.7	40.2	40.2	43.8	44.3	42.2	36.2	36.2	36.2	36.2
Rec_61-G	5	56.2	57.4	56.9	55.5	56.2	55.1	54.3	54.4	52.6	52.6	52.2	54.0	54.2	50.2	46.7	48.6	48.8	47.8	39.9	40.2	43.3	41.7	37.7	40.8	40.8	37.9	37.9	40.5	40.0	40.0	43.5	43.8	41.5	35.8	35.8	35.8	35.8
Rec_62-G	5	56.2	57.5	57.0	55.3	56.1	55.1	54.2	54.3	52.4	52.6	52.1	54.1	54.3	49.9	46.5	48.4	48.7	47.7	38.7	38.6	41.3	39.0	34.5	37.6	37.6	34.7	34.7	37.3	36.8	36.8	40.3	40.7	38.5	32.6	32.6	32.6	32.6
Rec_63-G	5	53.8	54.6	54.2	54.7	54.4	53.0	50.9	52.0	50.8	49.8	49.3	51.2	51.4	47.9	44.9	46.3	46.5	45.6	38.9	39.6	42.9	41.5	37.2	40.4	40.4	37.5	37.5	40.1	39.6	39.6	43.2	43.6	41.4	35.5	35.5	35.5	35.5
Rec_64-G	5	55.1	55.7	55.8	56.4	55.7	54.3	52.2	53.1	51.7	50.2	49.7	51.3	52.0	49.6	46.5	47.4	47.7	46.8	41.0	41.8	44.9	42.9	37.8	41.0	41.0	38.2	38.2	40.8	40.3	40.3	43.9	44.6	42.6	36.3	36.3	36.3	36.3
Rec_65-G	5	55.7	57.9	57.8	58.5	56.9	55.2	55.5	55.8	54.1	52.8	52.2	54.1	54.5	51.3	48.6	49.8	50.0	49.1	42.9	43.8	46.8	44.9	40.2	43.4	43.4	40.5	40.5	43.1	42.6	42.6	46.2	46.7	44.6	38.6	38.6	38.6	38.6
Rec_66-G	5	52.9	56.5	57.8	57.7	55.9	54.2	52.7	54.0	52.5	50.2	49.3	51.0	51.8	50.3	46.8	47.3	47.7	46.9	42.6	43.4	46.7	45.1	40.5	43.7	43.7	40.8	40.8	43.4	42.9	42.9	46.5	47.1	45.0	38.9	38.9	38.9	38.9
Rec_67-G	5	53.6	56.4	57.3	58.1	56.3	54.5	53.0	54.3	52.8	50.5	49.7	51.3	52.1	50.7	47.6	48.1	48.5	47.7	43.2	44.0	47.1	45.2	40.2	43.4	43.4	40.6	40.6	43.2	42.7	42.7	46.3	46.9	44.9	38.6	38.6	38.6	38.6
Rec_68-G	5	55.8	58.5	59.2	57.7	57.0	55.9	56.5	56.2	53.8	52.9	52.2	54.2	54.5	51.0	47.2	48.5	48.9	48.1	41.0	40.9	44.4	43.3	39.1	42.3	42.3	39.4	39.4	42.0	41.5	41.5	45.1	45.5	43.3	37.4	37.4	37.4	37.4
Rec_69-G	5	56.4	57.1	56.7	57.1	56.7	55.1	53.4	54.2	52.7	51.6	51.2	52.9	53.4	50.7	47.8	49.0	49.1	48.0	42.8	43.9	46.9	45.0	40.6	43.8	43.8	40.9	40.9	43.5	43.0	43.0	46.6	47.0	44.8	38.9	38.9	38.9	38.9
Rec_70-G	5	54.8	58.4	59.6	58.5	57.0	55.7	56.2	56.2	54.1	52.4	51.5	53.6	54.0	51.2	47.1	48.2	48.6	47.9	42.0	42.3	46.2	45.4	41.3	44.5	44.5	41.6	41.6	44.2	43.7	43.7	47.3	47.7	45.6	39.7	39.7	39.7	39.7
Rec_71-G	5	54.1	58.3	59.7	58.4	56.9	55.6	54.5	55.1	53.0	51.8	50.8	52.7	53.5	51.4	47.6	48.2	48.7	48.0	43.3	43.8	46.9	45.1	40.5	43.7	43.7	40.8	40.8	43.4	42.9	42.9	46.5	47.0	44.9	38.9	38.9	38.9	38.9
Rec_72-G	5	53.3	56.8	57.6	57.5	55.6	54.0	53.5	54.1	52.4	50.4	49.5	51.4	52.4	50.9	47.4	47.9	48.3	47.4	43.4	44.3	47.3	45.3	40.5	43.7	43.7	40.8	40.8	43.4	42.9	42.9	46.5	47.1	45.0	38.9	38.9	38.9	38.9
Rec_73-G	5	54.5	57.9	58.8	57.9	56.3	55.0	54.0	54.9	53.3	51.6	50.7	52.7	53.5	51.4	47.1	48.0	48.4	47.6	42.8	43.3	46.6	45.1	40.7	43.9	43.9	41.0	41.0	43.6	43.1	43.1	46.7	47.2	45.1	39.1	39.1	39.1	39.1
Rec_74-G	5	55.0	58.5	59.6	59.3	57.1	55.6	54.6	55.4	53.6	51.8	50.9	52.6	53.8	52.5	48.9	49.4	49.8	49.0	44.8	45.6	48.5	46.3	41.5	44.7	44.7	41.8	41.8	44.4	43.9	43.9	47.5	48.0	45.9	39.9	39.9	39.9	39.9
Rec_75-G	5	53.5	56.4	57.0	57.7	55.5	53.6	53.4	54.1	52.4	50.1	49.3	50.8	52.2	51.5	48.1	48.5	48.9	47.9	44.8	45.8	48.8	46.9	42.3	45.5	45.5	42.7	42.7	45.3	44.8	44.8	48.4	48.8	46.7	40.7	40.7	40.7	40.7
Rec_76-G	5	53.8	58.0	59.1	58.2	56.4	54.9	55.1	55.4	53.3	51.5	50.6	52.4	53.2	51.2	47.0	47.8	48.3	47.7	42.2	42.3	46.2	45.4	41.2	44.4	44.4	41.6	41.6	44.2	43.7	43.7	47.3	47.7	45.6	39.6	39.6	39.6	39.6
Rec_77-G	5	56.0	59.2	59.9	58.5	57.3	56.1	55.6	55.9	53.5	52.5	51.6	53.1	54.3	52.4	47.5	48.3	48.9	48.4	42.1	41.8	46.0	45.6	41.6	44.8	44.8	41.9	41.9	44.5	44.0	44.0	47.6	48.0	45.8	39.9	39.9	39.9	39.9
Rec_78-G	5	56.9	60.3	61.2	59.6	58.7	57.4	56.6	57.1	54.8	53.4	52.5	53.8	55.1	53.3	47.6	48.6	49.3	48.7	42.3	41.7	46.5	46.4	42.3	45.5	45.5	42.6	42.6	45.2	44.7	44.7	48.3	48.8	46.7	40.6	40.6	40.6	40.6
Rec_79-G	5	57.9	60.1	59.6	60.4	58.5	56.8	56.0	57.0	55.3	54.0	53.4	54.9	56.1	54.3	50.4	51.2	51.5	50.6	45.4	46.3	49.8	48.2	43.4	46.6	46.6	43.8	43.8	46.4	45.9	45.9	49.5	50.2	48.1	41.8	41.8	41.8	41.8
Rec_80-G	5	59.0	60.7	60.4	58.4	58.7	57.5	55.8	56.5	54.6	54.2	53.5	55.2	56.2	53.6	48.0	49.7	50.0	49.1	41.7	41.9	46.4	46.4	42.6	45.8	45.8	42.9	42.9	45.4	44.9	44.9	48.5	48.9	46.6	40.8	40.8	40.8	40.8
Rec_81-G	5	57.2	58.9	58.8	56.8	57.1	56.1	54.5	55.2	53.4	53.1	52.5	54.3	55.0	52.1	47.2	48.8	49.1	48.2	40.8	41.1	44.2	42.6	38.3	41.4	41.4	38.5	38.5	41.0	40.5	40.5	44.1	44.5	42.4	36.4	36.4	36.4	36.4
Rec_82-G	5	56.7	59.2	59.1	58.3	57.1	55.7	55.9	56.0	54.0	53.1	52.4	54.3	55.1	52.4	48.0	49.3	49.6	48.8	42.1	42.6	46.1	44.9	40.4	43.6	43.6	40.8	40.8	43.4	42.9	42.9	46.5	47.0	44.8	38.8	38.8	38.8	38.8
Rec_83-G	5	56.0	58.2	58.1	57.8	56.4	55.1	56.6	56.1	53.5	52.5	51.9	53.6	54.4	51.8	48.0	49.1	49.4	48.5	42.4	43.1	45.9	43.4	38.4	41.6	41.6	38.8	38.8	41.4	40.9	40.9	44.5	45.0	42.9	36.8	36.8	36.8	36.8
Rec_84-G	5	56.1	58.3	58.3	55.9	56.2	55.3	57.0	56.2	53.0	52.7	52.0	53.9	54.3	50.7	45.9	47.9	48.2	47.4	36.9	34.6	39.2	38.8	34.2	37.4	37.4	34.6	34.6	37.1	36.6	36.6	40.2	40.9	38.9	32.5	32.5	32.5	32.5
Rec_85-G	5	55.3	57.8	58.2	57.7	56.3	54.9	55.6	55.4	53.0	52.1	51.4	53.4	54.0	51.3	47.8	48.9	49.2	48.2	42.8	43.7	46.6	44.4	39.8	43.0	43.0	40.1	40.1	42.7	42.2	42.2	45.8	46.2	44.1	38.1	38.1	38.1	38.1
Rec_86-G	5	55.0	57.0	57.1	55.9	55.4	54.4	54.6	54.5	52.3	51.9	51.2	53.2	53.6	50.3	46.4	47.8	48.1	47.3	40.1	40.4	43.7	42.2	37.8	41.0	41.0	38.1	38.1	40.7	40.2	40.2	43.7	44.2	42.0	36.0	36.0	36.0	36.0
Rec_87-G	5	55.2	57.4	57.6	55.0	55.4	54.6	55.3	54.9	52.2	52.0	51.3	53.4	53.8	49.9	45.6	47.3	47.6	46.7	38.4	38.2	41.6	40.5	36.6	39.8	39.8	36.9	36.9	39.4	38.8	38.8	42.3	42.7	40.4	34.6	34.6	34.6	34.6
Rec_88-G	5	55.2	57.6	58.0	57.2	56.2	54.8	56.0	55.7	53.5	52.2	51.6	53.6	53.9	50.3	46.5	48.0	48.3	47.4	40.2	40.6	44.5	43.7	39.4	42.6	42.6	39.8	39.8	42.4	41.9	41.9	45.5	45.9	43.8	37.8	37.8	37.8	37.8
Rec_89-G	5	55.4	57.4	57.4	57.6	56.3	54.9	56.0	55.7	53.3	52.3	51.8	53.8	54.1	50.8	48.1	49.2	49.5	48.5	42.9	43.8	46.8	44.7	40.1	43.3	43.3	40.5	40.5	43.0	42.5	42.5	46.1	46.6	44.4	38.5	38.5	38.5	38.5
Rec_90-G	5	53.9	55.4	55.2	57.3	55.4	53.2	51.9	53.3	52.2	49.9	49.4	51.2	51.8	49.8	47.2	47.9	48.1	47.1	42.8	44.0	47.3	46.0	41.7	44.9	44.9	42.0	42.0	44.6	44.1	44.1	47.7	48.1	45.9	40.0	40.0	40.0	40.0
Rec_91-G	5	55.5	58.9	60.3	58.5	57.8	56.6	54.5	55.3	53.1	52.3	51.3	52.8	53.8	51.8	47.2	48.1	48.7	48.0	42.4	42.3	45.8	44.6	40.3	43.5	43.5	40.6	40.6	43.2	42.7	42.7	46.3	46.7	44.5	38.6	38.6	38.6	38.6
Rec_92-G	5	55.7	59.1	60.4	59.3	57.9	56.6	55.2	56.0	54.2	52.8	51.9	53.7	54.5	52.3	48.1	49.0	49.4	48.7	43.3	43.7	47.1	45.7	41.2	44.4	44.4	41.5	41.5	44.1	43.6	43.6	47.2	47.7	45.6	39.6	39.6	39.6	39.6
Rec_93-G	5	55.4	58.8	60.1	58.9	57.7	56.2	54.6	55.5	53.5	51.9	50.9	52.6	53.7	52.1	47.6	48.2	48.7	48.0	43.1	43.5	47.1	46.0	41.7	44.9	44.9	42.0	42.0	44.6	44.1	44.1	47.7	48.2	46.0	40.0	40.0	40.0	40.0
Rec_94-G	5	55.7	58.7	59.4	58.8	57.5	55.8	54.5	55.4	53.8	52.2	51.3	53.1	54.2	52.4	48.0	48.8	49.3	48.5	43.2	43.7	47.5	46.7	42.6	45.8	45.8	42.9	42.9	45.5	45.0	45.0	48.6	49.0	46.8	40.9	40.9	40.9	40.9
Rec_95-G	5	55.1	58.1	58.8	58.1	57.0	55.3	53.8	54.8	53.1	51.3	50.4	51.9	53.1	51.6	47.2	47.9	48.4	47.6	43.2	43.8	47.4	46.1	41.6	44.8	44.8	42.0	42.0	44.6	44.1	44.1	47.7	48.2	46.1	40.1	40.1	40.1	40.1
Rec_96-G	5	55.9	58.7	59.3	58.3	57.4	55.8	53.9	55.0	53.4	52.0	51.2	52.7	53.8	52.0	47.2	48.1	48.6	47.8	41.8	42.1	46.1	45.3	40.7	43.9	43.9	41.1	41.1	43.7	43.2	43.2	46.8	47.5	45.4	39.2	39.2	39.2	39.2
Rec_97-G	5	56.3	58.8	59.3	58.7	57.6	56.0	54.6	55.6	53.7	52.5	51.8	53.3	54.3	52.5	48.3	49.1	49.5	48.7	43.8	44.5	48.0	46.7	42.2	45.4	45.4	42.6	42.6	45.2	44.7	44.7	48.3	48.8	46.6	40.6	40.6	40.6	40.6
Rec_98-G	5	56.5	59.1	59.5	60.3	58.3	56.2	54.9	56.1	54.6	52.3	51.6	52.9	54.4	53.4	49.5	50.0	50.3	49.4	45.5	46.5	50.0	48.5	43.7	46.9	46.9	44.1	44.1	46.7	46.2	46.2	49.8	50.5	48.4	42.2	42.2	42.2	42.2
Rec_99-G	5	56.5	59.0	58.7	60.8	58.3	55.6	55.7	57.2	56.3	53.4	52.8	54.7	55.4	53.3	49.3	50.1	50.4	49.5	44.1	45.0	50.2	50.2	45.8	49.0	49.0	46.2	46.2	48.8	48.3	48.3	51.9	52.6	50.5	44.3	44.3	44.3	44.3
Rec_100-G	5	58.3	60.3	60.1	58.2	58.0	56.8	55.4	56.3	54.3	53.6	53.0	54.4	55.6	53.5	47.6	49.0	49.4	48.5	41.7	42.1	46.0	45.0	40.5	43.7	43.7	40.8	40.8	43.4	42.9	42.9	46.5	47.1	45.0	38.8	38.8	38.8	38.8
Rec_101-G	5	57.1	59.4	59.5	57.3	57.3	56.2	55.3	55.6	53.4	53.1	52.5	54.1	54.9	52.0	46.9	48.5	48.8	47.9	40.1	40.0	44.1	43.3	38.7	41.9	41.9	39.0	39.0	41.6	41.1	41.1	44.7	45.4	43.4	37.0	37.0	37.0	37.0
Rec_102-G	5	57.0	59.4	59.7	57.1	57.3	56.4	55.9	55.9	53.5	53.3	52.6	54.5	55.1	51.8	46.5	48.3	48.7	47.9	38.0	35.9	41.9	42.5	38.4	41.6	41.6	38.7	38.7	41.2	40.7	40.7	44.3	44.9	42.8	36.6	36.6	36.6	36.6
Rec_103-G	5	55.7	57.9	57.7	55.6	55.9	54.8	54.7	54.6	52.2	51.9	51.3	53.1	53.7	50.3	45.5	47.3	47.6	46.7	37.2	36.6	41.0	40.0	34.6	37.9	37.9	35.1	35.1	37.7	37.3	37.3	41.0	42.0	40.2	33.4	33.4	33.4	33.4
Rec_104-G	5	56.6	59.3	59.9	58.8	57.8	56.2	55.7	56.3	54.7	53.3	52.5	54.6	55.2	52.3	47.8	49.1	49.4	48.6	41.6	42.0	46.2	45.6	41.3	44.5	44.5	41.6	41.6	44.2	43.8	43.8	47.4	47.9	45.8	39.8	39.8	39.8	39.8
Rec_105-G	5	56.6	59.5	60.2	58.2	57.6	56.4	55.8	56.2	54.4	53.6	52.7	54.9	55.4	52.2	47.6	49.0	49.3	48.4	42.1	42.5	46.0	44.8	40.5	43.7	43.7	40.9	40.9	43.5	43.0	43.0	46.6	47.0	44.8	38.9	38.9	38.9	38.9
Rec_106-G	5	56.9	59.7	60.7	57.8	57.7	56.8	56.7	56.4	53.9	53.7	52.9	55.0	55.4	51.7	46.8	48.5	48.8	48.0	39.6	39.2	43.0	42.2	37.9	41.1	41.1	38.2	38.2	40.7	40.2	40.2	43.8	44.3	42.2	36.1	36.1	36.1	36.1
Rec_107-G	5	57.0	59.9	60.9	58.8	58.3	57.1	56.5	56.7	54.7	53.7	52.8	54.9	55.4	52.0	47.1	48.5	48.9	48.2	40.6	40.3	44.5	44.0	39.8	43.0	43.0	40.1	40.1	42.7	42.2	42.2	45.8	46.3	44.2	38.2	38.2	38.2	38.2
Rec_108-G	5	51.4	53.9	54.3	56.3	54.0	51.9	50.9	52.5	51.5	48.2	47.6	49.2	49.9	48.5	45.4	45.8	46.2	45.4	40.8	41.7	45.5	44.5	39.8	43.0	43.0	40.2	40.2	42.8	42.3	42.3	45.9	46.6	44.5	38.3	38.3	38.3	38.3
Rec_109-G	5	55.4	58.3	59.2	58.2	56.8	55.3	55.9	56.1	54.3	52.6	51.8	54.1	54.4	51.1	47.5	48.6	48.9	47.8	42.7	43.7	47.0	45.6	41.3	44.5	44.5	41.7	41.7	44.3	43.8	43.8	47.4	47.8	45.6	39.7	39.7	39.7	39.7
Rec_110-G	5	54.6	56.7	57.2	57.2	56.0	54.3	53.3	54.4	53.1	50.8	50.2	52.0	52.5	49.9	46.2	47.3	47.6	46.7	40.5	41.2	45.1	44.2	39.7	42.9	42.9	40.1	40.1	42.7	42.2	42.2	45.8	46.4	44.3	38.2	38.2	38.2	38.2
Rec_111-G	5	52.8	55.5	55.9	59.1	56.6	54.3	53.2	55.0	54.0	50.7	50.2	51.5	52.3	51.4	48.5	49.0	49.5	48.7	44.3	45.0	48.7	47.7	43.3	46.5	46.5	43.7	43.7	46.3	45.8	45.8	49.4	49.9	47.8	41.7	41.7	41.7	41.7
Rec_112-G	5	54.9	57.3	57.9	59.8	57.8	55.6	53.9	55.4	54.0	51.7	51.0	52.2	53.4	52.7	49.6	50.1	50.5	49.6	45.6	46.5	49.7	48.1	43.7	46.9	46.9	44.0	44.0	46.6	46.1	46.1	49.7	50.1	48.0	42.0	42.0	42.0	42.0
Rec_113-G	5	54.9	56.9	56.9	60.1	57.7	55.4	53.8	56.0	55.0	51.7	51.2	52.4	53.5	52.7	49.5	50.0	50.4	49.6	45.1	45.9	49.7	48.7	44.2	47.4	47.4	44.5	44.5	47.1	46.6	46.6	50.2	50.8	48.8	42.6	42.6	42.6	42.6
Rec_114-G	5	55.0	57.4	57.6	59.9	57.6	55.4	54.0	55.6	54.4	51.7	51.1	52.4	53.6	53.0	50.0	50.4	50.7	49.8	46.3	47.4	50.7	49.2	44.7	47.9	47.9	45.0	45.0	47.6	47.1	47.1	50.7	51.2	49.0	43.0	43.0	43.0	43.0
Rec_115-G	5	55.3	57.2	56.7	59.1	57.1	54.7	53.5	55.2	54.3	51.7	51.2	52.4	53.5	52.6	49.1	49.8	50.1	49.1	45.1	46.1	50.0	49.3	45.2	48.4	48.4	45.5	45.5	48.1	47.6	47.6	51.2	51.6	49.4	43.5	43.5	43.5	43.5
Rec_116-G	5	56.3	59.1	59.4	60.1	58.3	56.2	55.0	56.3	54.8	52.7	52.0	53.2	54.4	53.4	49.7	50.3	50.6	49.7	45.9	46.8	50.6	49.8	45.6	48.8	48.8	45.9	45.9	48.5	48.0	48.0	51.6	52.0	49.9	43.9	43.9	43.9	43.9
Rec_117-G	5	57.2	59.7	59.6	61.2	59.1	56.7	55.4	56.9	55.7	53.3	52.7	53.8	55.1	54.2	50.7	51.2	51.5	50.5	46.2	47.3	51.2	50.3	45.7	48.9	48.9	46.0	46.0	48.6	48.1	48.1	51.7	52.4	50.3	44.1	44.1	44.1	44.1
Rec_118-G	5	57.0	59.8	59.7	61.3	59.1	56.5	55.9	57.6	56.8	53.7	53.0	54.8	55.7	54.1	50.3	51.0	51.3	50.3	46.2	47.2	51.7	51.3	46.9	50.1	50.1	47.2	47.2	49.8	49.3	49.3	52.9	53.5	51.5	45.3	45.3	45.3	45.3
Rec_119-G	5	58.7	60.4	59.8	58.9	58.6	57.3	55.9	56.7	54.6	53.8	53.3	54.5	55.6	53.5	48.1	49.6	50.0	49.1	42.1	42.2	47.7	48.4	44.6	47.7	47.7	44.8	44.8	47.4	46.9	46.9	50.4	50.9	48.7	42.7	42.7	42.7	42.7
Rec_120-G	5	57.6	59.8	59.8	59.7	58.8	56.7	56.0	57.0	55.7	53.8	53.2	54.9	55.6	53.1	48.5	49.9	50.2	49.3	42.5	43.0	48.4	48.8	44.7	47.9	47.9	45.0	45.0	47.6	47.1	47.1	50.7	51.2	49.1	43.0	43.0	43.0	43.0
Rec_121-G	5	56.6	59.3	59.8	59.6	58.2	56.3	55.9	56.7	55.1	53.4	52.7	54.5	55.3	53.1	48.9	49.9	50.3	49.4	44.2	44.9	49.0	48.4	44.3	47.5	47.5	44.6	44.6	47.2	46.7	46.7	50.3	50.7	48.6	42.6	42.6	42.6	42.6
Rec_122-G	5	56.3	59.0	59.5	58.0	57.4	56.1	55.7	55.9	54.0	53.3	52.6	54.7	55.3	52.5	48.3	49.5	49.8	48.8	43.5	44.3	48.1	47.4	43.4	46.6	46.6	43.7	43.7	46.3	45.8	45.8	49.3	49.7	47.4	41.6	41.6	41.6	41.6
Rec_123-G	5	56.0	58.9	59.5	57.8	57.1	55.7	54.8	55.2	53.2	52.4	51.6	53.5	54.2	51.6	46.7	47.9	48.3	47.5	40.9	41.1	45.6	45.1	40.7	43.9	43.9	41.1	41.1	43.7	43.2	43.2	46.8	47.4	45.4	39.2	39.2	39.2	39.2

Ontario Regional Sports Complex EIR
Construction Noise Analysis, Predicted Daytime Construction Noise Levels by Month for All Receptors, 8-hour Leq

Receptor	Receptor Group	Cumulative Construction Noise Levels by Month, Maximum Hourly Leq, dBA																																				
		9/1/2024 9/30/2024	10/1/2024 10/31/2024	11/1/2024 11/30/2024	12/1/2024 12/31/2024	1/1/2025 1/31/2025	2/1/2025 2/28/2025	3/1/2025 3/31/2025	4/1/2025 4/30/2025	5/1/2025 5/31/2025	6/1/2025 6/30/2025	7/1/2025 7/31/2025	8/1/2025 8/31/2025	9/1/2025 9/30/2025	10/1/2025 10/31/2025	11/1/2025 11/30/2025	12/1/2025 12/31/2025	1/1/2026 1/31/2026	2/1/2026 2/28/2026	3/1/2026 3/31/2026	4/1/2026 4/30/2026	5/1/2026 5/31/2026	6/1/2026 6/30/2026	7/1/2026 7/31/2026	8/1/2026 8/31/2026	9/1/2026 9/30/2026	10/1/2026 10/31/2026	11/1/2026 11/30/2026	12/1/2026 12/31/2026	1/1/2027 1/31/2027	2/1/2027 2/28/2027	3/1/2027 3/31/2027	4/1/2027 4/30/2027	5/1/2027 5/31/2027	6/1/2027 6/30/2027	7/1/2027 7/31/2027	8/1/2027 8/31/2027	9/1/2027 9/30/2027
Rec_124-G	5	56.4	59.1	59.6	58.5	57.9	56.3	55.5	56.4	54.8	53.4	52.6	54.7	55.2	52.2	47.5	48.8	49.2	48.5	40.9	40.5	45.4	45.5	41.3	44.5	44.5	41.7	41.7	44.3	43.8	43.8	47.4	47.9	45.8	39.8	39.8	39.8	39.8
Rec_125-G	5	56.4	59.1	59.9	58.8	58.2	56.6	56.1	56.6	54.8	53.4	52.7	54.7	55.2	52.4	48.0	49.1	49.5	48.7	43.0	43.4	47.1	46.1	41.8	45.0	45.0	42.1	42.1	44.7	44.2	44.2	47.8	48.3	46.1	40.2	40.2	40.2	40.2
Rec_126-G	5	56.2	59.0	60.1	58.1	58.0	56.7	55.4	55.7	53.2	53.0	52.2	54.0	54.6	51.8	46.9	48.2	48.7	48.0	40.7	40.0	44.1	43.5	39.2	42.4	42.4	39.5	39.5	42.1	41.6	41.6	45.2	45.7	43.6	37.5	37.5	37.5	37.5
Rec_127-G	5	54.5	56.9	57.4	58.8	57.3	55.5	53.7	54.9	53.1	51.1	50.4	51.4	52.5	51.7	48.1	48.6	49.2	48.4	43.9	44.4	47.9	46.4	41.7	44.9	44.9	42.1	42.1	44.7	44.2	44.2	47.8	48.4	46.4	40.2	40.2	40.2	40.2
Rec_128-G	5	54.9	58.7	60.0	58.3	57.5	56.0	55.3	55.9	54.1	52.3	51.3	53.4	53.9	51.0	45.9	46.9	47.5	46.8	40.3	40.1	44.4	43.9	39.5	42.7	42.7	39.9	39.9	42.5	42.0	42.0	45.6	46.2	44.1	38.0	38.0	38.0	38.0
Rec_129-G	5	53.3	55.1	55.4	57.7	55.6	53.4	51.6	53.6	52.7	49.6	49.0	50.6	51.3	49.9	47.1	47.7	48.0	47.1	42.4	43.4	47.2	46.1	41.5	44.7	44.7	41.8	41.8	44.4	43.9	43.9	47.5	48.1	46.1	39.9	39.9	39.9	39.9
Rec_130-G	5	54.8	57.3	58.1	57.2	56.3	54.8	54.4	55.3	54.0	51.6	50.9	53.0	53.3	50.2	45.8	47.2	47.6	46.7	39.1	39.2	43.9	43.8	39.5	42.7	42.7	39.9	39.9	42.5	42.0	42.0	45.6	46.2	44.1	38.0	38.0	38.0	38.0
Rec_131-G	5	54.7	56.0	56.1	60.7	57.8	55.1	52.9	55.5	55.1	51.2	50.7	52.0	52.8	52.4	50.3	50.7	50.9	50.0	46.1	47.3	50.9	49.5	44.8	48.0	48.0	45.2	45.2	47.8	47.3	47.3	50.9	51.6	49.5	43.3	43.3	43.3	43.3
Rec_132-G	5	54.4	57.6	58.8	59.0	57.9	56.1	54.9	55.8	54.3	52.5	51.6	53.6	53.8	50.7	46.4	47.7	48.4	47.9	40.2	38.4	45.8	46.9	42.7	45.9	45.9	43.1	43.1	45.7	45.2	45.2	48.8	49.4	47.4	41.2	41.2	41.2	41.2
Rec_133-G	5	54.0	55.8	55.7	59.1	56.3	53.8	52.9	55.4	55.1	50.6	50.1	52.1	52.5	51.3	49.0	49.3	49.5	48.6	44.5	45.7	49.0	47.3	42.5	45.7	45.7	42.9	42.9	45.5	45.0	45.0	48.6	49.2	47.1	40.9	40.9	40.9	40.9
Rec_134-G	5	55.2	57.4	58.1	59.6	58.2	56.2	54.6	55.4	53.6	52.3	51.6	53.1	53.8	51.8	48.5	49.4	49.9	49.2	43.6	44.0	48.3	47.7	43.2	46.4	46.4	43.6	43.6	46.2	45.7	45.7	49.3	50.0	47.9	41.7	41.7	41.7	41.7
Rec_135-G	5	55.1	57.8	58.6	59.1	58.0	56.2	55.5	55.9	54.0	52.8	52.1	54.1	54.4	51.3	47.6	48.7	49.3	48.6	41.9	41.6	46.8	46.9	42.6	45.8	45.8	43.0	43.0	45.6	45.1	45.1	48.7	49.3	47.2	41.1	41.1	41.1	41.1
Rec_136-G	5	55.0	57.4	57.9	58.3	57.2	55.4	54.2	54.9	53.1	52.0	51.3	53.1	53.7	51.0	47.2	48.3	48.8	48.1	41.5	41.3	46.5	46.6	42.5	45.7	45.7	42.9	42.9	45.5	45.0	45.0	48.6	49.1	47.0	40.9	40.9	40.9	40.9
Rec_137-G	5	55.3	57.7	58.1	58.8	57.5	55.7	55.2	55.9	54.3	53.2	52.4	54.5	54.8	51.8	48.5	49.6	50.0	49.3	43.5	43.8	48.2	47.8	43.6	46.8	46.8	44.0	44.0	46.6	46.1	46.1	49.7	50.2	48.0	42.0	42.0	42.0	42.0
Rec_138-G	5	54.5	57.4	58.1	58.9	57.4	55.3	53.9	55.1	53.8	51.7	50.9	52.7	53.4	51.4	47.6	48.4	48.9	48.1	42.7	43.1	47.8	47.7	43.4	46.6	46.6	43.7	43.7	46.3	45.8	45.8	49.4	50.0	47.9	41.7	41.7	41.7	41.7
Rec_139-G	5	56.1	58.4	58.8	59.6	58.2	56.4	55.9	56.6	55.1	53.6	52.9	55.0	55.3	52.4	48.7	49.8	50.2	49.4	43.5	43.9	48.7	48.6	44.3	47.5	47.5	44.6	44.6	47.2	46.7	46.7	50.3	50.9	48.9	42.7	42.7	42.7	42.7
Rec_140-G	5	56.3	59.1	59.4	59.6	58.4	56.6	55.7	56.6	55.1	53.7	52.9	54.8	55.3	52.4	48.3	49.5	50.0	49.3	42.4	42.2	47.8	48.1	43.6	46.8	46.8	44.0	44.0	46.6	46.1	46.1	49.7	50.4	48.4	42.1	42.1	42.1	42.1
Rec_141-G	5	56.7	59.7	60.5	60.0	58.8	57.2	56.5	56.7	54.5	53.9	53.1	55.0	55.5	52.5	48.6	49.7	50.2	49.5	42.6	42.4	48.0	48.3	44.0	47.2	47.2	44.4	44.4	46.9	46.4	46.4	50.0	50.7	48.7	42.4	42.4	42.4	42.4
Rec_142-G	5	56.6	59.1	59.2	59.6	58.1	56.1	55.6	56.6	55.2	53.4	52.8	54.6	55.1	52.3	48.1	49.5	49.9	49.1	41.8	41.8	48.2	49.0	45.0	48.2	48.2	45.4	45.4	48.0	47.5	47.5	51.1	51.6	49.5	43.4	43.4	43.4	43.4
Rec_143-G	5	57.7	60.2	60.3	59.6	58.6	57.1	56.3	56.7	54.8	54.4	53.7	55.5	56.1	53.4	48.9	50.1	50.5	49.6	43.9	44.3	49.6	49.9	45.7	48.9	48.9	46.0	46.0	48.6	48.1	48.1	51.7	52.3	50.2	44.0	44.0	44.0	44.0
Rec_144-G	5	54.4	57.1	56.8	60.9	57.8	54.5	53.4	56.2	56.0	51.7	51.0	52.7	53.8	53.5	50.2	50.5	50.8	49.8	46.9	48.0	52.3	51.7	47.0	50.2	50.2	47.4	47.4	50.0	49.5	49.5	53.1	53.8	51.8	45.5	45.5	45.5	45.5
Rec_145-G	5	55.9	58.6	58.4	61.7	58.7	55.7	54.5	57.0	56.5	52.9	52.3	53.7	54.8	54.3	51.4	51.8	52.0	50.9	47.5	48.7	52.7	51.8	47.3	50.5	50.5	47.6	47.6	50.2	49.7	49.7	53.3	53.9	51.9	45.7	45.7	45.7	45.7
Rec_146-G	5	55.5	57.8	57.8	61.2	58.3	55.7	54.7	56.5	55.7	52.6	52.0	53.7	54.5	53.6	50.7	51.0	51.3	50.4	46.5	47.5	51.7	51.0	46.4	49.6	49.6	46.8	46.8	49.4	48.9	48.9	52.5	53.1	51.1	44.8	44.8	44.8	44.8
Rec_147-G	5	55.6	58.0	58.0	60.8	58.3	55.8	54.4	56.5	55.8	52.8	52.2	53.8	54.6	53.5	50.5	51.1	51.4	50.4	46.5	47.5	51.5	50.5	45.8	49.0	49.0	46.2	46.2	48.8	48.3	48.3	51.9	52.6	50.6	44.3	44.3	44.3	44.3
Rec_148-G	5	55.4	57.2	56.9	60.2	57.6	55.2	53.9	55.8	55.0	52.2	51.7	53.2	54.0	52.8	50.1	50.7	51.0	50.0	45.9	47.0	50.8	49.8	45.1	48.3	48.3	45.5	45.5	48.1	47.6	47.6	51.2	51.9	49.8	43.6	43.6	43.6	43.6
Rec_149-G	5	54.5	57.0	57.3	60.1	57.5	55.2	54.0	55.8	55.0	52.2	51.5	53.2	53.8	52.4	49.8	50.4	50.7	49.8	45.7	46.7	50.6	49.8	45.4	48.6	48.6	45.7	45.7	48.3	47.8	47.8	51.4	52.0	49.9	43.7	43.7	43.7	43.7
Rec_150-G	5	53.6	55.7	56.0	59.4	56.6	54.1	52.3	54.5	53.9	50.6	49.9	51.4	52.2	51.6	49.1	49.4	49.8	48.9	45.1	46.1	50.1	49.2	44.8	48.0	48.0	45.2	45.2	47.8	47.3	47.3	50.9	51.4	49.3	43.2	43.2	43.2	43.2
Rec_151-G	5	54.2	56.5	57.0	59.7	57.2	55.1	53.8	55.6	54.9	52.1	51.4	53.2	53.6	52.1	49.4	50.1	50.5	49.6	45.6	46.4	50.3	49.6	45.2	48.4	48.4	45.5	45.5	48.1	47.6	47.6	51.2	51.8	49.7	43.6	43.6	43.6	43.6
Rec_152-G	5	53.6	55.3	55.4	60.6	57.4	54.6	53.0	55.8	55.4	51.0	50.5	52.1	52.7	52.2	50.0	50.3	50.6	49.7	45.8	46.8	50.6	49.6	45.0	48.2	48.2	45.3	45.3	47.9	47.4	47.4	51.0	51.7	49.6	43.4	43.4	43.4	43.4
Rec_153-G	5	53.1	55.6	56.2	60.2	57.4	55.1	54.0	55.8	55.0	51.7	51.1	52.9	53.2	51.6	49.0	49.5	50.0	49.2	44.5	45.2	49.7	49.3	44.8	48.0	48.0	45.2	45.2	47.8	47.3	47.3	50.9	51.6	49.5	43.3	43.3	43.3	43.3
Rec_154-G	5	54.7	57.4	58.1	57.1	56.5	54.8	54.0	54.8	53.4	51.4	50.7	52.6	53.0	50.0	45.7	47.1	47.4	46.6	39.1	39.3	44.0	43.7	39.2	42.4	42.4	39.6	39.6	42.2	41.7	41.7	45.3	46.0	43.9	37.7	37.7	37.7	37.7
Rec_155-G	5	52.8	54.5	54.3	60.6	56.7	53.3	51.8	56.3	56.6	50.3	49.9	51.6	52.3	52.6	50.8	50.9	51.1	50.0	46.7	48.0	51.2	49.2	44.3	47.5	47.5	44.7	44.7	47.3	46.8	46.8	50.4	51.1	49.0	42.8	42.8	42.8	42.8
Rec_156-G	5	48.2	51.3	52.2	60.5	55.7	52.2	49.8	55.2	55.8	48.6	47.9	49.7	50.4	51.8	50.4	50.3	50.5	49.6	46.6	47.9	51.1	49.2	44.4	47.6	47.6	44.8	44.8	47.4	46.9	46.9	50.5	51.1	49.1	42.9	42.9	42.9	42.9
Rec_157-G	5	50.0	53.2	54.5	59.7	55.6	52.9	51.7	54.1	53.7	48.9	48.2	50.2	50.9	51.0	49.5	49.5	49.8	48.8	45.6	46.8	49.9	48.0	43.2	46.4	46.4	43.6	43.6	46.2	45.7	45.7	49.3	49.9	47.8	41.7	41.7	41.7	41.7
Rec_158-G	5	49.0	50.8	51.0	58.8	54.3	50.9	48.9	53.5	53.9	47.9	47.4	48.9	49.9	50.8	49.0	49.1	49.4	48.5	45.3	46.4	49.9	48.5	43.9	47.1	47.1	44.3	44.3	46.9	46.4	46.4	50.0	50.6	48.5	42.4	42.4	42.4	42.4
Rec_159-G	5	52.5	55.4	56.0	60.4	56.5	53.9	52.8	55.0	54.5	51.0	50.2	52.1	53.0	52.4	50.8	50.9	51.2	50.2	46.6	47.8	50.9	49.0	44.2	47.4	47.4	44.6	44.6	47.2	46.7	46.7	50.3	50.9	48.8	42.7	42.7	42.7	42.7
Rec_160-G	5	53.5	56.2	56.9	61.6	57.9	55.4	54.2	56.6	56.2	52.2	51.6	53.5	54.0	53.3	51.8	52.0	52.3	51.3	47.9	49.0	52.2	50.5	45.8	49.0	49.0	46.1	46.1	48.7	48.2	48.2	51.8	52.4	50.3	44.2	44.2	44.2	44.2
Rec_161-G	5	55.6	58.5	58.9	60.3	57.8	55.5	55.5	57.2	56.6	53.2	52.5	54.8	55.2	53.1	50.2	50.8	51.0	49.9	45.8	47.1	50.6	49.1	44.3	47.5	47.5	44.7	44.7	47.3	46.8	46.8	50.4	51.1	49.0	42.8	42.8	42.8	42.8
Rec_162-G	5	54.5	56.3	55.4	57.0	55.5	52.8	52.6	54.5	54.0	50.8	50.4	52.0	52.8	50.9	46.9	48.1	48.3	47.3	41.3	42.3	47.1	47.0	42.6	45.8	45.8	43.0	43.0	45.6	45.1	45.1	48.7	49.3	47.2	41.0	41.0	41.0	41.0
Rec_163-G	5	55.3	58.2	58.6	62.5	59.3	56.6	55.6	57.4	56.6	53.3	52.6	54.4	55.0	54.0	51.7	52.0	52.3	51.4	47.5	48.6	52.9	52.2	47.6	50.8	50.8	47.9	47.9	50.5	50.0	50.0	53.6	54.3	52.3	46.0	46.0	46.0	46.0
Rec_164-G	5	55.2	58.4	59.0	61.6	58.7	56.1	55.5	57.3	56.6	53.1	52.5	54.3	54.9	53.8	51.0	51.4	51.7	50.7	47.3	48.4	52.6	52.0	47.6	50.8	50.8	47.9	47.9	50.5	50.0	50.0	53.6	54.2	52.1	45.9	45.9	45.9	45.9
Rec_165-G	5	53.5	56.7	56.8	60.6	57.7	54.7	52.9	55.9	55.7	51.6	50.8	52.6	53.0	52.1	48.7	48.9	49.4	48.6	44.7	45.5	51.2	51.6	47.3	50.5	50.5	47.7	47.7	50.3	49.8	49.8	53.4	54.0	51.9	45.7	45.7	45.7	45.7
Rec_166-G	5	57.2	59.7	60.1	60.6	59.1	56.9	56.0	56.6	54.8	53.7	53.0	54.7	55.4	53.2	49.4	50.4	50.7	49.8	45.0	45.8	50.9	51.0	46.7	49.9	49.9	47.1	47.1	49.7	49.2	49.2	52.8	53.4	51.3	45.1	45.1	45.1	45.1
Rec_167-G	5	55.3	58.4	59.3	60.5	58.3	56.0	55.3	56.6	55.6	52.7	51.9	53.9	54.4	52.3	48.5	49.2	49.7	48.9	44.3	45.0	50.3	50.5	46.2	49.4	49.4	46.6	46.6	49.2	48.7	48.7	52.3	52.9	50.8	44.6	44.6	44.6	44.6
Rec_168-G	5	55.3	58.0	58.2	59.6	58.0	55.7	54.9	55.9	54.6	52.9	52.1	54.2	54.6	52.0	48.3	49.3	49.7	49.0	42.7	43.0	48.8	49.3	45.1	48.3	48.3	45.4	45.4	48.0	47.5	47.5	51.1	51.7	49.7	43.5	43.5	43.5	43.5
Rec_169-G	5	54.8	57.8	58.5	59.7	58.1	56.0	55.2	55.9	54.1	53.0	52.2	54.3	54.6	51.5	48.2	49.1	49.7	49.0	42.9	42.8	48.6	48.9	44.5	47.7	47.7	44.9	44.9	47.5	47.0	47.0	50.6	51.3	49.3	43.0	43.0	43.0	43.0
Rec_170-G	5	54.6	57.5	58.1	58.9	57.4	55.6	54.3	55.1	53.6	52.4	51.5	53.5	54.0	51.2	47.2	48.3	49.0	48.4	41.3	40.3	47.1	47.9	43.7	46.9	46.9	44.1	44.1	46.7	46.2	46.2	49.8	50.4	48.4	42.1	42.1	42.1	42.1
Rec_171-G	5	53.5	56.3	56.7	56.0	55.5	53.9	52.8	53.3	51.6	51.0	50.1	52.3	52.6	49.2	44.4	45.9	46.5	45.9	37.0	34.4	43.3	44.7	40.7	43.9	43.9	41.0	41.0	43.6	43.1	43.1	46.7	47.3	45.3	39.1	39.1	39.1	39.1
Rec_172-G	5	49.1	49.9	48.0	48.6	48.3	46.6	46.0	47.0	45.7	44.4	44.0	45.8	46.6	43.9	38.9	40.7	40.8	39.7	30.9	32.0	37.3	37.2	32.5	35.7	35.7	32.9	32.9	35.5	35.0	35.0	38.6	39.4	37.5	31.0	31.0	31.0	31.0
Rec_173-G	5	48.2	51.1	50.5	48.8	48.6	47.2	46.6	47.5	46.6	45.2	44.2	47.1	47.5	44.0	38.1	39.5	39.8	39.0	31.4	31.7	37.7	38.2	34.0	37.2	37.2	34.3	34.3	36.9	36.4	36.4	40.0	40.6	38.5	32.3	32.3	32.3	32.3
Rec_174-G	5	50.9	53.1	53.3	56.6	52.7	50.3	50.0	52.4	52.1	47.9	47.4	49.2	50.2	49.8	47.9	48.2	48.3	47.1	44.5	45.9	48.3	45.2	40.2	43.4	43.4	40.5	40.5	43.1	42.6	42.6	46.2	46.6	44.5	38.6	38.6	38.6	38.6
Rec_175-G	5	48.8	51.6	52.6	56.9	54.0	51.8	49.7	52.8	52.6	48.2	47.4	49.3	49.5	48.8	46.7	47.2	47.6	46.8	42.8	43.6	47.2	46.0	41.5	44.7	44.7	41.8	41.8	44.4	44.0	44.0	47.6	48.1	46.0	39.9	39.9	39.9	39.9
Rec_176-G	5	53.0	55.6	56.3	57.7	55.6	53.7	53.0	55.2	54.9	51.2	50.5	52.7	52.8	50.5	47.8	48.5	48.8	47.8	43.7	44.7	47.9	46.3	41.8	45.0	45.0	42.1	42.1	44.7	44.2	44.2	47.8	48.3	46.2	40.2	40.2	40.2	40.2
Rec_177-G	5	54.2	56.4	56.8	58.2	56.3	54.5	53.5	55.4	54.8	51.6	51.0	52.9	53.3	51.2	48.2	49.0	49.3	48.4	43.6	44.5	47.8	46.3	41.8	45.0	45.0	42.2	42.2	44.8	44.3	44.3	47.9	48.4	46.3	40.3	40.3	40.3	40.3
Rec_178-G	5	54.4	57.1	57.7	60.5	57.7	55.2	53.9	57.5	57.6	52.0	51.4	53.5	53.9	53.0	49.8	50.3	50.6	49.6	45.9	47.0	50.6	49.4	44.9	48.1	48.1	45.2	45.2	47.8	47.3	47.3	50.9	51.5	49.4	43.3	43.3	43.3	43.3
Rec_179-G	5	52.9	56.4	56.9	60.8	57.2	54.6	53.6	56.3	56.2	51.6	50.8	53.3	53.8	52.7	50.6	50.9	51.1	50.1	46.7	47.9	51.1	49.5	45.1	48.3	48.3	45.5	45.5	48.1	47.6	47.6	51.2	51.6	49.4	43.5	43.5	43.5	43.5
Rec_180-G	5	53.3	56.4	57.1	60.3	57.4	54.8	53.7	56.3	56.0	51.5	50.8	52.8	53.4	52.4	49.9	50.4	50.7	49.8	45.8	46.8	50.5	49.5	45.3	48.5	48.5	45.6	45.6	48.2	47.7	47.7	51.3	51.7	49.5	43.6	43.6	43.6	43.6
Rec_181-G	5	53.5	57.5	58.8	60.9	58.2	55.6	54.9	56.3	55.2	51.8	50.9	53.1	53.6	52.2	49.8	50.2	50.5	49.6	46.0	47.0	50.8	50.0	45.8	49.0	49.0	46.2	46.2	48.7	48.2	48.2	51.8	52.2	50.0	44.1	44.1	44.1	44.1
Rec_182-G	5	50.9	53.0	52.6	59.6	55.6	52.6	50.6	55.4	55.8	49.3	48.8	50.8	51.1	51.3	49.3	49.6	49.9	49.0	45.8	46.9	50.4	49.1	44.6	47.8	47.8	45.0	45.0	47.6	47.1	47.1	50.7	51.2	49.0	43.0	43.0	43.0	43.0
Rec_183-G	5	56.4	59.7	60.7	61.6	59.9	57.3	56.9	57.8	56.6	54.2	53.4	55.5	55.8	53.7	50.5	51.3	51.6	50.6	46.8	47.8	52.1	51.6	47.2	50.4	50.4	47.6	47.6	50.2	49.7	49.7	53.3	53.9	51.8	45.6	45.6	45.6	45.6
Rec_184-G	5	56.1	58.7	59.1	60.9	58.4	56.2	55.5	57.3	56.7	53.4	52.7	54.5	55.1	53.7	50.7	51.3	51.6	50.6	46.4	47.4	51.4	50.6	46.3	49.5	49.5	46.6	46.6	49.2	48.7	48.7	52.3	52.8	50.7	44.6	44.6	44.6	44.6
Rec_185-G	5	57.3	60.0	60.0	60.5	58.8	56.8	56.1	57.6	56.9	54.2	53.4	55.5	56.0	53.9	49.9	50.7	51.1	50.1	45.6	46.5	51.0	50.7	46.6	49.8	49.8	46.9	46.9	49.5	49.0	49.0	52.6	53.1	51.0	45.0	45.0	45.0	45.0
Rec_186-G	5	56.8	59.3	59.1	60.8	58.6	56.5	55.7	57.6	57.0	53.9	53.2	55.1	55.7	54.1	50.8	51.5	51.7	50.7	46.7	47.7	51.6	50.9	46.6	49.8	49.8	46.9	46.9	49.5	49.0	49.0	52.6	53.1	51.0	44.9	44.9	44.9	44.9
Rec_187-G	5	57.1	60.0	60.3	61.1	59.3	56.9	56.5	58.4	57.9	54.5	53.8	55.8	56.2	54.3	50.6	51.4	51.7	50.6	46.9	48.0	52.0	51.4	47.3	50.5	50.5	47.6	47.6	50.2	49.7	49.7	53.3	53.7	51.5	45.6	45.6	45.6	45.6
Rec_188-G	5	50.3	52.9	53.0	57.4	53.4	50.8	50.1	58.8	59.9	51.6	51.3	53.5	52.1	52.6	48.2	48.5	48.7	47.6	44.4	45.7	48.7	46.5	41.6	44.8	44.8	41.9	41.9	44.5	44.0	44.0	47.6	48.2	46.1	40.0	40.0	40.0	40.0
Rec_189-G	5	44.4	46.8	46.1	55.3	49.8	46.5	44.0	57.6	59.0	49.5	49.3	51.6	49.3	51.0	46.1	45.9	46.1	45.0	42.6	44.0	46.7	44.0	38.6	41.8	41.8	39.0	39.0	41.6	41.1	41.1	44.7	45.4	43.4	37.1	37.1	37.1	37.1
Rec_190-G	5	44.3	46.9	46.6	54.2	50.2	47.3	44.4	52.0	52.9	45.3	44.7	46.7	45.5	46.2	43.1	43.1	43.6	42.8	39.0	39.9	44.1	43.3	38.7	41.9	41.9	39.1	39.1	41.7	41.3	41.3	44.9	45.6	43.5	37.3	37.3	37.3	37.3
Rec_191-G	5	44.7	47.5	47.7	55.5	50.8	47.6	45.0	57.6	58.9	49.9	49.6	51.8	49.5	51.0	46.1	46.1	46.4	45.3	43.1	44.3	47.2	44.9	39.9	43.1	43.1	40.3	40.3	42.9	42.4	42.4	46.0	46.6	44.6	38.4	38.4	38.4	38.4
Rec_192-G	5	43.7	47.0	47.2	57.1	52.0	48.0	45.4	53.0	53.9	45.5	44.9	47.0	47.2	49.0	47.4	47.3	47.5	46.4	44.3	45.6	48.7	46.5	41.5	44.7	44.7	41.8	41.8	44.4	44.0	44.0	47.6	48.3	46.2	40.0	40.0	40.0	40.0
Rec_193-G	5	44.0	48.1	44.6	58.7	52.8	45.3	44.8	60.8	62.3	52.6	52.5	54.9	52.2	54.2	48.8	48.0	48.1	46.9	45.0	46.5	50.5	49.2	43.9	47.1	47.1	44.3	44.3	46.9	46.5	46.5	50.1	51.1	49.2	42.5	42.5	42.5	42.5
Rec_194-G	5	59.1	63.7	63.4	70.8	66.9	60.6	60.3	66.1	66.9	59.0	58.5	60.8	60.2	60.7	57.2	56.8	57.0	56.0	53.0	54.3	61.9	62.6	57.7	60.9	60.9	58.1	58.1	60.7	60.3	60.3	63.9	64.9	63.0	56.3	56.3	56.3	56.3
Rec_195-G	5	58.7	63.6	63.4	70.8	66.9	60.6	60.3	65.5	66.2	58.6	58.1	60.3	59.9	60.3	57.0	56.7	56.9	55.9	52.9	54.2	61.8	62.6	57.7	60.9	60.9	58.1	58.1	60.7	60.3	60.3	63.9	64.9	63.0	56.3	56.3	56.3	56.3
Rec_196-G	5	59.6	64.2	63.8	71.2	67.3	60.8	60.5	65.3	65.8	58.6	58.1	60.2	60.1	60.3	57.1	56.8	57.1	56.1	53.0	54.3	62.1	62.9	58.1	61.4	61.4	58.6	58.6	61.2	60.7	60.7	64.4	65.3	63.4	56.8	56.8	56.8	56.8
Rec_197-G	5	59.9	64.4	64.0	71.3	67.4	61.0	60.7	65.0	65.4	58.5	57.9	60.0	60.0	60.2	57.0	56.8	57.0	56.0	52.9	54.2	62.1	63.0	58.3	61.5	61.5	58.7	58.7	61.3	60.8	60.8	64.5	65.4	63.5	56.9	56.9	56.9	56.9
Rec_198-G	5	60.1	64.6	64.4	71.2	67.4	61.2	61.0	64.6	64.7	58.4	57.8	59.8	60.1	59.9	56.9	56.8	57.0	56.0	52.6	53.9	61.9	62.8	58.1	61.3	61.3	58.5	58.5	61.1	60.7	60.7	64.3	65.2	63.3	56.7	56.7	56.7	56.7
Rec_199-G	5	60.7	64.9	64.5	71.4	67.6	61.3	61.0	64.5	64.5	58.4	57.8	59.7	60.1	60.0	56.9	56.7	57.0	56.0	52.7	54.0	62.2	63.1	58.4	61.6	61.6	58.8	58.8	61.4	61.0	61.0	64.6	65.5	63.6	57.0	57.0	57.0	57.0
Rec_200-G	5	60.9	65.0	64.6	71.4	67.6	61.4	61.1	64.3	64.2	58.4	57.8	59.6	60.2	59.9	56.8	56.7	56.9	56.0	52.6	53.8	62.0	63.0	58.4	61.6	61.6	58.8	58.8	61.4	60.9	60.9	64.6	65.4	63.5	57.0	57.0	57.0	57.0
Rec_201-G	5	60.4	64.8	64.6	71.1	67.5	61.3	61.1	63.9	63.6	58.1	57.4	59.3	59.9	59.5	56.5	56.5	56.7	55.8	52.4	53.6	61.8	62.7	58.1	61.3	61.3	58.5	58.5	61.1	60.7	60.7	64.3	65.2	63.2	56.7	56.7	56.7	56.7
Rec_202-G	5	61.2	65.3	64.9	71.3	67.6	61.4	61.3	63.8	63.4	58.3	57.7	59.4	60.2	59.7	56.4	56.4	56.7	55.7	52.2	53.4	61.8	62.9	58.3	61.5	61.5	58.7	58.7	61.3	60.8	60.8	64.4	65.3	63.3	56.8	56.8	56.8	56.8
Rec_203-G	5	61.8	65.7	65.3	71.1	67.6	61.7	61.5	63.8	63.2	58.6	57.9	59.5	60.5	59.8	56.2	56.3	56.6	55.6	51.9	53.1	61.6	62.7	58.1	61.3	61.3	58.5	58.5	61.1	60.7	60.7	64.3	65.1	63.2	56.7	56.7	56.7	56.7
Rec_204-G	5	61.9	65.7	65.5	70.8	67.4	61.8	61.8	63.5	62.6	58.6	57.9	59.4	60.5	59.7	56.2	56.4	56.6	55.7	51.8	53.0	61.2	62.2	57.7	60.9	60.9	58.1	58.1	60.7	60.3	60.3	63.9	64.7	62.7	56.3	56.3	56.3	56.3
Rec_205-G	5	62.9	66.4	65.9	71.0	67.6	62.1	62.0	63.8	62.8	58.9	58.3	59.6	60.9	60.2	56.2	56.3	56.6	55.7	51.8	53.0	61.4	62.5	57.9	61.1	61.1	58.3	58.3	60.9	60.5	60.5	64.1	64.9	63.0	56.5	56.5	56.5	56.5
Rec_206-G	5	63.2	66.8	66.3	70.8	67.5	62.3	62.2	63.7	62.4	59.1	58.5	59.8	61.2	60.3	56.1	56.3	56.6	55.6	51.7	52.8	61.0	62.1	57.6	60.8	60.8	58.0	58.0	60.6	60.1	60.1	63.7	64.5	62.6	56.1	56.1	56.1	56.1
Rec_207-G	5	63.4	66.9	66.5	70.6	67.3	62.4	62.4	63.8	62.5	59.3	58.7	59.9	61.3	60.4	56.0	56.3	56.6	55.6	51.5	52.6	60.8	61.8	57.2	60.5	60.5	57.7	57.7	60.3	59.8	59.8	63.4	64.3	62.3	55.8	55.8	55.8	55.8
Rec_208-G	5	64.3	67.6	67.1	70.6	67.5	62.8	62.7	64.2	62.7	59.8	59.2	60.2	61.9	61.0	56.1	56.3	56.6	55.7	51.5	52.6	60.8	61.8	57.2	60.5	60.5	57.7	57.7	60.3	59.8	59.8	63.4	64.3	62.3	55.8	55.8	55.8	55.8
Rec_209-G	5	64.8	68.0	67.4	70.1	67.2	62.9	62.9	64.2	62.5	60.0	59.5	60.3	62.2	61.2	55.7	56.1	56.4	55.5	51.1	52.1	60.1	61.1	56.5	59.8	59.8	57.0	57.0	59.6	59.1	59.1	62.7	63.5	61.6	55.1	55.1	55.1	55.1
Rec_210-G	5	64.7	67.9	67.4	69.5	66.7	62.8	62.7	64.0	62.2	59.9	59.3	60.1	62.0	61.2	55.5	55.8	56.1	55.3	51.0	52.0	59.5	60.2	55.5	58.8	58.8	56.0	56.0	58.6	58.1	58.1	61.7	62.6	60.7	54.1	54.1	54.1	54.1
Rec_211-G	5	65.8	68.8	68.2	69.5	66.9	63.5	63.4	64.7	62.7	60.6	60.1	60.8	62.9	61.9	55.6	56.1	56.4	55.5	50.7	51.7	59.2	60.0	55.3	58.5	58.5	55.7	55.7	58.3	57.8	57.8	61.5	62.3	60.4	53.9	53.9	53.9	53.9
Rec_212-G	5	66.0	69.0	68.4	68.8	66.6	63.6	63.6	64.7	62.6	60.8	60.3	61.0	63.1	62.0	55.1	55.7	56.0	55.2	49.9	50.8	58.2	58.9	54.2	57.4	57.4	54.6	54.6	57.2	56.7	56.7	60.4	61.3	59.4	52.8	52.8	52.8	52.8
Rec_213-G	5	67.7	70.3	69.6	67.1	66.3	64.7	64.7	65.5	62.9	62.0	61.5	62.0	64.2	63.0	55.1	56.2	56.4	55.5	49.0	49.7	54.3	53.7	48.5	51.8	51.8	49.0	49.0	51.6	51.1	51.1	54.8	55.7	53.9	47.2	47.2	47.2	47.2
Rec_214-G	5	67.6	70.2	69.5	67.5	66.4	64.5	64.6	65.5	63.0	61.9	61.4	61.9	64.2	62.9	55.1	56.2	56.4	55.5	49.2	50.0	55.3	55.0	50.0	53.3	53.3	50.5	50.5	53.1	52.6	52.6	56.3	57.2	55.4	48.7	48.7	48.7	48.7
Rec_215-G	5	67.6	70.4	69.7	67.8	66.6	64.6	64.7	65.6	63.1	61.9	61.4	62.0	64.2	62.9	55.2	56.2	56.5	55.6	49.5	50.3	55.9	55.8	50.8	54.1	54.1	51.3	51.3	53.9	53.4	53.4	57.1	58.0	56.2	49.5	49.5	49.5	49.5
Rec_216-G	5	66.7	69.5	69.0	66.8	65.9	64.0	64.1	64.9	62.3	61.3	60.8	61.4	63.5	62.0	54.1	55.3	55.6	54.8	47.8	48.3	54.3	54.5	49.5	52.7	52.7	49.9	49.9	52.5	52.1	52.1	55.7	56.7	54.8	48.1	48.1	48.1	48.1
Rec_217-G	5	67.8	70.5	69.7	68.0	66.8	64.7	64.8	65.6	63.1	61.9	61.4	62.0	64.2	63.1	55.5	56.4	56.7	55.8	49.9	50.7	56.2	56.1	51.1	54.4	54.4	51.6	51.6	54.2	53.7	53.7	57.4	58.3	56.5	49.8	49.8	49.8	49.8
Rec_218-G	5	67.1	70.0	69.3	68.7	66.9	64.4	64.4	65.5	63.2	61.7	61.2	61.7	63.9	62.8	55.6	56.3	56.5	55.7	50.3	51.2	57.9	58.2	53.1	56.4	56.4	53.6	53.6	56.2	55.8	55.8	59.5	60.5	58.7	51.9	51.9	51.9	51.9
Rec_219-G	5	67.0	69.9	69.2	68.8	66.9	64.3	64.3	65.4	63.1	61.5	61.0	61.5	63.8	62.7	55.7	56.3	56.6	55.7	50.5	51.4	58.1	58.5	53.5	56.8	56.8	54.0	54.0	56.6	56.1	56.1	59.8	60.7	58.9	52.2	52.2	52.2	52.2
Rec_220-G	5	66.4	69.4	68.8	68.7	66.6	63.9	63.9	64.9	62.7	61.1	60.6	61.2	63.3	62.3	55.6	56.2	56.5	55.6	50.4	51.4	58.1	58.5	53.5	56.7	56.7	53.9	53.9	56.5	56.1	56.1	59.7	60.7	58.9	52.1	52.1	52.1	52.1
Rec_221-G	5	68.0	70.4	69.6	66.6	66.3	64.8	64.7	65.5	62.8	62.0	61.6	62.1	64.3	62.9	54.7	56.2	56.4	55.5	47.9	48.5	52.8	51.9	46.9	50.1	50.1	47.3	47.3	49.9	49.4	49.4	53.0	53.9	52.0	45.4	45.4	45.4	45.4
Rec_222-G	5	67.4	70.0	69.3	66.3	66.0	64.4	64.5	65.2	62.5	61.8	61.3	61.9	64.0	62.5	54.4	55.9	56.1	55.2	47.5	47.9	52.3	51.5	46.4	49.6	49.6	46.8	46.8	49.4	49.0	49.0	52.6	53.5	51.7	45.0	45.0	45.0	45.0
Rec_223-G	5	67.7	70.2	69.5	66.6	66.2	64.6	64.6	65.4	62.7	61.9	61.5	62.0	64.2	62.9	54.5	56.0	56.2	55.3	47.9	48.4	53.0	52.3	47.2	50.5	50.5	47.7	47.7	50.3	49.8	49.8	53.4	54.3	52.5	45.8	45.8	45.8	45.8
Rec_224-G	5	67.6	70.1	69.4	66.9	66.2	64.5	64.4	65.3	62.8	61.9	61.4	61.9	64.1	62.8	54.8	56.0	56.3	55.4	48.5	49.2	53.9	53.4	48.4	51.6	51.6	48.8	48.8	51.4	50.9	50.9	54.5	55.4	53.6	46.9	46.9	46.9	46.9
Rec_225-G	5	67.5	70.1	69.5	66.7	66.1	64.5	64.5	65.3	62.7	61.8	61.4	61.9	64.1	62.7	54.7	55.9	56.2	55.3	48.3	48.9	53.4	52.6	47.5	50.8	50.8	48.0	48.0	50.6	50.1	50.1	53.7	54.6	52.8	46.1	46.1	46.1	46.1
Rec_226-G	5	43.9	47.4	48.8	59.9	53.5	49.1	46.9	55.6	56.7	47.6	47.1	49.3	49.9	52.2	50.9	50.6	50.8	49.7	47.3	48.7	51.4	48.8	43.8	47.0	47.0	44.2	44.2	46.8	46.3	46.3	49.9	50.4	48.3	42.2	42.2	42.2	42.2
Rec_227-G	2	61.5	59.8	59.8	61.1	61.3	61.1	56.2	57.5	56.0	56.0	54.6	56.2	56.0	52.2	50.6	51.4	52.2	51.9	44.2	41.2	44.3	42.1	36.8	40.0	40.0	37.2	37.2	39.8	39.3	39.3	42.9	43.7	41.7	35.3	35.3	35.3	35.3
Rec_228-G	2	62.0	60.4	60.2	61.4	61.8	61.5	57.2	58.1	56.6	56.6	55.4	57.3	57.0	52.6	51.0	51.9	52.7	52.3	44.4	41.3	44.2	41.9	36.7	39.9	39.9	37.1	37.1	39.7	39.2	39.2	42.8	43.5	41.5	35.2	35.2	35.2	35.2
Rec_229-G	2	61.2	59.2	59.4	60.8	61.2	60.9	55.8	57.0	55.4	55.3	54.1	55.8	55.6	51.9	50.3	51.2	52.1	51.8	44.1	41.0	43.9	41.4	36.3	39.5	39.5	36.7	36.7	39.3	38.8	38.8	42.4	43.1	41.0	34.8	34.8	34.8	34.8
Rec_230-G	2	61.0	58.8	58.6	60.2	60.6	60.4	55.4	56.6	55.1	55.2	54.2	55.9	55.6	51.6	50.0	51.0	51.8	51.4	43.5	40.8	43.3	40.2	34.6	37.8	37.8	35.0	35.0	37.6	37.1	37.1	40.7	41.4	39.4	33.1	33.1	33.1	33.1
Rec_231-G	2	62.4	59.9	60.6	62.0	62.3	62.1	56.9	58.1	56.5	56.5	55.4	57.2	56.9	52.9	51.3	52.2	53.1	52.7	45.1	42.3	45.1	42.5	37.4	40.6	40.6	37.7	37.7	40.3	39.8	39.8	43.4	44.1	42.0	35.8	35.8	35.8	35.8
Rec_232-G	2	64.0	61.4	61.7	63.0	63.5	63.2	58.2	59.2	57.7	57.9	56.7	58.5	58.2	53.8	52.2	53.2	54.0	53.7	45.6	41.9	44.9	42.8	37.8	41.0	41.0	38.2	38.2	40.7	40.2	40.2	43.8	44.5	42.4	36.2	36.2	36.2	36.2
Rec_233-G	2	62.1	60.0	60.4	61.8	62.2	61.9	57.0	58.0	56.3	56.3	55.3	57.1	56.8	52.7	51.0	52.0	52.8	52.5	44.7	41.7	44.6	42.3	37.2	40.4	40.4	37.6	37.6	40.2	39.7	39.7	43.3	44.0	41.9	35.7	35.7	35.7	35.7
Rec_234-G	2	61.8	60.0	59.8	61.0	61.6	61.4	56.8	57.7	56.2	56.3	55.3	57.1	56.8	52.3	50.7	51.8	52.6	52.2	44.1	40.2	43.2	40.8	35.6	38.8	38.8	36.0	36.0	38.6	38.1	38.1	41.7	42.4	40.4	34.1	34.1	34.1	34.1
Rec_235-G	2	61.3	58.8	58.9	60.3	61.1	60.8	55.4	56.5	54.8	55.0	54.0	55.6	55.3	51.3	49.6	50.7	51.5	51.1	43.0	39.1	42.0	39.5	34.2	37.4	37.4	34.6	34.6	37.2	36.7	36.7	40.3	41.1	39.1	32.7	32.7	32.7	32.7
Rec_236-G	2	62.5	60.6	61.0	61.7	62.5	62.1	58.0	58.6	56.8	56.9	56.0	58.1	57.7	52.8	51.1	52.2	53.0	52.5	44.4	41.5	44.5	42.2	37.1	40.3	40.3	37.5	37.5	40.1	39.7	39.7	43.3	44.0	41.9	35.7	35.7	35.7	35.7
Rec_237-G	2	62.3	60.0	61.0	62.7	62.6	62.5	57.4	58.6	57.0	57.1	56.1	57.7	57.3	53.7	52.2	53.1	54.0	53.7	46.4	43.7	46.1	42.5	36.6	39.8	39.8	37.0	37.0	39.6	39.1	39.1	42.7	43.4	41.4	35.1	35.1	35.1	35.1
Rec_238-G	2	61.9	59.2	60.2	62.0	62.0	61.9	56.3	57.7	56.0	56.2	55.1	56.5	56.1	52.7	51.2	52.1	53.1	52.8	45.3	41.7	44.3	41.3	35.9	39.1	39.1	36.3	36.3	38.9	38.4	38.4	42.0	42.7	40.6	34.4	34.4	34.4	34.4
Rec_239-G	2	63.3	60.5	61.5	63.2	63.0	63.0	58.0	59.3	57.9	58.2	57.3	59.0	58.5	54.1	52.6	53.7	54.6	54.3	46.1	41.5	44.5	42.2	37.1	40.3	40.3	37.4	37.4	40.0	39.5	39.5	43.1	43.8	41.8	35.4	35.4	35.4	35.4
Rec_240-G	2	63.5	61.5	61.3	61.7	62.7	62.5	58.8	59.3	57.8	58.1	57.2	59.5	59.0	52.8	51.0	52.3	53.0	52.5	43.4	39.1	43.3	42.6	37.8	41.0	41.0	38.2	38.2	40.8	40.3	40.3	43.9	44.6	42.6	36.2	36.2	36.2	36.2
Rec_241-G	2	66.9	61.8	63.5	65.2	66.0	65.8	58.5	59.7	58.2	59.1	58.3	59.7	59.2	55.0	53.7	54.9	55.9	55.6	47.5	42.3	44.9	42.0	36.9	40.1	40.1	37.2	37.2	39.8	39.3	39.3	42.9	43.4	41.3	35.2	35.2	35.2	35.2
Rec_242-G	2	75.3	67.9	69.8	71.6	74.1	73.7	63.0	64.1	62.3	63.7	62.7	64.0	63.2	59.2	58.0	59.1	60.3	60.1	51.9	42.6	45.7	43.5	38.2	41.4	41.4	38.5	38.5	41.1	40.6	40.6	44.2	45.1	43.1	36.6	36.6	36.6	36.6
Rec_243-G	2	73.0	66.8	68.5	70.0	72.1	71.7	63.5	64.2	62.5	63.3	62.7	64.5	63.8	58.8	57.5	58.9	59.9	59.6	51.1	45.4	47.8	44.0	37.6	40.8	40.8	38.0	38.0	40.6	40.2	40.2	43.8	44.7	42.8	36.2	36.2	36.2	36.2
Rec_244-G	2	79.6	71.3	72.5	74.6	78.0	77.5	63.4	64.6	62.7	64.4	63.4	64.4	63.6	59.9	58.9	60.1	61.2	61.1	52.8	43.1	45.9	43.1	37.4	40.6	40.6	37.8	37.8	40.4	39.9	39.9	43.5	44.4	42.5	35.9	35.9	35.9	35.9
Rec_245-G	2	68.1	62.5	64.6	66.1	67.6	67.2	60.2	60.9	59.1	59.6	58.8	60.6	60.0	55.6	54.2	55.3	56.3	56.0	48.3	44.7	47.2	43.8	38.1	41.3	41.3	38.5	38.5	41.1	40.6	40.6	44.2	44.9	42.9	36.6	36.6	36.6	36.6
Rec_246-G	2	64.0	60.2	61.8	62.9	63.6	63.2	57.3	58.2	56.3	57.0	56.4	57.7	57.4	53.9	52.1	53.6	54.4	54.0	45.4	41.3	43.7	40.1	34.3	37.5	37.5	34.7	34.7	37.3	36.9	36.9	40.5	41.2	39.1	32.9	32.9	32.9	32.9

Ontario Regional Sports Complex EIR
Construction Noise Analysis, Predicted Daytime Construction Noise Levels by Month for All Receptors, 8-hour Leq

Receptor	Receptor Group	Cumulative Construction Noise Levels by Month, Maximum Hourly Leq, dBA																																		
		9/1/2024 9/30/2024	10/1/2024 10/31/2024	11/1/2024 11/30/2024	12/1/2024 12/31/2024	1/1/2025 1/31/2025	2/1/2025 2/28/2025	3/1/2025 3/31/2025	4/1/2025 4/30/2025	5/1/2025 5/31/2025	6/1/2025 6/30/2025	7/1/2025 7/31/2025	8/1/2025 8/31/2025	9/1/2025 9/30/2025	10/1/2025 10/31/2025	11/1/2025 11/30/2025	12/1/2025 12/31/2025	1/1/2026 1/31/2026	2/1/2026 2/28/2026	3/1/2026 3/31/2026	4/1/2026 4/30/2026	5/1/2026 5/31/2026	6/1/2026 6/30/2026	7/1/2026 7/31/2026	8/1/2026 8/31/2026	9/1/2026 9/30/2026	10/1/2026 10/31/2026	11/1/2026 11/30/2026	12/1/2026 12/31/2026	1/1/2027 1/31/2027	2/1/2027 2/28/2027	3/1/2027 3/31/2027	4/1/2027 4/30/2027	5/1/2027 5/31/2027	6/1/2027 6/30/2027	7/1/2027 7/31/2027	8/1/2027 8/31/2027	9/1/2027 9/30/2027
Rec_247-G	2	63.6	61.5	62.0	62.2	63.5	62.8	59.1	59.4	57.7	57.8	57.3	59.4	59.1	53.8	51.8	53.6	54.1	53.5	43.9	41.1	44.1	41.8	36.4	39.6	39.6	36.8	36.8	39.4	38.9	38.9	42.5	43.3	41.4	34.9	34.9	34.9	34.9
Rec_248-G	2	63.0	61.7	61.8	61.4	62.9	62.1	59.3	59.4	57.7	57.6	57.1	59.5	59.1	53.3	51.2	53.2	53.5	52.8	42.9	41.1	44.1	41.8	36.4	39.6	39.6	36.8	36.8	39.4	38.9	38.9	42.6	43.4	41.4	35.0	35.0	35.0	35.0
Rec_249-G	2	63.8	63.1	62.8	62.3	63.5	62.9	60.7	60.9	59.4	59.5	58.8	61.3	60.9	54.4	52.6	54.4	54.8	54.1	44.7	42.5	45.7	43.8	38.9	42.1	42.1	39.3	39.3	41.9	41.4	41.4	45.0	45.7	43.6	37.4	37.4	37.4	37.4
Rec_250-G	2	61.2	60.0	60.5	60.6	61.4	61.0	58.0	58.2	56.5	56.5	55.8	58.2	57.7	51.8	50.1	51.5	52.1	51.6	43.1	40.2	43.4	41.3	36.0	39.2	39.2	36.4	36.4	39.0	38.5	38.5	42.1	43.0	41.0	34.5	34.5	34.5	34.5
Rec_251-G	2	55.1	54.6	56.2	56.3	54.9	54.8	52.1	53.5	52.8	53.3	52.4	54.4	53.9	48.7	47.9	48.9	49.8	49.5	42.5	40.0	42.5	39.8	35.1	38.3	38.3	35.4	35.4	37.9	37.4	37.4	41.0	41.4	39.1	33.3	33.3	33.3	33.3
Rec_252-G	2	53.7	51.8	51.7	52.5	52.8	52.4	47.3	49.1	48.1	48.5	46.9	47.9	48.0	44.4	43.1	43.8	44.7	44.5	36.0	30.0	33.0	30.7	25.2	28.5	28.5	25.7	25.7	28.3	27.8	27.8	31.5	32.3	30.3	23.9	23.9	23.9	23.9
Rec_253-G	2	54.6	53.2	52.6	53.1	53.7	53.3	49.5	50.0	48.5	48.7	47.6	49.5	49.3	44.4	42.5	44.0	44.6	44.1	34.7	30.6	34.3	32.5	26.7	30.0	30.0	27.2	27.2	29.8	29.4	29.4	33.1	34.2	32.4	25.6	25.6	25.6	25.6
Rec_254-G	2	62.1	61.1	61.5	62.2	62.5	62.1	58.6	59.3	57.7	57.6	56.7	58.7	58.4	53.6	51.8	53.0	53.7	53.3	45.0	42.2	45.2	42.9	37.5	40.7	40.7	37.9	37.9	40.5	40.0	40.0	43.6	44.4	42.5	36.0	36.0	36.0	36.0
Rec_255-G	2	59.6	58.5	59.9	60.6	60.4	60.1	56.8	57.6	56.0	55.8	55.0	57.0	56.6	52.2	50.5	51.7	52.4	52.0	44.1	41.4	44.1	41.1	35.4	38.6	38.6	35.7	35.7	38.3	37.9	37.9	41.5	42.3	40.4	33.9	33.9	33.9	33.9
Rec_256-G	2	60.4	59.2	59.3	60.7	60.6	60.3	56.4	57.3	55.8	55.7	54.6	56.5	56.2	51.8	50.4	51.2	52.0	51.6	44.2	42.0	44.8	42.0	36.5	39.7	39.7	36.8	36.8	39.4	39.0	39.0	42.6	43.4	41.4	35.0	35.0	35.0	35.0
Rec_257-G	2	60.4	59.6	60.3	60.9	61.1	60.6	57.2	58.0	56.3	56.1	55.2	57.2	56.9	52.6	50.6	51.7	52.4	52.0	44.0	41.6	44.6	42.2	36.7	39.9	39.9	37.1	37.1	39.7	39.2	39.2	42.8	43.7	41.7	35.2	35.2	35.2	35.2
Rec_258-G	2	60.4	57.7	59.3	61.7	61.0	61.2	55.4	57.3	55.9	55.6	54.5	55.7	55.4	52.7	51.1	51.9	52.8	52.6	45.3	42.2	44.4	40.3	34.2	37.4	37.4	34.5	34.5	37.1	36.6	36.6	40.2	40.8	38.8	32.6	32.6	32.6	32.6
Rec_259-G	2	60.9	60.3	61.0	61.7	61.6	61.2	58.2	58.8	57.3	57.1	56.2	58.3	57.9	53.1	51.4	52.5	53.2	52.8	45.0	42.7	45.7	43.3	37.8	41.0	41.0	38.2	38.2	40.8	40.4	40.4	44.0	44.9	42.9	36.4	36.4	36.4	36.4
Rec_260-G	2	59.1	57.7	58.0	59.7	59.3	59.3	54.7	56.1	54.8	54.5	53.3	55.1	54.6	50.5	49.0	49.7	50.6	50.4	43.0	40.0	42.5	39.3	33.5	36.7	36.7	33.9	33.9	36.5	36.0	36.0	39.6	40.4	38.4	32.0	32.0	32.0	32.0
Rec_261-G	2	59.3	58.6	58.9	59.4	59.6	59.2	56.1	56.8	55.2	54.9	54.0	56.0	55.7	51.0	49.0	50.2	50.9	50.4	42.3	39.7	42.7	40.3	35.0	38.2	38.2	35.3	35.3	37.9	37.5	37.5	41.1	41.9	39.9	33.5	33.5	33.5	33.5
Rec_262-G	2	55.7	54.6	56.0	57.3	56.2	56.0	52.0	53.4	52.1	52.2	51.1	52.4	52.2	49.0	47.7	48.5	49.3	49.0	41.9	39.9	42.2	38.6	32.9	36.1	36.1	33.2	33.2	35.8	35.3	35.3	38.9	39.6	37.5	31.3	31.3	31.3	31.3
Rec_263-G	2	60.3	59.5	60.3	61.2	60.9	60.6	57.3	58.3	56.9	56.5	55.5	57.6	57.1	52.5	50.7	51.7	52.5	52.1	44.3	41.8	44.7	42.2	37.2	40.4	40.4	37.5	37.5	40.1	39.6	39.6	43.2	43.8	41.7	35.5	35.5	35.5	35.5
Rec_264-G	2	59.3	58.5	59.1	60.4	59.9	59.8	56.0	57.2	55.9	55.2	54.2	56.0	55.6	51.7	50.0	50.9	51.7	51.4	43.7	41.0	43.5	40.3	34.4	37.6	37.6	34.8	34.8	37.4	36.9	36.9	40.5	41.3	39.4	32.9	32.9	32.9	32.9
Rec_265-G	2	56.5	56.0	57.2	57.6	57.5	57.0	54.1	54.6	52.8	52.6	51.9	53.8	53.6	49.4	47.5	48.8	49.4	49.0	40.8	38.4	41.4	38.9	33.4	36.6	36.6	33.8	33.8	36.4	35.9	35.9	39.5	40.3	38.4	31.9	31.9	31.9	31.9
Rec_266-G	2	55.8	55.7	56.7	56.6	56.2	55.5	52.9	53.4	51.9	52.1	51.4	53.1	52.9	48.5	46.9	48.3	48.9	48.5	40.3	37.7	40.8	38.5	33.3	36.5	36.5	33.7	33.7	36.3	35.8	35.8	39.4	40.2	38.2	31.8	31.8	31.8	31.8
Rec_267-G	2	56.7	56.3	56.4	55.6	56.6	55.7	53.3	53.6	51.9	51.9	51.1	53.1	53.0	47.9	45.5	47.1	47.5	46.8	37.4	35.3	39.2	38.0	33.1	36.3	36.3	33.5	33.5	36.1	35.6	35.6	39.2	40.0	38.0	31.6	31.6	31.6	31.6
Rec_268-G	2	56.7	56.6	55.7	54.7	56.5	55.2	53.1	53.3	51.6	51.7	51.2	53.1	53.3	48.7	45.8	47.9	48.1	47.1	36.0	35.4	39.3	38.5	34.2	37.4	37.4	34.5	34.5	37.1	36.6	36.6	40.2	40.7	38.5	32.5	32.5	32.5	32.5
Rec_269-G	2	59.2	58.5	58.6	58.1	58.6	57.7	55.5	55.8	54.4	54.7	54.1	56.1	55.9	50.8	49.0	50.7	51.2	50.6	42.0	40.2	42.7	39.3	33.7	36.9	36.9	34.1	34.1	36.7	36.2	36.2	39.8	40.5	38.5	32.2	32.2	32.2	32.2
Rec_271-G	2	59.7	58.9	59.9	60.6	60.5	60.1	56.8	57.6	55.9	55.6	54.7	56.6	56.3	52.1	50.2	51.3	52.0	51.6	43.8	41.6	44.4	41.8	36.5	39.7	39.7	36.9	36.9	39.5	39.0	39.0	42.6	43.3	41.3	35.0	35.0	35.0	35.0
Rec_272-G	2	59.9	58.9	60.5	61.2	61.1	60.7	57.4	58.1	56.3	55.8	55.2	57.2	56.8	52.6	50.7	51.9	52.7	52.2	44.5	42.3	45.2	42.5	37.0	40.2	40.2	37.4	37.4	40.0	39.5	39.5	43.1	43.9	42.0	35.5	35.5	35.5	35.5
Rec_273-G	2	59.0	58.2	58.4	57.7	58.9	58.2	55.4	55.6	53.8	53.9	53.0	55.2	55.0	49.4	46.9	48.5	49.1	48.6	38.5	30.9	38.0	38.8	34.3	37.5	37.5	34.7	34.7	37.3	36.8	36.8	40.4	41.2	39.2	32.8	32.8	32.8	32.8
Rec_274-G	2	59.6	58.7	60.0	60.8	60.7	60.3	57.0	57.8	56.0	55.5	54.8	56.8	56.5	52.4	50.4	51.6	52.3	51.8	44.0	41.8	44.6	42.0	36.5	39.7	39.7	36.9	36.9	39.5	39.1	39.1	42.7	43.4	41.4	35.0	35.0	35.0	35.0
Rec_275-G	2	58.9	57.8	55.9	57.2	57.6	57.6	52.2	53.9	53.0	53.0	51.1	52.5	52.3	48.2	46.8	47.3	48.3	48.0	39.9	34.5	38.2	36.3	29.8	33.1	33.1	30.4	30.4	33.1	32.7	32.7	36.4	37.8	36.2	28.9	28.9	28.9	28.9
Rec_276-G	2	58.6	57.1	55.0	57.0	57.2	57.2	51.6	53.7	52.9	53.0	51.3	52.6	52.4	48.6	47.0	47.7	48.6	48.3	39.6	32.8	35.6	32.4	25.8	29.1	29.1	26.3	26.3	28.9	28.5	28.5	32.2	33.4	31.6	24.7	24.7	24.7	24.7
Rec_277-G	2	59.9	58.3	56.6	58.6	58.8	58.8	54.2	55.8	54.8	54.8	53.6	55.3	55.1	50.8	49.2	50.2	50.9	50.5	42.5	39.5	41.7	37.8	32.1	35.3	35.3	32.4	32.4	35.0	34.5	34.5	38.1	38.6	36.5	30.5	30.5	30.5	30.5
Rec_278-G	2	53.9	54.4	54.0	54.0	53.3	53.1	50.6	51.4	50.4	50.5	49.3	51.3	50.9	46.1	44.7	45.5	46.3	45.9	39.3	38.0	40.9	38.6	33.5	36.7	36.7	33.8	33.8	36.3	35.8	35.8	39.4	40.1	38.1	31.7	31.7	31.7	31.7
Rec_279-G	2	53.7	52.8	50.3	51.9	52.0	51.8	46.6	48.5	47.7	47.6	46.1	47.2	47.2	43.6	41.7	42.5	43.4	43.1	34.4	28.7	31.7	29.2	23.7	26.9	26.9	24.1	24.1	26.7	26.3	26.3	29.9	30.7	28.7	22.3	22.3	22.3	22.3
Rec_280-G	2	61.4	60.2	61.3	62.2	62.2	61.9	58.2	59.0	57.3	56.9	56.1	58.1	57.8	53.5	51.7	52.8	53.6	53.1	45.4	43.0	45.9	43.4	38.1	41.3	41.3	38.5	38.5	41.1	40.6	40.6	44.2	45.0	43.0	36.6	36.6	36.6	36.6
Rec_281-G	2	56.6	54.5	55.2	57.4	56.6	56.6	50.8	52.9	51.8	51.7	50.6	51.4	51.5	49.2	48.0	48.9	49.8	49.5	42.3	39.7	41.7	36.9	30.4	33.6	33.6	30.8	30.8	33.4	32.9	32.9	36.5	37.1	35.0	28.9	28.9	28.9	28.9
Rec_282-G	2	54.0	52.8	54.0	55.1	53.7	53.4	49.5	51.1	50.2	50.7	49.5	50.7	50.7	47.3	46.3	47.2	48.0	47.7	40.5	38.4	40.9	37.9	33.1	36.3	36.3	33.4	33.4	36.0	35.5	35.5	39.0	39.5	37.2	31.3	31.3	31.3	31.3
Rec_283-G	2	55.5	55.2	55.5	55.4	55.5	54.9	52.2	52.6	51.0	51.2	50.3	52.3	52.1	47.6	45.6	46.8	47.4	46.8	38.8	37.1	40.4	38.2	32.3	35.6	35.6	32.8	32.8	35.4	35.0	35.0	38.7	39.8	38.0	31.1	31.1	31.1	31.1
Rec_284-G	2	60.2	59.5	59.2	59.8	60.1	59.7	56.2	57.0	55.4	55.4	54.3	56.2	56.0	51.5	49.6	50.7	51.4	50.9	42.7	40.2	43.2	40.8	35.4	38.6	38.6	35.8	35.8	38.4	37.9	37.9	41.5	42.3	40.4	33.9	33.9	33.9	33.9
Rec_285-G	2	59.1	58.3	58.4	60.0	59.5	59.3	55.0	56.5	55.1	54.6	53.3	54.9	54.7	51.3	49.6	50.4	51.2	50.9	43.6	41.0	43.8	41.2	35.9	39.1	39.1	36.2	36.2	38.8	38.4	38.4	42.0	42.7	40.7	34.4	34.4	34.4	34.4
Rec_286-G	2	55.9	55.5	51.1	53.1	53.1	53.1	47.4	51.0	51.0	50.7	47.8	48.7	48.9	45.2	44.0	43.5	44.5	44.3	36.5	32.2	34.8	31.8	26.0	29.3	29.3	26.5	26.5	29.1	28.6	28.6	32.3	33.0	31.1	24.7	24.7	24.7	24.7
Rec_287-G	2	58.6	57.9	58.3	58.9	58.8	58.4	54.9	55.9	54.5	54.2	53.3	55.0	54.8	50.8	49.0	50.2	50.9	50.4	42.4	40.0	42.6	39.4	33.7	36.9	36.9	34.1	34.1	36.7	36.2	36.2	39.8	40.6	38.6	32.2	32.2	32.2	32.2
Rec_288-G	2	53.4	51.9	52.5	54.9	54.1	53.9	49.6	50.8	49.2	48.7	47.8	49.3	49.3	46.5	44.9	45.8	46.4	46.0	39.3	38.4	40.7	36.7	30.7	33.9	33.9	31.0	31.0	33.6	33.2	33.2	36.8	37.5	35.4	29.2	29.2	29.2	29.2
Rec_289-G	1	63.2	62.3	60.3	62.2	61.4	61.4	55.8	59.0	58.5	58.5	56.1	56.9	56.8	53.5	52.1	52.0	53.0	52.8	45.1	40.9	43.8	41.0	34.9	38.2	38.2	35.4	35.4	38.0	37.5	37.5	41.2	42.3	40.5	33.6	33.6	33.6	33.6
Rec_290-G	1	66.6	65.2	63.3	64.9	64.4	64.3	58.0	61.3	60.9	61.0	58.4	59.1	59.1	55.7	54.5	54.1	55.2	55.0	47.4	43.3	46.2	43.3	37.3	40.6	40.6	37.8	37.8	40.4	39.9	39.9	43.6	44.5	42.7	36.0	36.0	36.0	36.0
Rec_291-G	1	67.9	66.4	63.9	65.6	65.4	65.3	58.7	62.2	61.9	62.1	59.2	59.9	60.0	56.5	55.3	54.7	55.8	55.6	47.9	43.5	46.3	43.4	37.4	40.6	40.6	37.8	37.8	40.4	40.0	40.0	43.6	44.6	42.7	36.0	36.0	36.0	36.0
Rec_292-G	1	62.9	63.0	61.6	63.0	61.5	61.6	57.3	59.8	59.2	59.2	57.0	58.0	57.9	54.6	53.2	53.3	54.2	54.0	46.6	43.5	45.9	42.2	35.7	39.0	39.0	36.2	36.2	38.8	38.3	38.3	41.9	42.9	41.0	34.3	34.3	34.3	34.3
Rec_293-G	1	63.9	63.3	62.0	63.5	62.4	62.4	57.7	60.2	59.5	59.4	57.2	58.2	58.1	54.7	53.3	53.3	54.3	54.1	46.5	43.0	45.8	42.8	36.9	40.1	40.1	37.3	37.3	39.9	39.4	39.4	43.0	44.0	42.1	35.4	35.4	35.4	35.4
Rec_294-G	1	63.1	62.7	61.5	63.0	61.9	61.9	57.4	59.7	59.0	58.8	56.7	57.8	57.6	54.3	52.8	52.9	53.8	53.6	46.1	42.9	45.7	42.7	36.7	40.0	40.0	37.2	37.2	39.8	39.3	39.3	42.9	43.9	42.0	35.3	35.3	35.3	35.3
Rec_295-G	1	62.5	62.0	60.9	62.5	61.4	61.4	56.5	59.1	58.4	58.1	56.0	57.1	56.9	53.7	52.2	52.4	53.4	53.1	45.7	42.6	45.4	42.5	36.6	39.9	39.9	37.1	37.1	39.7	39.2	39.2	42.8	43.7	41.9	35.2	35.2	35.2	35.2
Rec_296-G	1	61.9	61.5	60.6	62.1	61.0	61.0	56.3	58.7	57.9	57.5	55.5	56.6	56.4	53.2	51.7	51.9	52.9	52.6	45.3	42.1	45.0	42.4	36.6	39.8	39.8	37.0	37.0	39.6	39.2	39.2	42.8	43.7	41.9	35.2	35.2	35.2	35.2
Rec_297-G	1	61.6	61.3	60.5	61.9	60.7	60.8	56.5	58.6	57.8	57.3	55.5	56.6	56.4	53.1	51.5	51.8	52.7	52.5	45.1	42.0	44.9	42.2	36.4	39.7	39.7	36.9	36.9	39.5	39.0	39.0	42.6	43.6	41.7	35.0	35.0	35.0	35.0
Rec_298-G	1	60.9	60.6	59.9	61.4	60.2	60.2	55.7	58.0	57.3	56.7	54.8	56.0	55.8	52.7	51.0	51.4	52.3	52.0	44.7	41.9	44.8	42.0	36.2	39.4	39.4	36.6	36.6	39.2	38.8	38.8	42.4	43.3	41.5	34.8	34.8	34.8	34.8
Rec_299-G	1	60.6	60.4	59.7	61.2	60.0	60.0	55.7	58.0	57.2	56.5	54.7	55.9	55.7	52.5	50.8	51.2	52.1	51.9	44.5	41.7	44.5	41.6	35.9	39.1	39.1	36.3	36.3	38.9	38.4	38.4	42.0	42.9	41.0	34.4	34.4	34.4	34.4
Rec_300-G	1	60.2	60.0	59.4	60.9	59.7	59.7	55.5	57.7	56.9	56.1	54.4	55.6	55.4	52.3	50.5	50.9	51.9	51.6	44.3	41.7	44.4	41.4	35.7	38.9	38.9	36.1	36.1	38.7	38.3	38.3	41.9	42.7	40.8	34.3	34.3	34.3	34.3
Rec_301-G	1	59.9	59.8	59.3	60.8	59.5	59.5	55.5	57.7	56.9	56.1	54.4	55.7	55.4	52.2	50.5	50.9	51.9	51.6	44.2	41.6	44.3	41.4	35.7	38.9	38.9	36.1	36.1	38.7	38.2	38.2	41.8	42.7	40.7	34.2	34.2	34.2	34.2
Rec_302-G	1	59.4	59.1	58.4	60.3	59.0	59.0	54.6	57.0	56.3	55.4	53.7	54.9	54.6	51.7	50.0	50.4	51.3	51.0	43.8	41.4	44.1	41.2	35.6	38.8	38.8	36.0	36.0	38.6	38.1	38.1	41.7	42.5	40.6	34.1	34.1	34.1	34.1
Rec_303-G	1	59.5	59.4	59.0	60.5	59.2	59.1	55.1	57.2	56.4	55.5	53.9	55.1	54.9	51.8	50.0	50.5	51.4	51.1	43.9	41.4	44.1	41.1	35.4	38.6	38.6	35.8	35.8	38.4	37.9	37.9	41.5	42.3	40.4	33.9	33.9	33.9	33.9
Rec_304-G	1	56.8	57.0	56.4	58.7	56.8	57.1	52.2	54.7	53.7	53.1	51.3	52.3	52.2	49.9	48.5	48.8	49.8	49.6	42.6	40.0	42.6	39.5	34.1	37.3	37.3	34.5	34.5	37.1	36.6	36.6	40.2	40.9	38.8	32.6	32.6	32.6	32.6
Rec_305-G	1	51.9	50.9	53.2	54.5	51.0	51.2	45.4	49.8	49.7	50.4	48.4	48.4	48.6	47.0	46.8	47.3	48.3	48.1	41.7	39.7	41.5	36.2	29.1	32.3	32.3	29.4	29.4	32.0	31.5	31.5	35.1	35.6	33.5	27.4	27.4	27.4	27.4
Rec_306-G	1	57.7	56.9	57.1	58.4	57.6	57.5	53.1	54.8	53.8	53.7	52.4	53.7	53.6	50.1	48.8	49.6	50.5	50.2	42.8	39.9	42.5	39.6	34.5	37.7	37.7	34.9	34.9	37.5	37.0	37.0	40.6	41.1	39.0	33.0	33.0	33.0	33.0
Rec_307-G	1	52.8	50.5	53.0	54.1	52.3	52.1	46.3	48.2	47.2	48.4	47.1	47.3	47.2	45.2	44.6	45.4	46.4	46.1	39.5	37.3	40.2	37.9	33.1	36.3	36.3	33.4	33.4	35.9	35.4	35.4	38.9	39.5	37.4	31.2	31.2	31.2	31.2
Rec_308-G	1	57.9	56.9	56.9	58.2	57.7	57.5	53.0	54.6	53.3	53.2	51.8	53.2	53.0	49.5	48.0	48.8	49.7	49.4	41.6	38.0	41.3	39.5	34.3	37.5	37.5	34.7	34.7	37.3	36.8	36.8	40.4	41.2	39.3	32.8	32.8	32.8	32.8
Rec_309-G	1	58.4	57.6	58.1	58.7	58.7	58.3	54.7	55.3	53.5	53.7	52.5	54.3	54.0	49.8	47.9	48.9	49.7	49.4	41.3	37.7	41.5	40.1	34.9	38.1	38.1	35.3	35.3	37.9	37.4	37.4	41.1	42.0	40.1	33.5	33.5	33.5	33.5
Rec_310-G	1	55.7	56.2	55.3	57.9	55.4	55.9	51.0	54.0	53.3	52.7	50.9	51.6	51.4	49.2	47.7	48.1	49.2	49.0	41.7	38.5	41.3	38.5	32.7	35.9	35.9	33.1	33.1	35.7	35.3	35.3	38.9	39.8	37.9	31.3	31.3	31.3	31.3
Rec_311-G	1	56.8	55.9	55.7	57.3	56.9	56.6	52.4	53.7	52.2	51.9	50.9	52.5	52.4	48.9	47.3	48.2	49.0	48.6	41.3	39.2	41.7	38.8	33.9	37.1	37.1	34.2	34.2	36.8	36.3	36.3	39.9	40.3	38.1	32.2	32.2	32.2	32.2
Rec_312-G	1	58.3	56.5	57.0	57.7	58.4	58.0	53.9	54.4	52.5	52.8	51.9	53.7	53.5	49.2	47.4	48.6	49.3	48.9	40.9	38.4	40.9	37.6	31.8	35.0	35.0	32.2	32.2	34.8	34.4	34.4	38.0	38.8	36.8	30.4	30.4	30.4	30.4
Rec_313-G	1	56.9	55.9	56.1	58.4	57.4	57.3	52.9	54.5	53.3	52.9	51.9	53.5	53.4	50.2	48.9	49.8	50.6	50.2	43.3	41.5	43.7	40.1	34.7	37.9	37.9	35.0	35.0	37.6	37.1	37.1	40.7	41.1	38.9	33.0	33.0	33.0	33.0
Rec_314-G	1	54.8	52.9	52.6	53.0	54.2	53.8	49.2	50.7	49.8	49.5	48.5	50.2	49.9	45.1	43.1	44.4	45.1	44.6	34.9	28.4	32.5	31.8	27.4	30.6	30.6	27.7	27.7	30.2	29.7	29.7	33.2	33.8	31.7	25.5	25.5	25.5	25.5
Rec_315-G	1	54.2	54.2	53.9	55.6	54.7	54.5	51.1	52.4	51.0	50.3	49.1	50.6	50.5	47.2	45.4	46.2	47.0	46.6	39.3	37.3	40.1	37.4	32.3	35.5	35.5	32.7	32.7	35.3	34.8	34.8	38.4	39.0	36.9	30.8	30.8	30.8	30.8
Rec_316-G	1	56.0	55.6	55.7	57.0	56.2	56.0	52.7	53.8	52.5	52.2	51.1	52.7	52.5	48.8	47.0	48.0	48.7	48.3	40.8	38.5	41.3	38.5	32.7	35.9	35.9	33.1	33.1	35.7	35.3	35.3	38.9	39.8	37.8	31.3	31.3	31.3	31.3
Rec_317-G	1	56.3	55.5	55.0	56.5	56.0	55.8	51.3	53.4	52.6	51.5	50.2	51.6	51.4	48.3	46.3	47.1	47.9	47.6	40.2	37.9	40.4	37.0	31.4	34.6	34.6	31.8	31.8	34.4	33.9	33.9	37.5	38.2	36.1	29.9	29.9	29.9	29.9
Rec_318-G	1	55.4	54.8	54.9	56.1	55.5	55.2	51.5	52.9	51.7	51.5	50.4	51.9	51.8	48.3	46.7	47.7	48.5	48.1	40.8	38.6	41.2	38.5	33.5	36.7	36.7	33.9	33.9	36.5	36.0	36.0	39.6	40.0	37.9	31.9	31.9	31.9	31.9
Rec_319-G	1	53.8	54.1	54.6	55.9	54.6	54.4	51.0	52.3	50.9	50.6	49.3	50.7	50.6	47.4	45.6	46.4	47.3	46.9	39.5	37.0	40.2	38.2	33.2	36.4	36.4	33.6	33.6	36.2	35.7	35.7	39.3	40.0	38.0	31.7	31.7	31.7	31.7
Rec_320-G	1	54.9	54.0	53.6	55.0	54.9	54.6	50.6	51.9	50.5	50.0	48.9	50.6	50.5	46.8	44.8	45.8	46.5	46.1	38.4	36.4	39.2	36.5	31.4	34.6	34.6	31.8	31.8	34.4	34.0	34.0	37.6	38.2	36.1	30.0	30.0	30.0	30.0
Rec_321-G	1	52.9	52.5	52.4	53.4	52.4	52.2	49.1	50.4	49.4	49.3	48.2	49.9	49.7	45.5	43.5	44.5	45.3	44.9	36.5	33.4	36.6	34.6	29.4	32.6	32.6	29.8	29.8	32.4	31.9	31.9	35.6	36.3	34.3	28.0	28.0	28.0	28.0
Rec_322-G	1	56.8	56.2	56.9	58.0	57.4	57.2	53.6	54.5	52.8	52.9	51.7	53.3	53.1	49.6	47.9	48.8	49.6	49.3	41.8	39.3	42.1	39.2	33.5	36.7	36.7	33.9	33.9	36.5	36.0	36.0	39.6	40.5	38.5	32.0	32.0	32.0	32.0
Rec_323-G	1	54.9	54.7	55.0	56.6	55.6	55.4	51.8	53.1	51.6	51.2	50.1	51.5	51.4	48.4	46.8	47.7	48.5	48.1	41.0	39.1	41.6	38.7	33.6	36.8	36.8	34.0	34.0	36.5	36.0	36.0	39.6	40.1	38.0	32.0	32.0	32.0	32.0
Rec_324-G	1	53.8	53.3	52.9	55.1	54.3	54.1	50.0	51.5	50.1	49.4	48.2	49.8	49.8	46.7	45.0	45.8	46.5	46.1	39.2	37.7	40.3	37.4	32.3	35.5	35.5	32.7	32.7	35.3	34.8	34.8	38.4	38.9	36.8	30.8	30.8	30.8	30.8
Rec_325-G	1	59.1	58.5	58.8	60.3	59.5	59.4	55.4	56.7	55.4	55.2	53.9	55.5	55.3	51.8	50.2	51.0	51.8	51.4	44.0	41.7	44.3	41.1	35.3	38.5	38.5	35.7	35.7	38.3	37.9	37.9	41.5	42.3	40.3	33.9	33.9	33.9	33.9
Rec_326-G	1	54.2	54.0	55.3	55.7	53.8	53.6	51.4	52.5	51.7	52.3	51.3	53.0	52.7	48.4	47.5	48.6	49.5	49.1	41.6	39.0	41.5	38.6	33.6	36.8	36.8	33.9	33.9	36.5	36.0	36.0	39.6	40.0	37.9	31.9	31.9	31.9	31.9
Rec_327-G	1	57.6	56.4	56.5	58.1	57.5	57.5	53.0	54.6	53.5	53.3	52.1	53.6	53.3	49.7	48.1	49.0	49.8	49.4	41.7	38.9	41.2	37.1	30.7	33.9	33.9	31.1	31.1	33.7	33.3	33.3	36.9	37.7	35.7	29.3	29.3	29.3	29.3
Rec_328-G	1	65.8	62.7	61.6	63.2	64.1	63.8	56.3	58.9	58.2	58.4	56.1	57.1	57.0	53.5	52.1	52.2	53.1	52.9	45.1	40.8	43.4	40.2	34.4	37.6	37.6	34.8	34.8	37.4	37.0	37.0	40.6	41.4	39.4	32.9	32.9	32.9	32.9
Rec_329-G	1	66.3	62.8	62.9	64.6	65.0	64.8	57.4	59.8	58.8	59.0	57.0	57.9	57.7	54.7	53.4	53.7	54.7	54.5	46.8	42.7	45.5	42.6	36.9	40.1	40.1	37.3	37.3	39.9	39.4	39.4	43.0	43.8	41.9	35.4	35.4	35.4	35.4
Rec_330-G	1	64.1	61.6	61.7	63.0	63.4	63.2	57.8	59.1	57.8	57.8	56.3	57.9	57.6	53.7	52.1	52.8	53.7	53.4	45.5	42.2	45.1	42.4	36.8	40.0	40.0	37.2	37.2	39.8	39.3	39.3	42.9	43.8	41.8	35.3	35.3	35.3	35.3
Rec_331-G	1	63.7	61.5	61.6	62.8	63.1	62.8	57.7	59.1	57.8	57.8	56.3	57.8	57.5	53.7	52.1	52.8	53.6	53.3	45.4	42.2	45.0	42.3	36.7	39.9	39.9	37.1	37.1	39.7	39.2	39.2	42.8	43.6	41.7	35.2	35.2	35.2	35.2
Rec_332-G	1	62.9	60.9	61.1	62.3	62.5	62.2	57.3	58.7	57.4	57.3	55.9	57.4	57.1	53.3	51.7	52.5	53.3	52.9	45.1	42.0	44.8	42.1	36.6	39.8	39.8	37.0	37.0	39.6	39.1	39.1	42.7	43.5	41.5	35.1	35.1	35.1	35.1
Rec_333-G	1	62.8	62.0	59.8	61.9	60.7	60.9	54.8	58.7	58.4	58.4	55.8	56.4	56.5	53.6	52.5	52.2	53.3	53.1	45.7	41.8	44.0	40.0	34.3	37.5	37.5	34.6	34.6	37.2	36.7	36.7	40.3	40.8	38.6	32.6	32.6	32.6	32.6
Rec_334-G	1	57.8	56.1	56.1	57.2	57.5	57.1	52.8	53.9	52.5	52.9	51.7	53.4	53.3	49.2	47.5	48.5	49.2	48.8	41.0	38.8	41.6	39.0	34.1	37.3	37.3	34.4	34.4	36.9	36.4	36.4	40.0	40.6	38.5	32.3	32.3	32.3	32.3
Rec_335-G	1	59.3	58.2	57.1	58.6	58.0	57.8	53.1	55.1	54.3	54.4	52.7	53.9	53.9	50.2	48.8	49.5	50.3	50.0	42.4	39.5	42.3	39.8	34.9	38.1	38.1	35.2	35.2	37.8	37.3	37.3	40.9	41.4	39.3	33.2	33.2	33.2	33.2
Rec_336-G	1	60.5	59.2	59.6	60.8	60.8	60.6	56.4	57.4	55.8	55.9	54.6	56.3	56.1	52.2	50.5	51.5	52.3	51.9	44.1	40.9	43.8	41.4	35.9	39.1	39.1	36.3	36.3	38.9	38.5	38.5	42.1	42.9	40.9	34.5	34.5	34.5	34.5
Rec_337-G	1	58.5	57.8	56.9	58.4	58.1	57.9	53.7	55.2	54.0	53.9	52.4	53.8	53.7	50.1	48.5	49.2	50.0	49.6	42.2	39.7	42.5	39.9	34.7	37.9	37.9	35.0	35.0	37.6	37.1	37.1	40.7	41.4	39.3	33.0	33.0	33.0	33.0
Rec_338-G	1	58.9	57.9	58.6	58.7	59.1	58.6	55.5	56.0	54.2	54.3	53.5	55.7	55.4	50.5	48.4	49.8	50.4	49.8	41.3	39.0	42.0	39.7	34.3	37.5	37.5	34.7	34.7	37.3	36.8	36.8	40.4	41.2	39.3	32.8	32.8	32.8	32.8
Rec_339-G	1	58.7	58.4	57.4	59.0	57.7	57.8	53.3	55.5	54.7	54.7	53.0	54.0	54.0	50.8	49.6	50.1	51.1	50.9	43.6	40.5	43.0	39.9	34.4	37.6	37.6	34.8	34.8	37.4	36.9	36.9	40.5	41.2	39.1	32.9	32.9	32.9	32.9
Rec_340-G	1	58.2	56.6	56.7	58.3	58.1	58.0	52.9	54.5	53.1	53.0	51.8	53.2	53.0	49.6	47.9	48.8	49.7	49.4	41.6	38.6	41.3	38.5	32.9	36.1	36.1	33.3	33.3	35.9	35.4	35.4	39.0	39.8	37.8	31.4	31.4	31.4	31.4
Rec_341-G	1	59.9	57.7	58.8	58.9	59.9	59.5	55.4	55.6	53.4	53.8	52.9	55.0	54.6	49.8	47.7	49.1	49.8	49.3	40.7	37.5	40.9	39.2	33.8	37.0	37.0	34.2	34.2	36.8	36.4	36.4	40.0	40.9	39.0	32.4	32.4	32.4	32.4
Rec_342-G	1	59.4	58.4	58.7	59.9	59.6	59.5	55.4	56.6	55.1	54.8	53.7	55.4	55.1	51.3	49.5	50.5	51.3	50.9	43.1	40.1	42.9	40.2	34.7	37.9	37.9	35.1	35.1	37.7	37.2	37.2	40.8	41.6	39.6	33.2	33.2	33.2	33.2
Rec_343-G	1	58.6	57.5	58.0	59.3	59.1	58.8	54.8	55.8	54.1	54.0	52.9	54.5	54.3	50.6	48.9	49.8	50.6	50.2	42.5	39.9	42.8	40.3	34.8	38.0	38.0	35.2	35.2	37.8	37.3	37.3	40.9	41.7	39.8	33.3	33.3	33.3	33.3
Rec_344-G	1	55.0	55.4	54.0	56.9	54.3	54.9	50.5	53.8	53.5	52.3	50.7	51.7	51.5	48.9	47.3	47.8	48.7	48.4	41.3	38.8	40.9	36.5	30.1	33.3	33.3	30.5	30.5	33.1	32.6	32.6	36.2	36.8	34.8	28.5	28.5	28.5	28.5
Rec_345-G	1	55.2	54.9	54.2	56.9	55.2	55.5	50.7	53.6	52.9	51.8	50.5	51.7	51.5	48.7	47.1	47.7	48.6	48.3	41.1	38.8	41.2	37.5	31.4	34.6	34.6	31.8	31.8	34.4	33.9	33.9	37.5	38.3	36.3	29.9	29.9	29.9	29.9
Rec_346-G	1	53.3	52.8	53.0	54.4	53.7	53.4	49.6	50.9	49.6	49.3	48.1	49.6	49.6	46.5	44.9	45.7	46.5	46.1	39.3	37.7	40.3	37.5	32.5	35.7	35.7	32.8	32.8	35.4	35.0	35.0	38.6	39.1	36.9	30.9	30.9	30.9	30.9
Rec_347-G	1	53.6	52.8	53.1	54.5	54.0	53.7	49.6	50.9	49.6	49.3	48.2	49.6	49.6	46.5	44.9	45.8	46.6	46.1	39.3	37.8	40.4	37.6	32.6	35.8	35.8	33.0	33.0	35.6	35.1	35.1	38.7	39.2	37.0	31.0	31.0	31.0	31.0
Rec_348-G	1	53.6	53.7	55.2	56.2	55.2	54.9	51.8	52.4	50.3	50.4	49.2	50.7	50.6	47.4	45.6	46.5	47.3	47.0	39.6	37.1	40.4	38.6	33.6	36.8	36.8	33.9	33.9	36.5	36.1	36.1	39.7	40.4	38.4	32.0	32.0	32.0	32.0
Rec_349-G	1	54.4	54.2	54.0	56.4	54.8	54.9	50.8	53.1	52.2	51.4	50.2	51.6	51.4	48.3	46.6	47.4	48.2	47.9	40.5	38.2	40.7	37.4	31.8	35.0	35.0	32.1	32.1	34.7	34.3	34.3	37.9	38.6	36.5	30.2	30.2	30.2	30.2
Rec_350-G	1	55.8	55.5	56.0	57.4	56.7	56.4	52.9	54.0	52.3	52.0	51.0	52.5	52.3	49.0	47.1	48.1	48.9	48.5	40.9	38.4	41.4	39.0	33.7	36.9	36.9	34.1	34.1	36.7	36.2	36.2	39.8	40.6	38.6	32.2	32.2	32.2	32.2
Rec_351-G	1	55.1	54.8	55.2	56.7	55.5	55.5	52.0	53.3	51.9	51.6	50.5	52.0	51.8	48.3	46.6	47.5	48.3	47.9	40.4	38.0	40.9	38.3	32.7	35.9	35.9	33.1	33.1	35.7	35.3	35.3	38.9	39.8	37.8	31.3	31.3	31.3	31.3
Rec_352-G	1	50.8	51.3	53.3	53.7	51.1	51.0	48.5	50.0	49.2	49.8	48.9	50.3	50.1	46.6	45.7	46.7	47.7	47.3	40.4	38.2	40.7	37.7	33.0	36.2	36.2	33.3	33.3	35.9	35.4	35.4	39.0	39.3	37.1	31.3	31.3	31.3	31.3
Rec_353-G	1	58.8	58.5	56.0	59.0	57.2	57.6	51.4	55.5	55.3	54.6	52.3	52.8	52.7	50.6	49.2	49.1	50.2	50.0	42.9	39.9	42.4	39.0	33.2	36.4	36.4	33.5	33.5	36.1	35.6	35.6	39.2	39.9	37.9	31.6	31.6	31.6	31.6
Rec_354-G	1	57.7	57.5	55.7	58.4	56.6	56.9	51.2	54.9	54.6	53.7	51.5	52.2	52.2	50.0	48.4	48.5	49.5	49.3	42.3	39.6	42.1	38.6	32.7	35.9	35.9	33.1	33.1	35.7	35.2	35.2	38.8	39.6	37.6	31.2	31.2	31.2	31.2
Rec_355-G	1	52.2	52.5	53.6	53.8	51.7	51.6	49.5	50.8	49.9	50.5	49.5	51.2	51.0	46.7	45.7	46.8	47.6	47.3	40.0	37.6	40.1	37.3	32.6	35.7	35.7	32.8	32.8	35.3	34.8	34.8	38.3	38.8	36.6	30.6	30.6	30.6	30.6
Rec_356-G	1	56.7	55.7	55.8	57.7	56.9	56.8	51.9	53.6	52.3	52.1	50.7	51.8	51.6	48.8	47.2	47.9	48.8	48.5	41.1	38.1	41.0	38.5	32.9	36.1	36.1	33.3	33.3	35.9	35.4	35.4	39.0	39.9	37.9	31.4	31.4	31.4	31.4
Rec_357-G	1	62.4	60.7	60.8	62.0	62.1	61.8	57.3	58.6	57.3	57.0	55.7	57.3	57.1	53.1	51.4	52.2	53.0	52.6	44.8	41.9	44.7	42.0	36.5	39.7	39.7	36.9	36.9	39.5	39.0	39.0	42.6	43.4	41.4	35.0	35.0	35.0	35.0
Rec_358-G	1	59.4	58.2	58.8	59.6	59.3	59.1	55.1	56.4	55.0	55.1	53.7	55.3	55.1	51.0	49.7	50.5	51.3	51.0	43.1	40.0	42.7	39.7	34.0	37.2	37.2	34.4	34.4	37.0	36.5	36.5	40.1	41.0	39.0	32.5	32.5	32.5	32.5
Rec_359-G	1	57.6	57.4	57.7	58.4	57.9	57.7	54.7	55.5	54.0	53.9	52.8	54.7	54.4	50.0	48.1	49.1	49.9	49.5	41.5	38.6	41.8	39.8	34.6	37.8	37.8	34.9	34.9	37.5	37.0	37.0	40.6	41.4	39.4	33.0	33.0	33.0	33.0
Rec_360-G	1	56.9	56.0	56.2	57.8	57.1	57.0	52.5	54.1	52.8	52.6	51.4	52.8	52.6	49.2	47.5	48.4	49.2	48.9	41.2	38.1	41.2	39.0	34.0	37.2	37.2	34.3	34.3	36.9	36.4	36.4	40.0	40.7	38.6	32.3	32.3	32.3	32.3
Rec_361-G	1	56.7	55.5	55.6	58.3	57.1	57.2	51.5	53.9	52.8	52.4	50.9	51.7	51.6	49.5	48.0	48.6	49.6	49.4	42.1	38.9	41.7	39.0	33.6	36.8	36.8	34.0	34.0	36.6	36.1	36.1	39.7	40.5	38.5	32.1	32.1	32.1	32.1
Rec_362-G	1	56.7	56.3	56.4	58.1	57.0	56.9	53.1	54.7	53.4	53.2	51.9	53.4	53.2	49.8	48.0	48.8	49.6	49.3	41.6	38.8	41.9	39.7	34.7	37.9	37.9	35.1	35.1	37.7	37.2	37.2	40.8	41.4	39.4	33.1	33.1	33.1	33.1
Rec_363-G	1	56.2	55.6	56.1	58.0	56.4	56.4	52.3	54.2	53.3	53.2	51.9	53.1	53.0	49.8	48.5	49.3	50.2	49.9	42.5	39.7	42.5	40.2	35.3	38.4	38.4	35.5	35.5	38.1	37.6	37.6	41.2	41.7	39.6	33.5	33.5	33.5	33.5
Rec_364-G	1	56.9	56.5	57.3	57.8	57.3	56.8	53.8	54.6	53.1	53.3	52.2	53.8	53.6	49.6	48.0	49.0	49.8	49.4	41.8	39.5	42.3	39.7	34.1	37.3	37.3	34.5	34.5	37.1	36.6	36.6	40.2	41.1	39.1	32.6	32.6	32.6	32.6
Rec_365-G	1	58.7	58.1	58.1	59.4	58.9	58.7	54.9	56.1	54.6	54.5	53.3	54.9	54.7	50.9	49.1	50.0	50.8	50.4	42.5	39.7	42.7	40.4	35.0	38.2	38.2	35.4	35.4	38.0	37.5	37.5	41.1	41.9	40.0	33.5	33.5	33.5	33.5
Rec_366-G	1	58.3	57.7	57.5	58.9	58.4	58.1	54.4	55.6	54.1	54.0	52.8	54.4	54.3	50.5	48.6	49.6	50.4	49.9	42.1	39.5	42.5	40.1	34.8	38.0	38.0	35.2	35.2	37.8	37.4	37.4	41.0	41.8	39.8	33.4	33.4	33.4	33.4
Rec_367-G	1	57.8	56.5	57.1	57.9	58.1	57.7	53.7	54.4	52.6	52.6	51.7	53.4	53.2	49.2	47.2	48.4	49.1	48.6	40.5	37.9	41.2	39.4	34.1	37.3	37.3	34.5	34.5	37.1	36.6	36.6	40.3	41.1	39.2	32.7	32.7	32.7	32.7
Rec_368-G	1	58.2	56.5	57.7	57.7	58.6	58.0	54.5	54.5	52.3	52.6	51.8	53.9	53.6	48.7	46.5	47.9	48.6	48.1	39.3	36.0	40.0	38.9	34.0	37.2	37.2	34.4	34.4	37.0	36.5	36.5	40.1	40.9	38.9	32.5	32.5	32.5	32.5
Rec_369-G	1	56.0	55.4	55.8	57.2	56.6	56.3	52.7	53.7	52.2	51.9	50.9	52.5	52.4	48.8	47.0	48.0	48.7	48.3	40.7	38.8	41.7	39.1	33.7	36.9	36.9	34.1	34.1	36.7	36.3	36.3	39.9	40.7	38.7	32.3	32.3	32.3	32.3
Rec_370-G	1	55.5	55.3	54.2	56.5	54.6	54.9	50.2	53.1	52.6	51.8	50.1	51.3	51.1	48.4	46.8	47.1	48.0	47.6	40.7	38.8	40.9	36.4	29.7	32.9	32.9	30.1	30.1	32.7	32.3	32.3	35.9	36.6	34.6	28.3	28.3	28.3	28.3

Ontario Regional Sports Complex EIR

Construction Noise Analysis, Predicted Daytime Construction Noise Levels by Month for All Receptors, 8-hour Leq

Receptor	Receptor Group	Cumulative Construction Noise Levels by Month, Maximum Hourly Leq, dBA																																				
		9/1/2024 9/30/2024	10/1/2024 10/31/2024	11/1/2024 11/30/2024	12/1/2024 12/31/2024	1/1/2025 1/31/2025	2/1/2025 2/28/2025	3/1/2025 3/31/2025	4/1/2025 4/30/2025	5/1/2025 5/31/2025	6/1/2025 6/30/2025	7/1/2025 7/31/2025	8/1/2025 8/31/2025	9/1/2025 9/30/2025	10/1/2025 10/31/2025	11/1/2025 11/30/2025	12/1/2025 12/31/2025	1/1/2026 1/31/2026	2/1/2026 2/28/2026	3/1/2026 3/31/2026	4/1/2026 4/30/2026	5/1/2026 5/31/2026	6/1/2026 6/30/2026	7/1/2026 7/31/2026	8/1/2026 8/31/2026	9/1/2026 9/30/2026	10/1/2026 10/31/2026	11/1/2026 11/30/2026	12/1/2026 12/31/2026	1/1/2027 1/31/2027	2/1/2027 2/28/2027	3/1/2027 3/31/2027	4/1/2027 4/30/2027	5/1/2027 5/31/2027	6/1/2027 6/30/2027	7/1/2027 7/31/2027	8/1/2027 8/31/2027	9/1/2027 9/30/2027
Rec_371-G	1	56.4	56.1	56.6	57.7	57.0	56.7	53.3	54.3	52.7	52.5	51.5	53.1	53.0	49.3	47.4	48.4	49.1	48.7	41.1	39.0	41.9	39.3	33.8	37.0	37.0	34.2	34.2	36.8	36.4	36.4	40.0	40.8	38.8	32.4	32.4	32.4	32.4
Rec_372-G	1	57.4	57.2	58.0	58.9	58.4	58.0	54.8	55.7	54.0	53.8	52.7	54.4	54.2	50.3	48.5	49.5	50.3	50.0	42.1	39.0	42.3	40.5	35.3	38.5	38.5	35.7	35.7	38.3	37.8	37.8	41.4	42.2	40.3	33.8	33.8	33.8	33.8
Rec_373-G	1	57.8	57.5	57.5	58.5	58.2	57.9	54.6	55.5	54.0	53.8	52.8	54.5	54.3	50.3	48.3	49.4	50.1	49.6	41.7	39.3	42.3	39.9	34.4	37.6	37.6	34.8	34.8	37.4	37.0	37.0	40.6	41.4	39.5	33.0	33.0	33.0	33.0
Rec_374-G	1	54.6	54.0	54.6	57.0	55.4	55.6	50.4	52.7	51.4	51.0	49.5	50.3	50.1	48.1	46.5	47.0	48.1	47.9	40.8	38.0	40.8	38.0	32.3	35.5	35.5	32.7	32.7	35.3	34.8	34.8	38.5	39.3	37.4	30.9	30.9	30.9	30.9
Rec_375-G	1	51.8	52.2	52.6	52.5	51.5	51.2	49.7	50.5	49.6	49.9	49.0	51.1	50.9	46.0	44.3	45.7	46.4	45.9	37.7	35.1	38.5	37.3	33.2	36.4	36.4	33.5	33.5	36.0	35.5	35.5	39.1	39.5	37.2	31.4	31.4	31.4	31.4
Rec_376-G	1	58.6	58.4	57.4	59.0	58.1	58.0	53.9	56.1	55.2	54.6	53.0	54.2	54.1	50.7	48.9	49.5	50.4	50.0	42.3	39.1	42.0	39.4	34.0	37.2	37.2	34.4	34.4	37.0	36.5	36.5	40.1	40.9	38.9	32.5	32.5	32.5	32.5
Rec_377-G	1	55.4	55.2	54.7	55.8	55.1	54.7	51.2	52.6	51.5	51.0	49.8	51.3	51.3	47.8	46.0	46.9	47.6	47.2	39.9	38.2	40.9	38.4	33.4	36.6	36.6	33.8	33.8	36.4	35.9	35.9	39.5	40.0	37.9	31.8	31.8	31.8	31.8
Rec_378-G	1	55.1	54.7	54.1	56.2	54.9	55.0	50.7	52.7	51.8	51.2	49.8	51.1	51.0	48.1	46.5	47.1	48.0	47.6	40.5	38.5	41.0	37.8	32.5	35.7	35.7	32.8	32.8	35.4	34.9	34.9	38.5	39.1	37.0	30.8	30.8	30.8	30.8
Rec_379-G	1	54.2	53.5	54.2	55.3	54.7	54.2	51.8	52.4	50.9	50.9	50.1	52.1	52.0	47.7	45.6	46.8	47.3	46.7	38.5	37.2	39.9	37.0	31.6	34.8	34.8	32.0	32.0	34.6	34.1	34.1	37.7	38.4	36.4	30.1	30.1	30.1	30.1
Rec_380-G	1	58.2	57.4	57.4	59.5	58.5	58.6	54.0	55.8	54.7	54.0	52.7	54.0	53.8	50.8	49.3	50.0	50.9	50.6	43.4	40.9	43.2	39.4	33.2	36.4	36.4	33.6	33.6	36.2	35.7	35.7	39.3	40.1	38.1	31.7	31.7	31.7	31.7
Rec_381-G	1	61.4	60.0	60.3	61.2	61.4	61.0	56.9	58.0	56.6	56.3	55.1	56.8	56.5	52.5	50.7	51.6	52.4	52.0	44.2	41.7	44.5	41.8	36.3	39.5	39.5	36.7	36.7	39.3	38.8	38.8	42.4	43.2	41.3	34.8	34.8	34.8	34.8
Rec_382-G	1	61.1	59.7	60.0	61.0	61.1	60.7	56.7	57.8	56.4	56.1	54.9	56.6	56.3	52.3	50.5	51.4	52.1	51.7	43.9	41.6	44.4	41.7	36.2	39.4	39.4	36.6	36.6	39.2	38.7	38.7	42.3	43.1	41.2	34.7	34.7	34.7	34.7
Rec_383-G	1	58.0	57.0	57.6	57.8	57.9	57.2	54.1	54.7	53.2	53.4	52.5	54.1	54.0	49.8	48.3	49.5	50.1	49.6	41.7	39.7	42.1	38.8	33.1	36.3	36.3	33.5	33.5	36.1	35.6	35.6	39.2	39.9	37.9	31.6	31.6	31.6	31.6
Rec_384-G	1	53.9	54.3	50.4	52.6	50.8	51.4	45.9	50.1	50.2	49.7	47.2	47.8	47.9	44.8	43.6	43.4	44.5	44.4	36.6	31.0	33.6	30.5	24.5	27.7	27.7	24.9	24.9	27.5	27.1	27.1	30.7	31.6	29.6	23.1	23.1	23.1	23.1
Rec_385-G	1	59.5	58.4	58.1	59.0	59.1	58.8	55.0	56.3	55.1	54.7	53.4	55.2	55.0	50.6	48.7	49.7	50.4	50.0	41.8	38.8	41.7	39.3	33.8	37.0	37.0	34.2	34.2	36.8	36.3	36.3	39.9	40.7	38.8	32.3	32.3	32.3	32.3
Rec_386-G	1	59.8	59.1	59.3	59.5	59.8	59.3	56.0	56.9	55.5	55.2	54.0	55.9	55.6	51.0	49.0	50.1	50.8	50.3	41.9	38.8	42.1	40.1	34.9	38.1	38.1	35.3	35.3	37.9	37.4	37.4	41.0	41.8	39.9	33.4	33.4	33.4	33.4
Rec_387-G	1	59.1	58.3	59.0	59.2	59.5	59.0	56.0	56.5	54.9	54.6	53.7	55.7	55.3	50.7	48.6	49.8	50.5	50.0	41.6	38.7	42.2	40.5	35.4	38.6	38.6	35.8	35.8	38.4	37.9	37.9	41.5	42.3	40.4	33.9	33.9	33.9	33.9
Rec_388-G	1	58.8	57.5	57.8	59.2	58.9	58.7	54.3	55.8	54.6	53.9	52.7	54.3	54.1	50.7	49.0	49.8	50.5	50.2	42.8	40.9	43.3	39.5	33.3	36.5	36.5	33.7	33.7	36.3	35.8	35.8	39.4	40.3	38.3	31.8	31.8	31.8	31.8
Rec_389-G	1	51.7	51.2	51.4	53.2	52.1	52.2	49.4	50.6	49.4	49.4	48.5	50.5	50.3	46.1	44.5	45.6	46.3	45.8	38.6	37.2	39.4	35.5	30.2	33.3	33.3	30.4	30.4	32.9	32.4	32.4	35.9	36.3	34.0	28.1	28.1	28.1	28.1
Rec_390-G	1	56.1	55.7	55.6	56.5	56.3	56.0	53.4	54.1	52.6	52.4	51.6	53.6	53.5	49.0	47.0	48.2	48.8	48.3	40.4	38.6	41.6	39.3	34.2	37.4	37.4	34.6	34.6	37.2	36.8	36.8	40.4	41.1	39.0	32.8	32.8	32.8	32.8
Rec_391-G	1	51.8	51.5	51.2	52.4	50.6	50.5	46.5	48.9	48.3	48.6	47.0	47.9	48.1	45.3	44.2	44.9	45.8	45.4	38.5	36.6	39.0	36.0	31.2	34.4	34.4	31.5	31.5	34.0	33.4	33.4	36.9	37.3	35.1	29.2	29.2	29.2	29.2
Rec_392-G	1	55.7	54.8	54.9	56.1	56.1	55.7	51.8	52.7	51.1	50.6	49.6	51.5	51.3	47.6	45.7	46.7	47.4	46.9	39.5	37.9	40.7	38.2	33.1	36.3	36.3	33.5	33.5	36.1	35.6	35.6	39.2	39.8	37.7	31.6	31.6	31.6	31.6
Rec_393-G	1	56.4	55.9	56.4	57.9	57.2	56.8	53.4	54.4	52.8	52.5	51.5	53.2	53.1	49.6	47.7	48.7	49.4	48.9	41.7	40.2	43.0	40.4	35.2	38.4	38.4	35.6	35.6	38.2	37.7	37.7	41.3	41.9	39.8	33.6	33.6	33.6	33.6
Rec_394-G	1	57.4	57.2	57.4	58.4	57.9	57.6	54.6	55.5	54.1	53.7	52.8	54.6	54.4	50.4	48.5	49.6	50.3	49.8	42.5	40.9	43.8	41.3	36.0	39.2	39.2	36.4	36.4	38.9	38.4	38.4	42.0	42.8	40.8	34.4	34.4	34.4	34.4
Rec_395-G	1	57.1	56.7	57.1	58.6	57.9	57.7	54.1	55.4	54.0	53.3	52.3	53.9	53.7	50.3	48.5	49.4	50.1	49.7	42.3	40.3	43.1	40.3	34.6	37.8	37.8	35.0	35.0	37.6	37.1	37.1	40.8	41.6	39.7	33.2	33.2	33.2	33.2
Rec_396-G	1	56.6	56.5	55.9	56.9	56.8	56.3	53.1	54.2	52.9	52.4	51.2	52.9	52.8	48.8	46.7	47.7	48.3	47.9	39.8	37.5	41.1	39.6	34.6	37.8	37.8	35.0	35.0	37.6	37.1	37.1	40.7	41.5	39.5	33.1	33.1	33.1	33.1
Rec_397-G	1	54.5	54.4	54.8	55.8	55.1	54.5	51.8	52.8	51.4	51.1	50.0	51.7	51.7	47.9	46.2	47.2	47.9	47.4	40.2	38.6	41.4	39.0	34.1	37.3	37.3	34.5	34.5	37.1	36.6	36.6	40.2	40.7	38.6	32.5	32.5	32.5	32.5
Rec_398-G	1	53.6	53.1	53.7	55.2	54.1	53.9	50.0	51.4	50.1	49.9	48.8	50.2	50.1	47.1	45.7	46.5	47.4	47.0	40.2	38.5	41.2	38.2	32.8	36.0	36.0	33.2	33.2	35.8	35.4	35.4	39.0	39.7	37.6	31.4	31.4	31.4	31.4
Rec_399-G	1	57.3	56.9	57.8	58.9	58.3	58.0	54.6	55.4	53.7	53.4	52.4	54.2	53.9	50.2	48.3	49.3	50.1	49.7	42.0	39.5	42.7	40.7	35.3	38.5	38.5	35.7	35.7	38.3	37.9	37.9	41.5	42.4	40.4	33.9	33.9	33.9	33.9
Rec_400-G	1	56.6	56.2	56.1	58.4	57.0	57.1	52.5	54.7	53.7	52.9	51.5	52.6	52.5	50.0	48.5	49.1	50.0	49.7	42.6	40.3	42.7	39.2	33.0	36.2	36.2	33.4	33.4	36.0	35.5	35.5	39.2	40.0	38.1	31.6	31.6	31.6	31.6
Rec_401-G	1	53.0	52.6	51.9	53.5	52.6	52.6	48.5	50.6	49.7	49.4	48.0	49.3	49.3	45.9	44.2	45.0	45.8	45.5	37.5	33.7	36.5	34.2	29.5	32.6	32.6	29.7	29.7	32.3	31.8	31.8	35.3	35.8	33.7	27.6	27.6	27.6	27.6
Rec_402-G	4	61.3	62.0	61.9	61.0	61.3	59.9	58.3	58.7	56.8	55.8	55.3	56.9	57.5	54.5	50.3	51.9	52.1	51.3	43.0	43.2	46.9	45.8	41.2	44.4	44.4	41.5	41.5	44.1	43.6	43.6	47.2	47.8	45.8	39.6	39.6	39.6	39.6
Rec_403-G	4	61.4	62.1	61.9	60.4	61.2	60.0	58.3	58.6	56.5	55.7	55.2	56.8	57.4	54.2	49.7	51.5	51.7	50.9	41.7	41.4	45.0	43.7	39.0	42.2	42.2	39.4	39.4	42.0	41.5	41.5	45.1	45.8	43.7	37.5	37.5	37.5	37.5
Rec_404-G	4	61.3	62.2	62.0	60.6	61.2	59.9	58.4	58.7	56.7	55.8	55.2	56.8	57.5	54.4	50.0	51.7	52.0	51.1	42.6	42.8	46.4	45.1	40.4	43.6	43.6	40.8	40.8	43.4	42.9	42.9	46.5	47.1	45.1	38.8	38.8	38.8	38.8
Rec_405-G	4	61.0	61.1	60.6	59.6	60.5	59.3	57.3	57.7	55.8	55.0	54.5	56.3	56.8	53.5	49.2	51.0	51.3	50.4	41.3	41.2	45.1	44.0	39.2	42.4	42.4	39.6	39.6	42.2	41.7	41.7	45.3	46.1	44.1	37.7	37.7	37.7	37.7
Rec_406-G	4	61.1	62.0	61.8	60.1	60.9	59.7	58.2	58.5	56.3	55.6	55.0	56.6	57.2	54.0	49.4	51.3	51.6	50.7	41.4	41.0	44.7	43.3	38.3	41.5	41.5	38.7	38.7	41.3	40.8	40.8	44.4	45.2	43.2	36.8	36.8	36.8	36.8
Rec_407-G	4	61.2	62.2	62.0	61.1	61.3	59.8	58.4	58.9	57.0	55.8	55.2	56.8	57.4	54.6	50.2	51.7	52.0	51.1	43.1	43.4	47.6	46.7	41.9	45.1	45.1	42.2	42.2	44.8	44.4	44.4	48.0	48.8	46.8	40.4	40.4	40.4	40.4
Rec_408-G	4	61.2	62.2	62.1	60.7	61.1	59.8	58.4	58.8	56.8	55.7	55.1	56.7	57.4	54.4	50.0	51.6	51.8	51.0	42.8	43.0	46.7	45.3	40.4	43.6	43.6	40.8	40.8	43.4	42.9	42.9	46.5	47.3	45.3	38.9	38.9	38.9	38.9
Rec_409-G	4	60.4	61.7	61.5	59.7	60.3	59.0	58.1	58.2	56.0	55.1	54.5	56.2	56.8	53.8	49.2	51.0	51.2	50.4	41.3	41.0	44.8	43.4	38.3	41.5	41.5	38.7	38.7	41.3	40.8	40.8	44.4	45.3	43.3	36.8	36.8	36.8	36.8
Rec_410-G	4	60.8	61.8	61.7	60.0	60.8	59.5	58.1	58.3	56.3	55.4	54.8	56.4	57.0	53.8	49.3	51.1	51.3	50.5	41.5	41.2	44.9	43.5	38.2	41.4	41.4	38.6	38.6	41.2	40.8	40.8	44.4	45.3	43.4	36.8	36.8	36.8	36.8
Rec_411-G	4	60.6	61.7	61.6	60.3	60.6	59.3	57.9	58.3	56.4	55.3	54.7	56.3	56.9	53.9	49.6	51.2	51.4	50.6	42.5	42.7	46.5	45.2	40.1	43.3	43.3	40.5	40.5	43.1	42.6	42.6	46.2	47.1	45.1	38.6	38.6	38.6	38.6
Rec_412-G	4	59.0	60.7	60.5	59.7	59.3	57.5	56.4	57.3	55.6	53.8	53.1	54.7	55.7	53.6	48.7	49.8	50.1	49.2	42.9	43.7	47.7	46.8	42.1	45.3	45.3	42.5	42.5	45.1	44.6	44.6	48.2	48.9	46.9	40.6	40.6	40.6	40.6
Rec_413-G	4	59.4	60.8	60.9	59.1	59.6	58.3	57.2	57.5	55.3	54.3	53.6	55.3	55.9	52.9	48.4	50.1	50.4	49.5	41.1	41.0	44.6	43.0	37.9	41.1	41.1	38.3	38.3	40.9	40.4	40.4	44.0	44.8	42.9	36.4	36.4	36.4	36.4
Rec_414-G	6	51.5	53.8	53.9	63.1	56.7	53.8	52.2	64.7	66.1	56.2	56.0	58.6	56.9	58.6	54.7	54.1	54.2	53.1	50.6	52.1	54.4	50.5	43.9	47.1	47.1	44.3	44.3	46.9	46.5	46.5	50.1	51.0	49.1	42.5	42.5	42.5	42.5
Rec_415-G	6	49.7	53.3	53.9	65.7	57.9	53.2	52.6	66.2	67.6	57.8	57.7	60.1	58.8	61.1	58.0	57.1	57.1	55.9	54.1	55.7	57.8	53.3	46.5	49.7	49.7	46.9	46.9	49.5	49.0	49.0	52.6	53.4	51.5	45.0	45.0	45.0	45.0
Rec_416-G	6	51.2	53.2	53.1	59.1	53.7	52.4	50.0	60.5	61.8	53.0	52.4	54.7	53.3	54.3	50.5	50.0	50.3	49.4	46.3	47.6	49.8	45.4	38.7	41.9	41.9	39.1	39.1	41.7	41.3	41.3	44.9	45.7	43.7	37.3	37.3	37.3	37.3
Rec_417a-G	6	72.3	73.4	53.2	55.5	51.9	52.8	47.2	68.9	70.2	68.6	63.6	64.1	64.8	61.3	59.6	45.5	46.8	46.7	38.9	32.6	35.0	31.2	24.8	28.1	28.1	25.3	25.3	27.9	27.5	27.5	31.1	32.0	30.0	23.5	23.5	23.5	23.5
Rec_417b-G	6	73.9	75.0	56.2	60.3	56.3	56.4	51.6	69.6	70.9	70.1	64.8	65.0	66.2	62.1	61.3	50.8	51.5	51.0	46.0	46.1	48.3	44.2	37.7	40.9	40.9	38.1	38.1	40.7	40.2	40.2	43.8	44.6	42.7	36.2	36.2	36.2	36.2
Rec_418-G	6	55.1	56.4	56.0	61.1	56.2	55.9	51.9	64.8	66.1	57.9	57.3	59.2	56.8	58.0	52.4	52.1	52.6	51.9	47.9	48.7	50.9	46.5	39.6	42.9	42.9	40.1	40.1	42.7	42.2	42.2	45.8	46.7	44.8	38.2	38.2	38.2	38.2
Rec_419-G	6	58.6	59.7	58.8	61.4	58.0	58.9	53.9	68.4	69.8	61.1	60.4	62.5	59.9	60.5	51.6	51.8	52.9	52.7	45.4	41.4	43.8	39.3	31.5	34.8	34.8	32.1	32.1	34.7	34.3	34.3	38.0	39.2	37.5	30.5	30.5	30.5	30.5
Rec_420-G	2	76.0	69.0	70.3	71.9	74.5	74.1	64.2	64.7	63.1	64.1	63.4	65.2	64.4	58.9	57.6	59.0	60.0	59.8	51.3	43.8	46.7	43.9	38.0	41.3	41.3	38.5	38.5	41.1	40.6	40.6	44.3	45.2	43.4	36.7	36.7	36.7	36.7
Rec_421-G	2	73.3	67.7	69.1	70.4	72.4	72.0	65.1	65.5	63.9	64.4	63.7	65.9	65.1	59.3	57.9	59.3	60.2	59.9	51.4	45.6	48.4	45.7	40.1	43.3	43.3	40.5	40.5	43.1	42.6	42.6	46.2	47.0	45.1	38.6	38.6	38.6	38.6
Rec_422-G	3	62.3	62.3	61.9	60.5	62.0	60.6	58.5	58.3	56.1	55.9	55.4	57.4	57.6	53.4	50.8	53.1	53.2	52.2	40.5	40.7	44.7	43.4	38.0	41.2	41.2	38.4	38.4	41.0	40.6	40.6	44.2	45.2	43.4	36.6	36.6	36.6	36.6
Rec_423-G	1	56.8	54.8	52.6	55.1	54.7	54.8	48.1	51.3	50.7	50.6	48.0	48.8	48.8	45.9	44.4	44.3	45.3	45.2	37.5	33.2	35.6	31.9	25.7	28.9	28.9	26.1	26.1	28.7	28.3	28.3	32.0	32.8	30.9	24.4	24.4	24.4	24.4
Rec_424-G	1	62.0	62.2	61.0	62.7	61.1	61.3	56.8	59.5	58.8	58.3	56.2	57.2	57.0	54.1	52.5	52.7	53.7	53.5	46.0	42.6	45.5	42.9	37.1	40.3	40.3	37.5	37.5	40.1	39.7	39.7	43.3	44.2	42.4	35.7	35.7	35.7	35.7
Rec_425-G	1	60.4	61.1	60.5	62.0	60.1	60.3	56.6	58.8	57.8	57.5	55.6	56.7	56.5	53.5	51.9	52.3	53.2	53.0	45.7	42.7	45.3	42.3	36.5	39.7	39.7	36.9	36.9	39.5	39.0	39.0	42.6	43.4	41.5	35.0	35.0	35.0	35.0
Rec_426a-G	1	56.1	55.7	55.4	56.9	56.1	55.9	52.0	53.8	52.8	52.0	50.6	52.0	51.8	48.6	46.8	47.4	48.2	47.8	40.5	38.4	41.0	37.8	32.1	35.3	35.3	32.5	32.5	35.1	34.6	34.6	38.2	39.0	37.0	30.6	30.6	30.6	30.6
Rec_426b-G	1	72.7	68.4	65.7	67.7	70.4	69.9	58.0	62.4	62.5	62.8	59.5	60.0	60.3	56.5	55.6	54.3	55.4	55.2	47.2	41.3	44.0	41.0	35.1	38.3	38.3	35.5	35.5	38.1	37.6	37.6	41.3	42.2	40.3	33.7	33.7	33.7	33.7
Rec_427-G	2	57.2	56.8	57.0	56.7	57.6	56.7	54.1	54.5	52.8	52.7	52.1	54.2	54.1	49.5	47.0	48.6	49.0	48.3	40.0	39.4	42.5	40.6	35.9	39.1	39.1	36.3	36.3	38.9	38.4	38.4	42.0	42.5	40.4	34.3	34.3	34.3	34.3
Rec_428-G	2	64.0	63.2	62.8	61.7	63.4	62.5	60.7	60.3	58.7	58.6	58.1	60.7	60.3	53.8	51.6	53.7	53.9	53.0	42.3	42.1	45.1	42.8	37.3	40.5	40.5	37.7	37.7	40.3	39.8	39.8	43.4	44.3	42.3	35.8	35.8	35.8	35.8
Rec_429-G	2	65.7	64.9	64.8	63.6	65.4	64.5	62.6	62.3	60.6	60.5	60.1	62.6	62.3	55.9	53.6	55.7	55.8	54.9	44.5	44.3	47.2	44.8	39.7	42.9	42.9	40.1	40.1	42.7	42.2	42.2	45.8	46.4	44.3	38.1	38.1	38.1	38.1
Rec_430-G	2	63.9	63.4	63.0	61.4	63.3	62.3	61.0	60.5	58.9	58.7	58.2	61.0	60.6	53.6	51.2	53.5	53.6	52.6	40.7	40.9	44.8	43.7	38.7	41.9	41.9	39.1	39.1	41.7	41.2	41.2	44.8	45.6	43.7	37.2	37.2	37.2	37.2
Rec_431-G	2	65.6	65.1	65.0	63.3	65.4	64.3	62.8	62.5	60.8	60.7	60.2	62.9	62.6	55.6	53.3	55.5	55.6	54.6	43.0	43.1	46.8	45.7	41.2	44.4	44.4	41.5	41.5	44.1	43.6	43.6	47.2	47.8	45.7	39.6	39.6	39.6	39.6
Rec_432-G	2	63.3	63.1	62.7	60.7	62.9	61.6	60.6	60.1	58.3	58.1	57.7	60.4	60.0	53.0	50.3	52.9	53.0	51.9	37.6	37.7	43.4	43.5	38.8	42.0	42.0	39.2	39.2	41.8	41.3	41.3	44.9	45.8	43.8	37.3	37.3	37.3	37.3
Rec_433-G	2	65.1	64.8	64.7	62.7	64.9	63.6	62.5	62.1	60.3	60.2	59.7	62.4	62.0	55.1	52.4	54.9	54.9	53.8	40.1	40.4	45.5	45.5	41.2	44.4	44.4	41.6	41.6	44.2	43.7	43.7	47.3	47.9	45.9	39.7	39.7	39.7	39.7
Rec_434-G	2	63.3	63.1	62.6	60.6	62.8	61.5	60.6	60.0	58.2	58.0	57.5	60.3	59.9	52.9	50.2	52.8	52.9	51.8	37.0	37.1	43.2	43.5	38.8	42.0	42.0	39.2	39.2	41.8	41.4	41.4	45.0	45.8	43.9	37.4	37.4	37.4	37.4
Rec_435-G	2	65.0	64.7	64.6	62.5	64.8	63.5	62.4	62.0	60.2	60.0	59.5	62.2	61.9	54.9	52.2	54.7	54.8	53.7	39.5	39.7	45.2	45.5	41.3	44.5	44.5	41.6	41.6	44.2	43.7	43.7	47.3	47.9	45.9	39.7	39.7	39.7	39.7
Rec_436-G	2	60.9	60.3	59.4	57.9	60.3	58.8	56.8	56.4	54.3	54.4	54.1	56.0	56.2	51.3	48.6	51.2	51.3	50.2	34.8	35.2	39.6	39.0	34.3	37.5	37.5	34.7	34.7	37.3	36.8	36.8	40.4	41.2	39.2	32.8	32.8	32.8	32.8
Rec_437-G	2	63.0	62.5	62.1	60.5	62.8	61.3	59.4	59.1	57.1	57.1	56.7	58.8	58.9	53.9	51.2	53.6	53.7	52.6	39.7	40.3	44.1	43.2	38.9	42.1	42.1	39.2	39.2	41.8	41.3	41.3	44.9	45.4	43.3	37.3	37.3	37.3	37.3
Rec_438-G	2	61.0	60.7	60.0	58.2	60.5	59.0	57.5	57.0	54.9	55.0	54.6	56.7	56.7	51.5	48.7	51.4	51.5	50.4	33.9	34.2	40.2	40.6	36.2	39.4	39.4	36.6	36.6	39.2	38.7	38.7	42.3	43.0	41.0	34.7	34.7	34.7	34.7
Rec_439-G	2	63.3	62.9	62.6	60.7	63.1	61.6	60.0	59.6	57.5	57.6	57.1	59.3	59.3	54.0	51.3	53.8	53.8	52.7	38.7	39.4	44.1	44.0	39.9	43.1	43.1	40.2	40.2	42.8	42.3	42.3	45.9	46.4	44.3	38.3	38.3	38.3	38.3
Rec_440-G	2	56.9	53.9	53.4	54.0	55.8	55.3	49.3	50.3	49.1	49.4	48.0	49.7	49.4	44.3	42.5	43.4	44.1	43.7	34.8	29.5	33.3	32.3	27.8	31.0	31.0	28.1	28.1	30.7	30.3	30.3	33.9	34.5	32.4	26.3	26.3	26.3	26.3
Rec_441-G	2	49.3	46.8	48.4	49.0	48.8	48.5	44.0	45.1	43.8	44.2	43.0	44.7	44.1	39.2	37.3	38.4	39.3	38.9	30.4	25.3	29.9	29.0	23.4	26.7	26.7	23.9	23.9	26.5	26.1	26.1	29.8	30.9	29.1	22.2	22.2	22.2	22.2
Rec_442-G	2	51.7	48.9	50.1	50.6	51.2	50.8	46.1	46.8	45.3	45.6	44.6	46.4	45.9	40.9	38.8	40.1	40.9	40.4	31.5	26.8	30.3	28.8	24.1	27.3	27.3	24.5	24.5	27.1	26.6	26.6	30.2	30.8	28.8	22.6	22.6	22.6	22.6
Rec_443-G	2	54.7	51.7	50.1	51.4	53.6	53.2	46.7	47.9	46.6	46.7	45.1	46.8	46.7	42.2	40.2	41.0	41.8	41.4	32.9	29.3	32.5	30.4	25.1	28.3	28.3	25.5	25.5	28.1	27.6	27.6	31.3	32.0	30.1	23.7	23.7	23.7	23.7
Rec_444-G	2	52.9	49.8	48.7	49.9	51.9	51.5	45.2	46.3	44.9	45.0	43.6	45.4	45.2	40.6	38.6	39.4	40.2	39.8	31.4	27.9	31.0	28.8	23.4	26.6	26.6	23.8	23.8	26.4	26.0	26.0	29.7	30.4	28.5	22.1	22.1	22.1	22.1
Rec_445-G	2	62.2	61.7	61.7	62.2	62.8	62.1	59.4	59.9	58.3	58.1	57.4	59.6	59.4	54.5	52.4	53.8	54.3	53.7	45.4	43.8	46.9	45.2	40.6	43.8	43.8	41.0	41.0	43.6	43.1	43.1	46.7	47.2	45.0	39.1	39.1	39.1	39.1
Rec_446-G	2	62.4	62.3	62.1	61.8	62.8	61.7	59.7	59.9	58.2	58.1	57.4	59.7	59.6	54.5	52.2	53.8	54.2	53.3	44.4	43.6	46.9	45.2	40.7	43.9	43.9	41.1	41.1	43.7	43.2	43.2	46.8	47.3	45.1	39.1	39.1	39.1	39.1
Rec_447-G	2	62.0	62.4	62.3	61.0	62.4	61.0	59.9	59.8	58.0	57.9	57.3	59.7	59.6	54.0	51.2	53.1	53.3	52.4	41.9	41.6	46.0	45.8	41.7	44.9	44.9	42.1	42.1	44.7	44.2	44.2	47.8	48.2	46.0	40.1	40.1	40.1	40.1
Rec_448-G	2	61.2	61.5	61.6	60.6	61.7	60.5	59.1	59.2	57.5	57.4	56.9	59.2	59.1	54.0	51.3	53.1	53.4	52.5	43.7	43.5	46.8	45.3	40.9	44.1	44.1	41.2	41.2	43.8	43.3	43.3	46.9	47.4	45.2	39.3	39.3	39.3	39.3
Rec_449-G	4	63.0	63.3	62.6	61.7	62.7	61.4	59.5	59.8	58.0	57.4	56.9	58.7	59.0	55.3	51.6	53.5	53.8	52.9	43.1	43.0	47.1	46.2	41.3	44.5	44.5	41.7	41.7	44.3	43.8	43.8	47.4	48.2	46.3	39.8	39.8	39.8	39.8
Rec_450-G	4	62.8	63.2	62.6	60.8	62.0	60.7	58.7	59.1	56.8	56.0	55.5	56.9	57.8	55.1	49.8	51.6	51.8	50.9	41.9	42.1	46.0	44.7	39.6	42.8	42.8	40.0	40.0	42.6	42.1	42.1	45.7	46.6	44.7	38.1	38.1	38.1	38.1
Rec_451-G	4	61.3	62.1	61.6	60.5	60.8	59.4	57.8	58.3	56.3	55.2	54.7	56.1	57.0	54.3	49.6	51.2	51.5	50.6	42.4	42.8	46.8	45.8	40.7	44.0	44.0	41.2	41.2	43.8	43.3	43.3	46.9	47.8	45.8	39.3	39.3	39.3	39.3
Rec_452-G	4	59.7	60.6	60.4	58.9	59.4	58.1	56.7	57.1	55.0	54.0	53.4	55.1	55.7	52.7	48.1	49.7	50.0	49.1	40.7	40.8	44.6	43.3	38.2	41.4	41.4	38.6	38.6	41.2	40.7	40.7	44.3	45.2	43.2	36.7	36.7	36.7	36.7
Rec_453-G	4	59.7	60.8	60.6	58.9	59.5	58.2	56.8	57.2	55.1	54.1	53.4	55.1	55.9	53.1	48.2	49.8	50.1	49.3	40.9	40.9	44.7	43.4	38.3	41.5	41.5	38.7	38.7	41.3	40.9	40.9	44.5	45.4	43.4	36.9	36.9	36.9	36.9
Rec_454-G	4	61.2	61.8	61.3	60.0	60.6	59.3	57.8	58.1	56.0	55.2	54.7	56.2	57.0	54.1	49.3	51.0	51.3	50.4	41.4	41.5	45.8	45.1	40.5	43.7	43.7	40.9	40.9	43.5	43.0	43.0	46.6	47.3	45.2	38.9	38.9	38.9	38.9
Rec_455-G	4	60.0	60.5	60.3	59.0	59.7	58.5	56.8	57.1	55.1	54.2	53.6	55.3	55.8	52.5	48.4	50.1	50.4	49.5	40.6	40.6	44.3	42.9	37.7	40.9	40.9	38.1	38.1	40.7	40.3	40.3	43.9	44.8	42.8	36.3	36.3	36.3	36.3

Ontario Regional Sports Complex EIR - Construction Noise Analysis, Nighttime (7 PM - 7 AM), Without Mitigation

Receptor	Receptor Group	Ambient Noise Level	Predicted Construction Noise Level by Project Activity/Phase, Hourly Leq, dBA WITHOUT MITIGATION										
			STADIUM-Building Construction-Canopies w/Lighting, Finishes (Phase 1B, PA 1)	STADIUM-Building Construction-Exterior Envelope (Phase 1B, PA 1)	STADIUM-Building Construction-Exterior Envelope (Phase 1B, PA 1)	STADIUM-Building Construction-Foundations, FTGs, & Substructure (Phase 1B, PA 1)	STADIUM-Building Construction-Interior Finishes and Buildouts (Phase 1B, PA 1)	STADIUM-Building Construction-Superstructure-Columns, Elevated Decks (Phase 1B, PA 1)	STADIUM-Finishing/Landscaping (Phase 1B, PA 1)	STADIUM PARK STRUCT-Parking Structure Construction-MEP's, FP Rough-ins (Phase 1B, PA 1)	PARK STRUCT B-Parking Structure Construction-MEP's, FP Rough-ins (Phase 2, PA 5)	STADIUM-Utilities Trenching (Phase 1B, PA 1)	STADIUM PARK STRUCT-Utilities Trenching (Phase 1B, PA 1)
Rec_1-G	5	48	51	51	51	52	51	52	50	51	49	53	53
Rec_2-G	5	48	49	49	49	49	48	49	48	49	48	49	49
Rec_3-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_4-G	5	48	49	49	49	49	48	49	48	49	48	49	49
Rec_5-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_6-G	5	48	48	48	48	48	48	48	48	48	48	48	48
Rec_7-G	5	48	48	48	48	48	48	48	48	48	48	49	49
Rec_8-G	5	48	48	48	48	49	48	49	48	48	48	49	49
Rec_9-G	5	48	48	48	48	48	48	49	48	48	48	49	49
Rec_10-G	5	48	48	48	48	48	48	48	48	48	48	49	49
Rec_11-G	5	48	48	48	48	48	48	48	48	48	48	49	49
Rec_12-G	5	48	50	50	50	50	50	50	49	50	48	51	51
Rec_13-G	5	48	51	51	51	52	51	52	50	51	49	53	53
Rec_14-G	5	48	51	51	51	52	51	52	50	51	49	53	53
Rec_15-G	5	48	49	49	49	49	49	49	49	49	49	50	50
Rec_16-G	5	48	49	49	49	49	49	49	49	49	48	50	50
Rec_17-G	5	48	49	49	49	49	49	49	49	49	48	50	50
Rec_18-G	5	48	48	48	48	49	48	49	48	48	48	49	49
Rec_19-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_20-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_21-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_22-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_23-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_24-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_25-G	5	48	48	48	48	48	48	48	48	48	48	48	48
Rec_26-G	5	48	52	52	52	52	51	52	51	52	49	53	53
Rec_27-G	5	48	51	51	51	52	51	52	50	51	49	53	53
Rec_28-G	5	48	51	51	51	51	51	52	50	51	49	53	53
Rec_29-G	5	48	51	51	51	52	51	52	50	51	49	53	53
Rec_30-G	5	48	51	51	51	52	51	52	50	51	49	53	53
Rec_31-G	5	48	51	51	51	52	51	52	50	51	49	53	53
Rec_32-G	5	48	51	51	51	52	51	52	50	51	49	53	53
Rec_33-G	5	48	49	49	49	49	49	49	49	49	48	50	50
Rec_34-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_35-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_36-G	5	48	49	49	49	49	49	49	49	49	48	50	50
Rec_37-G	5	48	49	49	49	49	49	49	49	49	48	50	50
Rec_38-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_39-G	5	48	49	49	49	49	48	49	48	49	48	49	49
Rec_40-G	5	48	48	48	48	49	48	49	48	48	48	49	49
Rec_41-G	5	48	48	48	48	49	48	49	48	48	48	49	49
Rec_42-G	5	48	48	48	48	49	48	49	48	48	48	49	49
Rec_43-G	5	48	49	49	49	49	49	49	49	49	48	49	49
Rec_44-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_45-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_46-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_47-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_48-G	5	48	49	49	49	49	49	49	48	49	48	49	49

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Receptor	Receptor Group	Ambient Noise Level	Predicted Construction Noise Level by Project Activity/Phase, Hourly Leq, dBA WITHOUT MITIGATION										
			STADIUM-Building Construction-Canopies w/Lighting, Finishes (Phase 1B, PA 1)	STADIUM-Building Construction-Exterior Envolope (Phase 1B, PA 1)	STADIUM-Building Construction-Exterior Envolope (Phase 1B, PA 1)	STADIUM-Building Construction-Foundations, FTGs, & Substructure (Phase 1B, PA 1)	STADIUM-Building Construction-Interior Finishes and Buildouts (Phase 1B, PA 1)	STADIUM-Building Construction-Superstructure-Columns, Elevated Decks (Phase 1B, PA 1)	STADIUM-Finishing/Landscaping (Phase 1B, PA 1)	STADIUM PARK STRUCT-Parking Structure Construction-MEP's, FP Rougn-ins (Phase 1B, PA 1)	PARK STRUCT B-Parking Structure Construction-MEP's, FP Rougn-ins (Phase 2, PA 5)	STADIUM-Utilities Trenching (Phase 1B, PA 1)	STADIUM PARK STRUCT-Utilities Trenching (Phase 1B, PA 1)
Rec_49-G	5	48	49	49	49	49	48	49	48	49	48	49	49
Rec_50-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_51-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_52-G	5	48	49	49	49	49	48	49	48	49	48	49	49
Rec_53-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_54-G	5	48	49	49	49	49	49	49	49	49	48	50	50
Rec_55-G	5	48	49	49	49	49	49	49	49	49	48	50	50
Rec_56-G	5	48	49	49	49	49	49	49	49	49	48	49	49
Rec_57-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_58-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_59-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_60-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_61-G	5	48	49	49	49	49	49	49	49	49	48	49	49
Rec_62-G	5	48	49	49	49	49	49	49	49	49	48	50	50
Rec_63-G	5	48	48	48	48	49	48	49	48	48	48	49	49
Rec_64-G	5	48	48	48	48	49	48	49	48	48	48	49	49
Rec_65-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_66-G	5	48	48	48	48	48	48	48	48	48	48	48	48
Rec_67-G	5	48	48	48	48	48	48	48	48	48	48	48	48
Rec_68-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_69-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_70-G	5	48	48	48	48	49	48	49	48	48	48	49	49
Rec_71-G	5	48	48	48	48	48	48	48	48	48	48	48	48
Rec_72-G	5	48	48	48	48	48	48	48	48	48	48	48	48
Rec_73-G	5	48	48	48	48	48	48	48	48	48	48	49	49
Rec_74-G	5	48	48	48	48	48	48	48	48	48	48	48	48
Rec_75-G	5	48	48	48	48	48	48	48	48	48	48	48	48
Rec_76-G	5	48	48	48	48	48	48	48	48	48	48	48	48
Rec_77-G	5	48	48	48	48	48	48	48	48	48	48	49	49
Rec_78-G	5	48	48	48	48	48	48	49	48	48	49	49	49
Rec_79-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_80-G	5	48	49	49	49	49	49	49	49	49	48	50	50
Rec_81-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_82-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_83-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_84-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_85-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_86-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_87-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_88-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_89-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_90-G	5	48	48	48	48	49	48	49	48	48	48	49	49
Rec_91-G	5	48	48	48	48	48	48	48	48	48	48	49	49
Rec_92-G	5	48	48	48	48	49	48	49	48	48	48	49	49
Rec_93-G	5	48	48	48	48	48	48	48	48	48	48	48	48
Rec_94-G	5	48	48	48	48	48	48	49	48	48	48	49	49
Rec_95-G	5	48	48	48	48	48	48	48	48	48	48	48	48

Ontario Regional Sports Complex EIR - Construction Noise Analysis, Nighttime (7 PM - 7 AM), Without Mitigation

Receptor	Receptor Group	Ambient Noise Level	Predicted Construction Noise Level by Project Activity/Phase, Hourly Leq, dBA WITHOUT MITIGATION										
			STADIUM-Building Construction-Canopies w/Lighting, Finishes (Phase 1B, PA 1)	STADIUM-Building Construction-Exterior Envolope (Phase 1B, PA 1)	STADIUM-Building Construction-Exterior Envolope (Phase 1B, PA 1)	STADIUM-Building Construction-Foundations, FTGs, & Substructure (Phase 1B, PA 1)	STADIUM-Building Construction-Interior Finishes and Buildouts (Phase 1B, PA 1)	STADIUM-Building Construction-Superstructure-Columns, Elevated Decks (Phase 1B, PA 1)	STADIUM-Finishing/Landscaping (Phase 1B, PA 1)	STADIUM PARK STRUCT-Parking Structure Construction-MEP's, FP Rougn-ins (Phase 1B, PA 1)	PARK STRUCT B-Parking Structure Construction-MEP's, FP Rougn-ins (Phase 2, PA 5)	STADIUM-Utilities Trenching (Phase 1B, PA 1)	STADIUM PARK STRUCT-Utilities Trenching (Phase 1B, PA 1)
Rec_96-G	5	48	48	48	48	49	48	49	48	48	48	49	49
Rec_97-G	5	48	49	49	49	49	48	49	48	49	48	49	49
Rec_98-G	5	48	48	48	48	48	48	48	48	48	48	49	49
Rec_99-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_100-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_101-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_102-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_103-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_104-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_105-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_106-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_107-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_108-G	5	48	48	48	48	48	48	48	48	48	48	48	48
Rec_109-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_110-G	5	48	48	48	48	49	48	49	48	48	48	49	49
Rec_111-G	5	48	48	48	48	48	48	48	48	48	48	48	48
Rec_112-G	5	48	48	48	48	48	48	49	48	48	48	49	49
Rec_113-G	5	48	48	48	48	49	48	49	48	48	48	49	49
Rec_114-G	5	48	48	48	48	48	48	48	48	48	48	49	49
Rec_115-G	5	48	49	49	49	49	48	49	48	49	48	49	49
Rec_116-G	5	48	48	48	48	49	48	49	48	48	48	49	49
Rec_117-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_118-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_119-G	5	48	49	49	49	49	49	49	49	49	48	50	50
Rec_120-G	5	48	49	49	49	49	49	49	49	49	48	50	50
Rec_121-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_122-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_123-G	5	48	49	49	49	49	48	49	48	49	48	49	49
Rec_124-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_125-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_126-G	5	48	49	49	49	49	48	49	48	49	48	49	49
Rec_127-G	5	48	48	48	48	48	48	48	48	48	48	48	48
Rec_128-G	5	48	48	48	48	48	48	48	48	48	48	49	49
Rec_129-G	5	48	48	48	48	48	48	48	48	48	48	49	49
Rec_130-G	5	48	49	49	49	49	48	49	48	49	48	49	49
Rec_131-G	5	48	49	49	49	49	48	49	48	49	48	49	49
Rec_132-G	5	48	48	48	48	48	48	48	48	48	48	49	49
Rec_133-G	5	48	48	48	48	49	48	49	48	48	48	49	49
Rec_134-G	5	48	49	49	49	49	48	49	48	49	48	49	49
Rec_135-G	5	48	49	49	49	49	48	49	48	49	48	49	49
Rec_136-G	5	48	48	48	48	49	48	49	48	48	48	49	49
Rec_137-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_138-G	5	48	48	48	48	48	48	48	48	48	48	49	49
Rec_139-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_140-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_141-G	5	48	49	49	49	49	49	49	48	49	49	49	49
Rec_142-G	5	48	49	49	49	49	49	49	48	49	48	49	49

Ontario Regional Sports Complex EIR - Construction Noise Analysis, Nighttime (7 PM - 7 AM), Without Mitigation

Receptor	Receptor Group	Ambient Noise Level	Predicted Construction Noise Level by Project Activity/Phase, Hourly Leq, dBA WITHOUT MITIGATION										
			STADIUM-Building Construction-Canopies w/Lighting, Finishes (Phase 1B, PA 1)	STADIUM-Building Construction-Exterior Envelope (Phase 1B, PA 1)	STADIUM-Building Construction-Exterior Envelope (Phase 1B, PA 1)	STADIUM-Building Construction-Foundations, FTGs, & Substructure (Phase 1B, PA 1)	STADIUM-Building Construction-Interior Finishes and Buildouts (Phase 1B, PA 1)	STADIUM-Building Construction-Superstructure-Columns, Elevated Decks (Phase 1B, PA 1)	STADIUM-Finishing/Landscaping (Phase 1B, PA 1)	STADIUM PARK STRUCT-Parking Structure Construction-MEP's, FP Rough-ins (Phase 1B, PA 1)	PARK STRUCT B-Parking Structure Construction-MEP's, FP Rough-ins (Phase 2, PA 5)	STADIUM-Utilities Trenching (Phase 1B, PA 1)	STADIUM PARK STRUCT-Utilities Trenching (Phase 1B, PA 1)
Rec_143-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_144-G	5	48	48	48	48	48	48	48	48	48	48	48	48
Rec_145-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_146-G	5	48	49	49	49	49	48	49	48	49	48	49	49
Rec_147-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_148-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_149-G	5	48	49	49	49	49	48	49	48	49	48	49	49
Rec_150-G	5	48	48	48	48	48	48	48	48	48	48	49	49
Rec_151-G	5	48	48	48	48	49	48	49	48	48	48	49	49
Rec_152-G	5	48	48	48	48	48	48	49	48	48	48	49	49
Rec_153-G	5	48	48	48	48	48	48	48	48	48	48	49	49
Rec_154-G	5	48	49	49	49	49	48	49	48	49	48	49	49
Rec_155-G	5	48	48	48	48	48	48	48	48	48	48	49	49
Rec_156-G	5	48	48	48	48	48	48	48	48	48	48	48	48
Rec_157-G	5	48	48	48	48	48	48	48	48	48	48	48	48
Rec_158-G	5	48	48	48	48	48	48	48	48	48	48	48	48
Rec_159-G	5	48	48	48	48	48	48	48	48	48	48	49	49
Rec_160-G	5	48	48	48	48	49	48	49	48	48	49	49	49
Rec_161-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_162-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_163-G	5	48	49	49	49	49	48	49	48	49	49	49	49
Rec_164-G	5	48	49	49	49	49	48	49	48	49	48	49	49
Rec_165-G	5	48	48	48	48	48	48	48	48	48	48	48	48
Rec_166-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_167-G	5	48	48	48	48	48	48	48	48	48	48	49	49
Rec_168-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_169-G	5	48	49	49	49	49	48	49	48	49	49	49	49
Rec_170-G	5	48	48	48	48	49	48	49	48	48	49	49	49
Rec_171-G	5	48	48	48	48	48	48	48	48	48	48	49	49
Rec_172-G	5	48	48	48	48	48	48	48	48	48	48	48	48
Rec_173-G	5	48	48	48	48	48	48	48	48	48	48	48	48
Rec_174-G	5	48	48	48	48	48	48	48	48	48	48	48	48
Rec_175-G	5	48	48	48	48	48	48	48	48	48	48	48	48
Rec_176-G	5	48	48	48	48	48	48	49	48	48	48	49	49
Rec_177-G	5	48	49	49	49	49	48	49	48	49	48	49	49
Rec_178-G	5	48	48	48	48	48	48	49	48	48	48	49	49
Rec_179-G	5	48	48	48	48	48	48	48	48	48	48	48	48
Rec_180-G	5	48	48	48	48	49	48	49	48	48	48	49	49
Rec_181-G	5	48	48	48	48	48	48	48	48	48	48	49	49
Rec_182-G	5	48	48	48	48	48	48	48	48	48	48	48	48
Rec_183-G	5	48	49	49	49	49	49	49	48	49	49	49	49
Rec_184-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_185-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_186-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_187-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_188-G	5	48	48	48	48	48	48	48	48	48	48	48	48
Rec_189-G	5	48	48	48	48	48	48	48	48	48	48	48	48

Ontario Regional Sports Complex EIR - Construction Noise Analysis, Nighttime (7 PM - 7 AM), Without Mitigation

Receptor	Receptor Group	Ambient Noise Level	Predicted Construction Noise Level by Project Activity/Phase, Hourly Leq, dBA WITHOUT MITIGATION										
			STADIUM-Building Construction-Canopies w/Lighting, Finishes (Phase 1B, PA 1)	STADIUM-Building Construction-Exterior Envolope (Phase 1B, PA 1)	STADIUM-Building Construction-Exterior Envolope (Phase 1B, PA 1)	STADIUM-Building Construction-Foundations, FTGs, & Substructure (Phase 1B, PA 1)	STADIUM-Building Construction-Interior Finishes and Buildouts (Phase 1B, PA 1)	STADIUM-Building Construction-Superstructure-Columns, Elevated Decks (Phase 1B, PA 1)	STADIUM-Finishing/Landscaping (Phase 1B, PA 1)	STADIUM PARK STRUCT-Parking Structure Construction-MEP's, FP Rougn-ins (Phase 1B, PA 1)	PARK STRUCT B-Parking Structure Construction-MEP's, FP Rougn-ins (Phase 2, PA 5)	STADIUM-Utilities Trenching (Phase 1B, PA 1)	STADIUM PARK STRUCT-Utilities Trenching (Phase 1B, PA 1)
Rec_190-G	5	48	48	48	48	48	48	48	48	48	48	48	48
Rec_191-G	5	48	48	48	48	48	48	48	48	48	48	48	48
Rec_192-G	5	48	48	48	48	48	48	48	48	48	48	48	48
Rec_193-G	5	48	48	48	48	48	48	48	48	48	48	48	48
Rec_194-G	5	48	49	49	49	49	49	49	49	49	49	50	50
Rec_195-G	5	48	49	49	49	49	49	49	49	49	49	50	50
Rec_196-G	5	48	49	49	49	49	49	49	49	49	49	50	50
Rec_197-G	5	48	49	49	49	49	49	49	49	49	49	50	50
Rec_198-G	5	48	49	49	49	49	49	49	49	49	49	50	50
Rec_199-G	5	48	49	49	49	49	49	49	49	49	49	50	50
Rec_200-G	5	48	49	49	49	49	49	49	49	49	49	50	50
Rec_201-G	5	48	49	49	49	49	49	49	49	49	49	50	50
Rec_202-G	5	48	49	49	49	49	49	50	49	49	49	50	50
Rec_203-G	5	48	49	49	49	50	49	50	49	49	49	50	50
Rec_204-G	5	48	49	49	49	50	49	50	49	49	49	50	50
Rec_205-G	5	48	50	50	50	50	49	50	49	50	49	51	51
Rec_206-G	5	48	50	50	50	50	49	50	49	50	49	51	51
Rec_207-G	5	48	50	50	50	50	49	50	49	50	49	51	51
Rec_208-G	5	48	50	50	50	50	49	50	49	50	49	51	51
Rec_209-G	5	48	50	50	50	50	49	50	49	50	49	51	51
Rec_210-G	5	48	49	49	49	50	49	50	49	49	49	51	51
Rec_211-G	5	48	50	50	50	50	50	50	49	50	49	51	51
Rec_212-G	5	48	50	50	50	50	50	50	49	50	49	51	51
Rec_213-G	5	48	51	51	51	51	51	51	50	51	49	53	53
Rec_214-G	5	48	51	51	51	51	50	51	50	51	49	53	53
Rec_215-G	5	48	51	51	51	51	50	51	50	51	49	53	53
Rec_216-G	5	48	51	51	51	51	50	51	50	51	49	52	52
Rec_217-G	5	48	51	51	51	51	50	51	50	51	49	53	53
Rec_218-G	5	48	50	50	50	51	50	51	50	50	49	52	52
Rec_219-G	5	48	50	50	50	51	50	51	50	50	49	52	52
Rec_220-G	5	48	50	50	50	50	50	51	50	50	49	52	52
Rec_221-G	5	48	51	51	51	52	51	52	50	51	49	53	53
Rec_222-G	5	48	51	51	51	51	51	52	50	51	49	53	53
Rec_223-G	5	48	51	51	51	51	51	52	50	51	49	53	53
Rec_224-G	5	48	51	51	51	51	51	52	50	51	49	53	53
Rec_225-G	5	48	51	51	51	51	51	51	50	51	49	53	53
Rec_226-G	5	48	48	48	48	48	48	48	48	48	48	48	48
Rec_227-G	2	47	48	48	48	48	48	48	47	48	49	48	48
Rec_228-G	2	47	48	48	48	48	48	48	48	48	49	49	49
Rec_229-G	2	47	48	48	48	48	47	48	47	48	49	48	48
Rec_230-G	2	47	48	48	48	48	48	48	48	48	48	48	48
Rec_231-G	2	47	48	48	48	48	48	48	47	48	49	48	48
Rec_232-G	2	47	48	48	48	48	48	49	48	48	49	49	49
Rec_233-G	2	47	48	48	48	48	48	48	48	48	49	49	49
Rec_234-G	2	47	48	48	48	48	48	48	48	48	49	49	49
Rec_235-G	2	47	48	48	48	48	48	48	47	48	48	48	48
Rec_236-G	2	47	48	48	48	48	48	49	48	48	49	49	49

Ontario Regional Sports Complex EIR - Construction Noise Analysis, Nighttime (7 PM - 7 AM), Without Mitigation

Receptor	Receptor Group	Ambient Noise Level	Predicted Construction Noise Level by Project Activity/Phase, Hourly Leq, dBA WITHOUT MITIGATION										
			STADIUM-Building Construction-Canopies w/Lighting, Finishes (Phase 1B, PA 1)	STADIUM-Building Construction-Exterior Envelope (Phase 1B, PA 1)	STADIUM-Building Construction-Exterior Envelope (Phase 1B, PA 1)	STADIUM-Building Construction-Foundations, FTGs, & Substructure (Phase 1B, PA 1)	STADIUM-Building Construction-Interior Finishes and Buildouts (Phase 1B, PA 1)	STADIUM-Building Construction-Superstructure-Columns, Elevated Decks (Phase 1B, PA 1)	STADIUM-Finishing/Landscaping (Phase 1B, PA 1)	STADIUM PARK STRUCT-Parking Structure Construction-MEP's, FP Rougn-ins (Phase 1B, PA 1)	PARK STRUCT B-Parking Structure Construction-MEP's, FP Rougn-ins (Phase 2, PA 5)	STADIUM-Utilities Trenching (Phase 1B, PA 1)	STADIUM PARK STRUCT-Utilities Trenching (Phase 1B, PA 1)
Rec_237-G	2	47	48	48	48	48	48	48	48	48	49	48	48
Rec_238-G	2	47	48	48	48	48	47	48	47	48	49	48	48
Rec_239-G	2	47	48	48	48	49	48	49	48	48	49	49	49
Rec_240-G	2	47	49	49	49	49	48	49	48	49	49	50	50
Rec_241-G	2	47	48	48	48	49	48	49	48	48	50	49	49
Rec_242-G	2	47	49	49	49	49	49	49	48	49	53	50	50
Rec_243-G	2	47	51	51	51	51	50	51	50	51	53	53	53
Rec_244-G	2	47	49	49	49	49	49	49	49	49	54	51	51
Rec_245-G	2	47	48	48	48	49	48	49	48	48	50	49	49
Rec_246-G	2	47	49	49	49	49	48	49	48	49	49	50	50
Rec_247-G	2	47	49	49	49	50	49	50	49	49	48	51	51
Rec_248-G	2	47	49	49	49	50	49	50	49	49	48	51	51
Rec_249-G	2	47	50	50	50	50	49	50	49	50	49	52	52
Rec_250-G	2	47	48	48	48	48	48	49	48	48	48	49	49
Rec_251-G	2	47	47	47	47	47	47	47	47	47	48	47	47
Rec_252-G	2	47	47	47	47	47	47	47	47	47	47	47	47
Rec_253-G	2	47	47	47	47	47	47	47	47	47	47	48	48
Rec_254-G	2	47	49	49	49	49	48	49	48	49	49	50	50
Rec_255-G	2	47	48	48	48	48	48	48	48	48	48	49	49
Rec_256-G	2	47	48	48	48	48	48	48	47	48	48	48	48
Rec_257-G	2	47	48	48	48	48	48	48	48	48	48	49	49
Rec_258-G	2	47	47	47	47	47	47	48	47	47	49	48	48
Rec_259-G	2	47	48	48	48	48	48	49	48	48	49	49	49
Rec_260-G	2	47	47	47	47	47	47	47	47	47	48	48	48
Rec_261-G	2	47	48	48	48	48	48	48	48	48	48	49	49
Rec_262-G	2	47	47	47	47	47	47	47	47	47	48	48	48
Rec_263-G	2	47	48	48	48	48	48	48	48	48	49	49	49
Rec_264-G	2	47	48	48	48	48	48	48	47	48	48	48	48
Rec_265-G	2	47	48	48	48	48	48	48	47	48	48	48	48
Rec_266-G	2	47	48	48	48	48	47	48	47	48	48	48	48
Rec_267-G	2	47	48	48	48	48	48	48	47	48	47	48	48
Rec_268-G	2	47	48	48	48	48	48	48	48	48	47	49	49
Rec_269-G	2	47	48	48	48	48	48	49	48	48	48	49	49
Rec_271-G	2	47	48	48	48	48	48	48	48	48	48	49	49
Rec_272-G	2	47	48	48	48	48	48	48	48	48	49	49	49
Rec_273-G	2	47	48	48	48	48	48	48	47	48	48	48	48
Rec_274-G	2	47	48	48	48	48	48	48	48	48	48	49	49
Rec_275-G	2	47	47	47	47	47	47	47	47	47	48	48	48
Rec_276-G	2	47	47	47	47	47	47	48	47	47	48	48	48
Rec_277-G	2	47	48	48	48	48	48	48	47	48	48	48	48
Rec_278-G	2	47	47	47	47	47	47	47	47	47	47	47	47
Rec_279-G	2	47	47	47	47	47	47	47	47	47	47	47	47
Rec_280-G	2	47	48	48	48	48	48	49	48	48	49	49	49
Rec_281-G	2	47	47	47	47	47	47	47	47	47	48	47	47
Rec_282-G	2	47	47	47	47	47	47	47	47	47	48	47	47
Rec_283-G	2	47	48	48	48	48	47	48	47	48	47	48	48
Rec_284-G	2	47	48	48	48	48	48	48	48	48	48	49	49

Ontario Regional Sports Complex EIR - Construction Noise Analysis, Nighttime (7 PM - 7 AM), Without Mitigation

Receptor	Receptor Group	Ambient Noise Level	Predicted Construction Noise Level by Project Activity/Phase, Hourly Leq, dBA WITHOUT MITIGATION										
			STADIUM-Building Construction-Canopies w/Lighting, Finishes (Phase 1B, PA 1)	STADIUM-Building Construction-Exterior Envelope (Phase 1B, PA 1)	STADIUM-Building Construction-Exterior Envelope (Phase 1B, PA 1)	STADIUM-Building Construction-Foundations, FTGs, & Substructure (Phase 1B, PA 1)	STADIUM-Building Construction-Interior Finishes and Buildouts (Phase 1B, PA 1)	STADIUM-Building Construction-Superstructure-Columns, Elevated Decks (Phase 1B, PA 1)	STADIUM-Finishing/Landscaping (Phase 1B, PA 1)	STADIUM PARK STRUCT-Parking Structure Construction-MEP's, FP Rougn-ins (Phase 1B, PA 1)	PARK STRUCT B-Parking Structure Construction-MEP's, FP Rougn-ins (Phase 2, PA 5)	STADIUM-Utilities Trenching (Phase 1B, PA 1)	STADIUM PARK STRUCT-Utilities Trenching (Phase 1B, PA 1)
Rec_285-G	2	47	47	47	47	48	47	48	47	47	48	48	48
Rec_286-G	2	47	47	47	47	47	47	47	47	47	47	47	47
Rec_287-G	2	47	48	48	48	48	48	48	48	48	48	49	49
Rec_288-G	2	47	47	47	47	47	47	47	47	47	47	47	47
Rec_289-G	1	47	48	48	48	48	47	48	47	48	49	48	48
Rec_290-G	1	47	48	48	48	48	48	48	47	48	50	48	48
Rec_291-G	1	47	48	48	48	48	48	48	48	48	50	48	48
Rec_292-G	1	47	48	48	48	48	48	48	47	48	49	48	48
Rec_293-G	1	47	48	48	48	48	48	48	47	48	49	48	48
Rec_294-G	1	47	48	48	48	48	48	48	47	48	49	48	48
Rec_295-G	1	47	48	48	48	48	47	48	47	48	49	48	48
Rec_296-G	1	47	48	48	48	48	47	48	47	48	49	48	48
Rec_297-G	1	47	48	48	48	48	47	48	47	48	49	48	48
Rec_298-G	1	47	47	47	47	47	47	48	47	47	49	48	48
Rec_299-G	1	47	47	47	47	48	47	48	47	47	49	48	48
Rec_300-G	1	47	47	47	47	47	47	48	47	47	49	48	48
Rec_301-G	1	47	47	47	47	48	47	48	47	47	49	48	48
Rec_302-G	1	47	47	47	47	47	47	47	47	47	48	48	48
Rec_303-G	1	47	47	47	47	47	47	48	47	47	48	48	48
Rec_304-G	1	47	47	47	47	47	47	47	47	47	48	47	47
Rec_305-G	1	47	47	47	47	47	47	47	47	47	48	47	47
Rec_306-G	1	47	47	47	47	47	47	48	47	47	48	48	48
Rec_307-G	1	47	47	47	47	47	47	47	47	47	48	47	47
Rec_308-G	1	47	47	47	47	47	47	47	47	47	48	48	48
Rec_309-G	1	47	48	48	48	48	47	48	47	48	48	48	48
Rec_310-G	1	47	47	47	47	47	47	47	47	47	48	47	47
Rec_311-G	1	47	47	47	47	47	47	47	47	47	48	48	48
Rec_312-G	1	47	48	48	48	48	47	48	47	48	48	48	48
Rec_313-G	1	47	47	47	47	48	47	48	47	47	48	48	48
Rec_314-G	1	47	47	47	47	47	47	47	47	47	47	48	48
Rec_315-G	1	47	47	47	47	47	47	47	47	47	47	47	47
Rec_316-G	1	47	47	47	47	48	47	48	47	47	48	48	48
Rec_317-G	1	47	47	47	47	47	47	47	47	47	48	48	48
Rec_318-G	1	47	47	47	47	47	47	47	47	47	48	48	48
Rec_319-G	1	47	47	47	47	47	47	47	47	47	48	47	47
Rec_320-G	1	47	47	47	47	47	47	47	47	47	47	47	47
Rec_321-G	1	47	47	47	47	47	47	47	47	47	47	47	47
Rec_322-G	1	47	47	47	47	48	47	48	47	47	48	48	48
Rec_323-G	1	47	47	47	47	47	47	47	47	47	48	47	47
Rec_324-G	1	47	47	47	47	47	47	47	47	47	47	47	47
Rec_325-G	1	47	48	48	48	48	48	48	47	48	48	48	48
Rec_326-G	1	47	47	47	47	48	47	48	47	47	48	48	48
Rec_327-G	1	47	47	47	47	48	47	48	47	47	48	48	48
Rec_328-G	1	47	48	48	48	48	48	48	47	48	49	48	48
Rec_329-G	1	47	48	48	48	48	48	48	47	48	50	48	48
Rec_330-G	1	47	48	48	48	48	48	48	48	48	49	49	49
Rec_331-G	1	47	48	48	48	48	48	48	48	48	49	49	49

Ontario Regional Sports Complex EIR - Construction Noise Analysis, Nighttime (7 PM - 7 AM), Without Mitigation

Receptor	Receptor Group	Ambient Noise Level	Predicted Construction Noise Level by Project Activity/Phase, Hourly Leq, dBA WITHOUT MITIGATION										
			STADIUM-Building Construction-Canopies w/Lighting, Finishes (Phase 1B, PA 1)	STADIUM-Building Construction-Exterior Envelope (Phase 1B, PA 1)	STADIUM-Building Construction-Exterior Envelope (Phase 1B, PA 1)	STADIUM-Building Construction-Foundations, FTGs, & Substructure (Phase 1B, PA 1)	STADIUM-Building Construction-Interior Finishes and Buildouts (Phase 1B, PA 1)	STADIUM-Building Construction-Superstructure-Columns, Elevated Decks (Phase 1B, PA 1)	STADIUM-Finishing/Landscaping (Phase 1B, PA 1)	STADIUM PARK STRUCT-Parking Structure Construction-MEP's, FP Rougn-ins (Phase 1B, PA 1)	PARK STRUCT B-Parking Structure Construction-MEP's, FP Rougn-ins (Phase 2, PA 5)	STADIUM-Utilities Trenching (Phase 1B, PA 1)	STADIUM PARK STRUCT-Utilities Trenching (Phase 1B, PA 1)
Rec_332-G	1	47	48	48	48	48	48	48	48	48	49	49	49
Rec_333-G	1	47	47	47	47	47	47	47	47	47	49	48	48
Rec_334-G	1	47	48	48	48	48	47	48	47	48	48	48	48
Rec_335-G	1	47	47	47	47	48	47	48	47	47	48	48	48
Rec_336-G	1	47	48	48	48	48	48	48	47	48	49	48	48
Rec_337-G	1	47	47	47	47	48	47	48	47	47	48	48	48
Rec_338-G	1	47	48	48	48	48	48	48	48	48	48	49	49
Rec_339-G	1	47	47	47	47	47	47	47	47	47	48	48	48
Rec_340-G	1	47	47	47	47	47	47	48	47	47	48	48	48
Rec_341-G	1	47	48	48	48	48	48	48	47	48	48	48	48
Rec_342-G	1	47	48	48	48	48	48	48	47	48	48	48	48
Rec_343-G	1	47	48	48	48	48	47	48	47	48	48	48	48
Rec_344-G	1	47	47	47	47	47	47	47	47	47	48	47	47
Rec_345-G	1	47	47	47	47	47	47	47	47	47	48	47	47
Rec_346-G	1	47	47	47	47	47	47	47	47	47	47	47	47
Rec_347-G	1	47	47	47	47	47	47	47	47	47	47	47	47
Rec_348-G	1	47	47	47	47	47	47	47	47	47	48	47	47
Rec_349-G	1	47	47	47	47	47	47	47	47	47	48	47	47
Rec_350-G	1	47	47	47	47	47	47	47	47	47	48	48	48
Rec_351-G	1	47	47	47	47	47	47	47	47	47	48	48	48
Rec_352-G	1	47	47	47	47	47	47	47	47	47	48	47	47
Rec_353-G	1	47	47	47	47	47	47	47	47	47	48	47	47
Rec_354-G	1	47	47	47	47	47	47	47	47	47	48	47	47
Rec_355-G	1	47	47	47	47	47	47	47	47	47	48	47	47
Rec_356-G	1	47	47	47	47	47	47	47	47	47	48	47	47
Rec_357-G	1	47	48	48	48	48	48	48	48	48	49	49	49
Rec_358-G	1	47	48	48	48	48	48	48	47	48	48	48	48
Rec_359-G	1	47	48	48	48	48	47	48	47	48	48	48	48
Rec_360-G	1	47	47	47	47	47	47	47	47	47	48	48	48
Rec_361-G	1	47	47	47	47	47	47	47	47	47	48	47	47
Rec_362-G	1	47	47	47	47	48	47	48	47	47	48	48	48
Rec_363-G	1	47	47	47	47	47	47	48	47	47	48	48	48
Rec_364-G	1	47	48	48	48	48	47	48	47	48	48	48	48
Rec_365-G	1	47	48	48	48	48	48	48	47	48	48	48	48
Rec_366-G	1	47	48	48	48	48	48	48	47	48	48	48	48
Rec_367-G	1	47	48	48	48	48	47	48	47	48	48	48	48
Rec_368-G	1	47	48	48	48	48	48	48	47	48	48	48	48
Rec_369-G	1	47	47	47	47	48	47	48	47	47	48	48	48
Rec_370-G	1	47	47	47	47	47	47	47	47	47	48	47	47
Rec_371-G	1	47	48	48	48	48	47	48	47	48	48	48	48
Rec_372-G	1	47	48	48	48	48	47	48	47	48	48	48	48
Rec_373-G	1	47	48	48	48	48	48	48	47	48	48	48	48
Rec_374-G	1	47	47	47	47	47	47	47	47	47	48	47	47
Rec_375-G	1	47	47	47	47	47	47	47	47	47	47	48	48
Rec_376-G	1	47	48	48	48	48	47	48	47	48	48	48	48
Rec_377-G	1	47	47	47	47	47	47	47	47	47	48	48	48
Rec_378-G	1	47	47	47	47	47	47	47	47	47	48	47	47

Ontario Regional Sports Complex EIR - Construction Noise Analysis, Nighttime (7 PM - 7 AM), Without Mitigation

Receptor	Receptor Group	Ambient Noise Level	Predicted Construction Noise Level by Project Activity/Phase, Hourly Leq, dBA WITHOUT MITIGATION										
			STADIUM-Building Construction-Canopies w/Lighting, Finishes (Phase 1B, PA 1)	STADIUM-Building Construction-Exterior Envolope (Phase 1B, PA 1)	STADIUM-Building Construction-Exterior Envolope (Phase 1B, PA 1)	STADIUM-Building Construction-Foundations, FTGs, & Substructure (Phase 1B, PA 1)	STADIUM-Building Construction-Interior Finishes and Buildouts (Phase 1B, PA 1)	STADIUM-Building Construction-Superstructure-Columns, Elevated Decks (Phase 1B, PA 1)	STADIUM-Finishing/Landscaping (Phase 1B, PA 1)	STADIUM PARK STRUCT-Parking Structure Construction-MEP's, FP Rougn-ins (Phase 1B, PA 1)	PARK STRUCT B-Parking Structure Construction-MEP's, FP Rougn-ins (Phase 2, PA 5)	STADIUM-Utilities Trenching (Phase 1B, PA 1)	STADIUM PARK STRUCT-Utilities Trenching (Phase 1B, PA 1)
Rec_379-G	1	47	48	48	48	48	47	48	47	48	47	48	48
Rec_380-G	1	47	47	47	47	47	47	47	47	47	48	48	48
Rec_381-G	1	47	48	48	48	48	48	48	48	48	48	49	49
Rec_382-G	1	47	48	48	48	48	48	48	48	48	48	49	49
Rec_383-G	1	47	48	48	48	48	48	48	47	48	48	48	48
Rec_384-G	1	47	47	47	47	47	47	47	47	47	47	47	47
Rec_385-G	1	47	48	48	48	48	48	48	47	48	48	48	48
Rec_386-G	1	47	48	48	48	48	48	48	48	48	48	49	49
Rec_387-G	1	47	48	48	48	48	48	48	48	48	48	49	49
Rec_388-G	1	47	48	48	48	48	47	48	47	48	48	48	48
Rec_389-G	1	47	47	47	47	47	47	47	47	47	47	47	47
Rec_390-G	1	47	48	48	48	48	48	48	47	48	48	48	48
Rec_391-G	1	47	47	47	47	47	47	47	47	47	47	47	47
Rec_392-G	1	47	47	47	47	47	47	47	47	47	47	48	48
Rec_393-G	1	47	48	48	48	48	47	48	47	48	48	48	48
Rec_394-G	1	47	48	48	48	48	48	48	47	48	48	48	48
Rec_395-G	1	47	48	48	48	48	47	48	47	48	48	48	48
Rec_396-G	1	47	48	48	48	48	47	48	47	48	48	48	48
Rec_397-G	1	47	47	47	47	47	47	47	47	47	48	48	48
Rec_398-G	1	47	47	47	47	47	47	47	47	47	48	47	47
Rec_399-G	1	47	48	48	48	48	47	48	47	48	48	48	48
Rec_400-G	1	47	47	47	47	47	47	47	47	47	48	48	48
Rec_401-G	1	47	47	47	47	47	47	47	47	47	47	47	47
Rec_402-G	4	48	50	50	50	50	49	50	49	50	48	51	51
Rec_403-G	4	48	50	50	50	50	49	50	49	50	48	51	51
Rec_404-G	4	48	50	50	50	50	49	50	49	50	48	51	51
Rec_405-G	4	48	49	49	49	50	49	50	49	49	48	51	51
Rec_406-G	4	48	50	50	50	50	49	50	49	50	48	51	51
Rec_407-G	4	48	50	50	50	50	49	50	49	50	48	51	51
Rec_408-G	4	48	49	49	49	50	49	50	49	49	48	51	51
Rec_409-G	4	48	49	49	49	50	49	50	49	49	48	50	50
Rec_410-G	4	48	49	49	49	50	49	50	49	49	48	51	51
Rec_411-G	4	48	49	49	49	49	49	50	49	49	48	50	50
Rec_412-G	4	48	49	49	49	49	49	49	49	49	48	50	50
Rec_413-G	4	48	49	49	49	49	49	49	49	49	48	50	50
Rec_414-G	6	47	47	47	47	47	47	47	47	47	47	47	47
Rec_415-G	6	47	47	47	47	47	47	47	47	47	47	47	47
Rec_416-G	6	47	47	47	47	47	47	47	47	47	47	47	47
Rec_417a-G	6	47	47	47	47	47	47	47	47	47	48	47	47
Rec_417b-G	6	47	47	47	47	47	47	47	47	47	48	47	47
Rec_418-G	6	47	47	47	47	47	47	47	47	47	48	47	47
Rec_419-G	6	47	47	47	47	47	47	47	47	47	49	47	47
Rec_420-G	2	47	50	50	50	50	50	50	49	50	53	52	52
Rec_421-G	2	47	51	51	51	51	50	51	50	51	53	53	53
Rec_422-G	3	48	50	50	50	51	50	51	50	50	48	52	52
Rec_423-G	1	47	47	47	47	47	47	47	47	47	47	47	47
Rec_424-G	1	47	48	48	48	48	47	48	47	48	49	48	48

Ontario Regional Sports Complex EIR - Construction Noise Analysis, Nighttime (7 PM - 7 AM), Without Mitigation

Receptor	Receptor Group	Ambient Noise Level	Predicted Construction Noise Level by Project Activity/Phase, Hourly Leq, dBA WITHOUT MITIGATION										
			STADIUM-Building Construction-Canopies w/Lighting, Finishes (Phase 1B, PA 1)	STADIUM-Building Construction-Exterior Envolope (Phase 1B, PA 1)	STADIUM-Building Construction-Exterior Envolope (Phase 1B, PA 1)	STADIUM-Building Construction-Foundations, FTGs, & Substructure (Phase 1B, PA 1)	STADIUM-Building Construction-Interior Finishes and Buildouts (Phase 1B, PA 1)	STADIUM-Building Construction-Superstructure-Columns, Elevated Decks (Phase 1B, PA 1)	STADIUM-Finishing/Landscaping (Phase 1B, PA 1)	STADIUM PARK STRUCT-Parking Structure Construction-MEP's, FP Rougn-ins (Phase 1B, PA 1)	PARK STRUCT B-Parking Structure Construction-MEP's, FP Rougn-ins (Phase 2, PA 5)	STADIUM-Utilities Trenching (Phase 1B, PA 1)	STADIUM PARK STRUCT-Utilities Trenching (Phase 1B, PA 1)
Rec_425-G	1	47	48	48	48	48	47	48	47	48	49	48	48
Rec_426a-G	1	47	48	48	48	48	48	48	48	48	50	48	48
Rec_426b-G	1	47	47	47	47	47	47	47	47	47	48	48	48
Rec_427-G	2	47	48	48	48	48	48	48	48	48	47	48	48
Rec_428-G	2	47	50	50	50	50	50	51	49	50	48	52	52
Rec_429-G	2	47	51	51	51	52	51	52	50	51	48	53	53
Rec_430-G	2	47	50	50	50	50	50	51	49	50	47	52	52
Rec_431-G	2	47	51	51	51	52	51	52	50	51	48	53	53
Rec_432-G	2	47	50	50	50	50	50	50	49	50	47	52	52
Rec_433-G	2	47	51	51	51	52	51	52	50	51	47	53	53
Rec_434-G	2	47	50	50	50	50	50	50	49	50	47	52	52
Rec_435-G	2	47	51	51	51	51	51	52	50	51	47	53	53
Rec_436-G	2	47	49	49	49	49	49	50	49	49	47	51	51
Rec_437-G	2	47	50	50	50	51	50	51	49	50	47	52	52
Rec_438-G	2	47	49	49	49	50	49	50	49	49	47	51	51
Rec_439-G	2	47	51	51	51	51	50	51	49	51	47	52	52
Rec_440-G	2	47	47	47	47	47	47	47	47	47	47	47	47
Rec_441-G	2	47	47	47	47	47	47	47	47	47	47	47	47
Rec_442-G	2	47	47	47	47	47	47	47	47	47	47	47	47
Rec_443-G	2	47	47	47	47	47	47	47	47	47	47	47	47
Rec_444-G	2	47	47	47	47	47	47	47	47	47	47	47	47
Rec_445-G	2	47	49	49	49	50	49	50	48	49	49	50	50
Rec_446-G	2	47	50	50	50	50	49	50	49	50	48	51	51
Rec_447-G	2	47	50	50	50	50	49	50	49	50	48	51	51
Rec_448-G	2	47	50	50	50	50	49	50	48	50	48	51	51
Rec_449-G	4	48	50	50	50	51	50	51	50	50	49	52	52
Rec_450-G	4	48	50	50	50	50	49	50	49	50	48	51	51
Rec_451-G	4	48	49	49	49	50	49	50	49	49	48	51	51
Rec_452-G	4	48	49	49	49	49	49	49	49	49	48	50	50
Rec_453-G	4	48	49	49	49	49	49	49	49	49	48	50	50
Rec_454-G	4	48	49	49	49	50	49	50	49	49	48	51	51
Rec_455-G	4	48	49	49	49	49	49	49	49	49	48	50	50
Rec_456-G	3	48	50	50	50	50	49	50	49	50	49	51	51
Rec_457-G	3	48	50	50	50	51	50	51	50	50	49	52	52
Rec_458-G	3	48	51	51	51	51	50	51	50	51	49	53	53
Rec_459-G	3	48	56	56	56	56	55	56	55	56	49	60	60
Rec_460-G	3	48	51	51	51	51	51	52	50	51	49	53	53
Rec_461-G	3	48	51	51	51	52	51	52	51	51	49	54	54
Rec_462-G	5	48	51	51	51	51	50	51	50	51	49	53	53
Rec_463-G	5	48	52	52	52	52	51	52	51	52	49	54	54
Rec_464-G	5	48	52	52	52	52	51	52	51	52	49	54	54
Rec_465-G	5	48	52	52	52	52	51	52	51	52	49	54	54
Rec_466-G	5	48	51	51	51	51	51	52	50	51	49	53	53
Rec_467-G	5	48	51	51	51	51	51	51	50	51	49	53	53
Rec_468-G	5	48	51	51	51	51	50	51	50	51	49	52	52
Rec_469-G	5	48	50	50	50	50	50	51	50	50	49	52	52
Rec_470-G	5	48	50	50	50	50	49	50	49	50	49	51	51

Ontario Regional Sports Complex EIR - Construction Noise Analysis, Nighttime (7 PM - 7 AM), Without Mitigation

Receptor	Receptor Group	Ambient Noise Level	Predicted Construction Noise Level by Project Activity/Phase, Hourly Leq, dBA WITHOUT MITIGATION										
			STADIUM-Building Construction-Canopies w/Lighting, Finishes (Phase 1B, PA 1)	STADIUM-Building Construction-Exterior Envolope (Phase 1B, PA 1)	STADIUM-Building Construction-Exterior Envolope (Phase 1B, PA 1)	STADIUM-Building Construction-Foundations, FTGs, & Substructure (Phase 1B, PA 1)	STADIUM-Building Construction-Interior Finishes and Buildouts (Phase 1B, PA 1)	STADIUM-Building Construction-Superstructure-Columns, Elevated Decks (Phase 1B, PA 1)	STADIUM-Finishing/Landscaping (Phase 1B, PA 1)	STADIUM PARK STRUCT-Parking Structure Construction-MEP's, FP Rougn-ins (Phase 1B, PA 1)	PARK STRUCT B-Parking Structure Construction-MEP's, FP Rougn-ins (Phase 2, PA 5)	STADIUM-Utilities Trenching (Phase 1B, PA 1)	STADIUM PARK STRUCT-Utilities Trenching (Phase 1B, PA 1)
Rec_471-G	5	48	49	49	49	50	49	50	49	49	49	50	50
Rec_472-G	5	48	49	49	49	49	49	49	49	49	49	50	50
Rec_473-G	5	48	49	49	49	49	49	49	49	49	49	50	50
Rec_474-G	5	48	49	49	49	49	49	49	49	49	49	50	50
Rec_475-G	5	48	49	49	49	49	48	49	48	49	49	49	49

Ontario Regional Sports Complex EIR - Construction Noise Analysis, Nighttime (7 PM - 7 AM), Without Mitigation

Receptor	Receptor Group	Ambient Noise Level	Predicted Construction Noise Level by Project Activity/Phase, Hourly Leq, dBA WITHOUT MITIGATION										
			STADIUM-Building Construction-Canopies w/Lighting, Finishes (Phase 1B, PA 1)	STADIUM-Building Construction-Exterior Envolope (Phase 1B, PA 1)	STADIUM-Building Construction-Exterior Envolope (Phase 1B, PA 1)	STADIUM-Building Construction-Foundations, FTGs, & Substructure (Phase 1B, PA 1)	STADIUM-Building Construction-Interior Finishes and Buildouts (Phase 1B, PA 1)	STADIUM-Building Construction-Superstructure-Columns, Elevated Decks (Phase 1B, PA 1)	STADIUM-Finishing/Landscaping (Phase 1B, PA 1)	STADIUM PARK STRUCT-Parking Structure Construction-MEP's, FP Rougn-ins (Phase 1B, PA 1)	PARK STRUCT B-Parking Structure Construction-MEP's, FP Rougn-ins (Phase 2, PA 5)	STADIUM-Utilities Trenching (Phase 1B, PA 1)	STADIUM PARK STRUCT-Utilities Trenching (Phase 1B, PA 1)
Rec_1-G	5	48	51	51	51	52	51	52	50	51	49	53	53
Rec_2-G	5	48	49	49	49	49	48	49	48	49	48	49	49
Rec_3-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_4-G	5	48	49	49	49	49	48	49	48	49	48	49	49
Rec_5-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_6-G	5	48	48	48	48	48	48	48	48	48	48	48	48
Rec_7-G	5	48	48	48	48	48	48	48	48	48	48	49	49
Rec_8-G	5	48	48	48	48	49	48	49	48	48	48	49	49
Rec_9-G	5	48	48	48	48	48	48	49	48	48	48	49	49
Rec_10-G	5	48	48	48	48	48	48	48	48	48	48	49	49
Rec_11-G	5	48	48	48	48	48	48	48	48	48	48	49	49
Rec_12-G	5	48	50	50	50	50	50	50	49	50	48	51	51
Rec_13-G	5	48	51	51	51	52	51	52	50	51	49	53	53
Rec_14-G	5	48	51	51	51	52	51	52	50	51	49	53	53
Rec_15-G	5	48	49	49	49	49	49	49	49	49	49	50	50
Rec_16-G	5	48	49	49	49	49	49	49	49	49	48	50	50
Rec_17-G	5	48	49	49	49	49	49	49	49	49	48	50	50
Rec_18-G	5	48	48	48	48	49	48	49	48	48	48	49	49
Rec_19-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_20-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_21-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_22-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_23-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_24-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_25-G	5	48	48	48	48	48	48	48	48	48	48	48	48
Rec_26-G	5	48	52	52	52	52	51	52	51	52	49	53	53
Rec_27-G	5	48	51	51	51	52	51	52	50	51	49	53	53
Rec_28-G	5	48	51	51	51	51	51	52	50	51	49	53	53
Rec_29-G	5	48	51	51	51	52	51	52	50	51	49	53	53
Rec_30-G	5	48	51	51	51	52	51	52	50	51	49	53	53
Rec_31-G	5	48	51	51	51	52	51	52	50	51	49	53	53
Rec_32-G	5	48	51	51	51	52	51	52	50	51	49	53	53
Rec_33-G	5	48	49	49	49	49	49	49	49	49	48	50	50
Rec_34-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_35-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_36-G	5	48	49	49	49	49	49	49	49	49	48	50	50
Rec_37-G	5	48	49	49	49	49	49	49	49	49	48	50	50
Rec_38-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_39-G	5	48	49	49	49	49	48	49	48	49	48	49	49
Rec_40-G	5	48	48	48	48	49	48	49	48	48	48	49	49
Rec_41-G	5	48	48	48	48	49	48	49	48	48	48	49	49
Rec_42-G	5	48	48	48	48	49	48	49	48	48	48	49	49
Rec_43-G	5	48	49	49	49	49	49	49	49	49	48	49	49
Rec_44-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_45-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_46-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_47-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_48-G	5	48	49	49	49	49	49	49	48	49	48	49	49

Ontario Regional Sports Complex EIR - Construction Noise Analysis, Nighttime (7 PM - 7 AM), Without Mitigation

Receptor	Receptor Group	Ambient Noise Level	Predicted Construction Noise Level by Project Activity/Phase, Hourly Leq, dBA WITHOUT MITIGATION										
			STADIUM-Building Construction-Canopies w/Lighting, Finishes (Phase 1B, PA 1)	STADIUM-Building Construction-Exterior Envolope (Phase 1B, PA 1)	STADIUM-Building Construction-Exterior Envolope (Phase 1B, PA 1)	STADIUM-Building Construction-Foundations, FTGs, & Substructure (Phase 1B, PA 1)	STADIUM-Building Construction-Interior Finishes and Buildouts (Phase 1B, PA 1)	STADIUM-Building Construction-Superstructure-Columns, Elevated Decks (Phase 1B, PA 1)	STADIUM-Finishing/Landscaping (Phase 1B, PA 1)	STADIUM PARK STRUCT-Parking Structure Construction-MEP's, FP Rougn-ins (Phase 1B, PA 1)	PARK STRUCT B-Parking Structure Construction-MEP's, FP Rougn-ins (Phase 2, PA 5)	STADIUM-Utilities Trenching (Phase 1B, PA 1)	STADIUM PARK STRUCT-Utilities Trenching (Phase 1B, PA 1)
Rec_49-G	5	48	49	49	49	49	48	49	48	49	48	49	49
Rec_50-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_51-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_52-G	5	48	49	49	49	49	48	49	48	49	48	49	49
Rec_53-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_54-G	5	48	49	49	49	49	49	49	49	49	48	50	50
Rec_55-G	5	48	49	49	49	49	49	49	49	49	48	50	50
Rec_56-G	5	48	49	49	49	49	49	49	49	49	48	49	49
Rec_57-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_58-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_59-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_60-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_61-G	5	48	49	49	49	49	49	49	49	49	48	49	49
Rec_62-G	5	48	49	49	49	49	49	49	49	49	48	50	50
Rec_63-G	5	48	48	48	48	49	48	49	48	48	48	49	49
Rec_64-G	5	48	48	48	48	49	48	49	48	48	48	49	49
Rec_65-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_66-G	5	48	48	48	48	48	48	48	48	48	48	48	48
Rec_67-G	5	48	48	48	48	48	48	48	48	48	48	48	48
Rec_68-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_69-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_70-G	5	48	48	48	48	49	48	49	48	48	48	49	49
Rec_71-G	5	48	48	48	48	48	48	48	48	48	48	48	48
Rec_72-G	5	48	48	48	48	48	48	48	48	48	48	48	48
Rec_73-G	5	48	48	48	48	48	48	48	48	48	48	49	49
Rec_74-G	5	48	48	48	48	48	48	48	48	48	48	48	48
Rec_75-G	5	48	48	48	48	48	48	48	48	48	48	48	48
Rec_76-G	5	48	48	48	48	48	48	48	48	48	48	48	48
Rec_77-G	5	48	48	48	48	48	48	48	48	48	48	49	49
Rec_78-G	5	48	48	48	48	48	48	49	48	48	49	49	49
Rec_79-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_80-G	5	48	49	49	49	49	49	49	49	49	48	50	50
Rec_81-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_82-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_83-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_84-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_85-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_86-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_87-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_88-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_89-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_90-G	5	48	48	48	48	49	48	49	48	48	48	49	49
Rec_91-G	5	48	48	48	48	48	48	48	48	48	48	49	49
Rec_92-G	5	48	48	48	48	49	48	49	48	48	48	49	49
Rec_93-G	5	48	48	48	48	48	48	48	48	48	48	48	48
Rec_94-G	5	48	48	48	48	48	48	49	48	48	48	49	49
Rec_95-G	5	48	48	48	48	48	48	48	48	48	48	48	48

Ontario Regional Sports Complex EIR - Construction Noise Analysis, Nighttime (7 PM - 7 AM), Without Mitigation

Receptor	Receptor Group	Ambient Noise Level	Predicted Construction Noise Level by Project Activity/Phase, Hourly Leq, dBA WITHOUT MITIGATION										
			STADIUM-Building Construction-Canopies w/Lighting, Finishes (Phase 1B, PA 1)	STADIUM-Building Construction-Exterior Envelope (Phase 1B, PA 1)	STADIUM-Building Construction-Exterior Envelope (Phase 1B, PA 1)	STADIUM-Building Construction-Foundations, FTGs, & Substructure (Phase 1B, PA 1)	STADIUM-Building Construction-Interior Finishes and Buildouts (Phase 1B, PA 1)	STADIUM-Building Construction-Superstructure-Columns, Elevated Decks (Phase 1B, PA 1)	STADIUM-Finishing/Landscaping (Phase 1B, PA 1)	STADIUM PARK STRUCT-Parking Structure Construction-MEP's, FP Rough-ins (Phase 1B, PA 1)	PARK STRUCT B-Parking Structure Construction-MEP's, FP Rough-ins (Phase 2, PA 5)	STADIUM-Utilities Trenching (Phase 1B, PA 1)	STADIUM PARK STRUCT-Utilities Trenching (Phase 1B, PA 1)
Rec_96-G	5	48	48	48	48	49	48	49	48	48	48	49	49
Rec_97-G	5	48	49	49	49	49	48	49	48	49	48	49	49
Rec_98-G	5	48	48	48	48	48	48	48	48	48	48	49	49
Rec_99-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_100-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_101-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_102-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_103-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_104-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_105-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_106-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_107-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_108-G	5	48	48	48	48	48	48	48	48	48	48	48	48
Rec_109-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_110-G	5	48	48	48	48	49	48	49	48	48	48	49	49
Rec_111-G	5	48	48	48	48	48	48	48	48	48	48	48	48
Rec_112-G	5	48	48	48	48	48	48	49	48	48	48	49	49
Rec_113-G	5	48	48	48	48	49	48	49	48	48	48	49	49
Rec_114-G	5	48	48	48	48	48	48	48	48	48	48	49	49
Rec_115-G	5	48	49	49	49	49	48	49	48	49	48	49	49
Rec_116-G	5	48	48	48	48	49	48	49	48	48	48	49	49
Rec_117-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_118-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_119-G	5	48	49	49	49	49	49	49	49	49	48	50	50
Rec_120-G	5	48	49	49	49	49	49	49	49	49	48	50	50
Rec_121-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_122-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_123-G	5	48	49	49	49	49	48	49	48	49	48	49	49
Rec_124-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_125-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_126-G	5	48	49	49	49	49	48	49	48	49	48	49	49
Rec_127-G	5	48	48	48	48	48	48	48	48	48	48	48	48
Rec_128-G	5	48	48	48	48	48	48	48	48	48	48	49	49
Rec_129-G	5	48	48	48	48	48	48	48	48	48	48	49	49
Rec_130-G	5	48	49	49	49	49	48	49	48	49	48	49	49
Rec_131-G	5	48	49	49	49	49	48	49	48	49	48	49	49
Rec_132-G	5	48	48	48	48	48	48	48	48	48	48	49	49
Rec_133-G	5	48	48	48	48	49	48	49	48	48	48	49	49
Rec_134-G	5	48	49	49	49	49	48	49	48	49	48	49	49
Rec_135-G	5	48	49	49	49	49	48	49	48	49	48	49	49
Rec_136-G	5	48	48	48	48	49	48	49	48	48	48	49	49
Rec_137-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_138-G	5	48	48	48	48	48	48	48	48	48	48	49	49
Rec_139-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_140-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_141-G	5	48	49	49	49	49	49	49	48	49	49	49	49
Rec_142-G	5	48	49	49	49	49	49	49	48	49	48	49	49

Ontario Regional Sports Complex EIR - Construction Noise Analysis, Nighttime (7 PM - 7 AM), Without Mitigation

Receptor	Receptor Group	Ambient Noise Level	Predicted Construction Noise Level by Project Activity/Phase, Hourly Leq, dBA WITHOUT MITIGATION										
			STADIUM-Building Construction-Canopies w/Lighting, Finishes (Phase 1B, PA 1)	STADIUM-Building Construction-Exterior Envelope (Phase 1B, PA 1)	STADIUM-Building Construction-Exterior Envelope (Phase 1B, PA 1)	STADIUM-Building Construction-Foundations, FTGs, & Substructure (Phase 1B, PA 1)	STADIUM-Building Construction-Interior Finishes and Buildouts (Phase 1B, PA 1)	STADIUM-Building Construction-Superstructure-Columns, Elevated Decks (Phase 1B, PA 1)	STADIUM-Finishing/Landscaping (Phase 1B, PA 1)	STADIUM PARK STRUCT-Parking Structure Construction-MEP's, FP Rough-ins (Phase 1B, PA 1)	PARK STRUCT B-Parking Structure Construction-MEP's, FP Rough-ins (Phase 2, PA 5)	STADIUM-Utilities Trenching (Phase 1B, PA 1)	STADIUM PARK STRUCT-Utilities Trenching (Phase 1B, PA 1)
Rec_143-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_144-G	5	48	48	48	48	48	48	48	48	48	48	48	48
Rec_145-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_146-G	5	48	49	49	49	49	48	49	48	49	48	49	49
Rec_147-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_148-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_149-G	5	48	49	49	49	49	48	49	48	49	48	49	49
Rec_150-G	5	48	48	48	48	48	48	48	48	48	48	49	49
Rec_151-G	5	48	48	48	48	49	48	49	48	48	48	49	49
Rec_152-G	5	48	48	48	48	48	48	49	48	48	48	49	49
Rec_153-G	5	48	48	48	48	48	48	48	48	48	48	49	49
Rec_154-G	5	48	49	49	49	49	48	49	48	49	48	49	49
Rec_155-G	5	48	48	48	48	48	48	48	48	48	48	49	49
Rec_156-G	5	48	48	48	48	48	48	48	48	48	48	48	48
Rec_157-G	5	48	48	48	48	48	48	48	48	48	48	48	48
Rec_158-G	5	48	48	48	48	48	48	48	48	48	48	48	48
Rec_159-G	5	48	48	48	48	48	48	48	48	48	48	49	49
Rec_160-G	5	48	48	48	48	49	48	49	48	48	49	49	49
Rec_161-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_162-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_163-G	5	48	49	49	49	49	48	49	48	49	49	49	49
Rec_164-G	5	48	49	49	49	49	48	49	48	49	48	49	49
Rec_165-G	5	48	48	48	48	48	48	48	48	48	48	48	48
Rec_166-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_167-G	5	48	48	48	48	48	48	48	48	48	48	49	49
Rec_168-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_169-G	5	48	49	49	49	49	48	49	48	49	49	49	49
Rec_170-G	5	48	48	48	48	49	48	49	48	48	49	49	49
Rec_171-G	5	48	48	48	48	48	48	48	48	48	48	49	49
Rec_172-G	5	48	48	48	48	48	48	48	48	48	48	48	48
Rec_173-G	5	48	48	48	48	48	48	48	48	48	48	48	48
Rec_174-G	5	48	48	48	48	48	48	48	48	48	48	48	48
Rec_175-G	5	48	48	48	48	48	48	48	48	48	48	48	48
Rec_176-G	5	48	48	48	48	48	48	49	48	48	48	49	49
Rec_177-G	5	48	49	49	49	49	48	49	48	49	48	49	49
Rec_178-G	5	48	48	48	48	48	48	49	48	48	48	49	49
Rec_179-G	5	48	48	48	48	48	48	48	48	48	48	48	48
Rec_180-G	5	48	48	48	48	49	48	49	48	48	48	49	49
Rec_181-G	5	48	48	48	48	48	48	48	48	48	48	49	49
Rec_182-G	5	48	48	48	48	48	48	48	48	48	48	48	48
Rec_183-G	5	48	49	49	49	49	49	49	48	49	49	49	49
Rec_184-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_185-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_186-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_187-G	5	48	49	49	49	49	49	49	48	49	48	49	49
Rec_188-G	5	48	48	48	48	48	48	48	48	48	48	48	48
Rec_189-G	5	48	48	48	48	48	48	48	48	48	48	48	48

Ontario Regional Sports Complex EIR - Construction Noise Analysis, Nighttime (7 PM - 7 AM), Without Mitigation

Receptor	Receptor Group	Ambient Noise Level	Predicted Construction Noise Level by Project Activity/Phase, Hourly Leq, dBA WITHOUT MITIGATION										
			STADIUM-Building Construction-Canopies w/Lighting, Finishes (Phase 1B, PA 1)	STADIUM-Building Construction-Exterior Envelope (Phase 1B, PA 1)	STADIUM-Building Construction-Exterior Envelope (Phase 1B, PA 1)	STADIUM-Building Construction-Foundations, FTGs, & Substructure (Phase 1B, PA 1)	STADIUM-Building Construction-Interior Finishes and Buildouts (Phase 1B, PA 1)	STADIUM-Building Construction-Superstructure-Columns, Elevated Decks (Phase 1B, PA 1)	STADIUM-Finishing/Landscaping (Phase 1B, PA 1)	STADIUM PARK STRUCT-Parking Structure Construction-MEP's, FP Rough-ins (Phase 1B, PA 1)	PARK STRUCT B-Parking Structure Construction-MEP's, FP Rough-ins (Phase 2, PA 5)	STADIUM-Utilities Trenching (Phase 1B, PA 1)	STADIUM PARK STRUCT-Utilities Trenching (Phase 1B, PA 1)
Rec_190-G	5	48	48	48	48	48	48	48	48	48	48	48	48
Rec_191-G	5	48	48	48	48	48	48	48	48	48	48	48	48
Rec_192-G	5	48	48	48	48	48	48	48	48	48	48	48	48
Rec_193-G	5	48	48	48	48	48	48	48	48	48	48	48	48
Rec_194-G	5	48	49	49	49	49	49	49	49	49	49	50	50
Rec_195-G	5	48	49	49	49	49	49	49	49	49	49	50	50
Rec_196-G	5	48	49	49	49	49	49	49	49	49	49	50	50
Rec_197-G	5	48	49	49	49	49	49	49	49	49	49	50	50
Rec_198-G	5	48	49	49	49	49	49	49	49	49	49	50	50
Rec_199-G	5	48	49	49	49	49	49	49	49	49	49	50	50
Rec_200-G	5	48	49	49	49	49	49	49	49	49	49	50	50
Rec_201-G	5	48	49	49	49	49	49	49	49	49	49	50	50
Rec_202-G	5	48	49	49	49	49	49	50	49	49	49	50	50
Rec_203-G	5	48	49	49	49	50	49	50	49	49	49	50	50
Rec_204-G	5	48	49	49	49	50	49	50	49	49	49	50	50
Rec_205-G	5	48	50	50	50	50	49	50	49	50	49	51	51
Rec_206-G	5	48	50	50	50	50	49	50	49	50	49	51	51
Rec_207-G	5	48	50	50	50	50	49	50	49	50	49	51	51
Rec_208-G	5	48	50	50	50	50	49	50	49	50	49	51	51
Rec_209-G	5	48	50	50	50	50	49	50	49	50	49	51	51
Rec_210-G	5	48	49	49	49	50	49	50	49	49	49	51	51
Rec_211-G	5	48	50	50	50	50	50	50	49	50	49	51	51
Rec_212-G	5	48	50	50	50	50	50	50	49	50	49	51	51
Rec_213-G	5	48	51	51	51	51	51	51	50	51	49	53	53
Rec_214-G	5	48	51	51	51	51	50	51	50	51	49	53	53
Rec_215-G	5	48	51	51	51	51	50	51	50	51	49	53	53
Rec_216-G	5	48	51	51	51	51	50	51	50	51	49	52	52
Rec_217-G	5	48	51	51	51	51	50	51	50	51	49	53	53
Rec_218-G	5	48	50	50	50	51	50	51	50	50	49	52	52
Rec_219-G	5	48	50	50	50	51	50	51	50	50	49	52	52
Rec_220-G	5	48	50	50	50	50	50	51	50	50	49	52	52
Rec_221-G	5	48	51	51	51	52	51	52	50	51	49	53	53
Rec_222-G	5	48	51	51	51	51	51	52	50	51	49	53	53
Rec_223-G	5	48	51	51	51	51	51	52	50	51	49	53	53
Rec_224-G	5	48	51	51	51	51	51	52	50	51	49	53	53
Rec_225-G	5	48	51	51	51	51	51	51	50	51	49	53	53
Rec_226-G	5	48	48	48	48	48	48	48	48	48	48	48	48
Rec_227-G	2	47	48	48	48	48	48	48	47	48	49	48	48
Rec_228-G	2	47	48	48	48	48	48	48	48	48	49	49	49
Rec_229-G	2	47	48	48	48	48	47	48	47	48	49	48	48
Rec_230-G	2	47	48	48	48	48	48	48	48	48	48	48	48
Rec_231-G	2	47	48	48	48	48	48	48	47	48	49	48	48
Rec_232-G	2	47	48	48	48	48	48	49	48	48	49	49	49
Rec_233-G	2	47	48	48	48	48	48	48	48	48	49	49	49
Rec_234-G	2	47	48	48	48	48	48	48	48	48	49	49	49
Rec_235-G	2	47	48	48	48	48	48	48	47	48	48	48	48
Rec_236-G	2	47	48	48	48	48	48	49	48	48	49	49	49

Ontario Regional Sports Complex EIR - Construction Noise Analysis, Nighttime (7 PM - 7 AM), Without Mitigation

Receptor	Receptor Group	Ambient Noise Level	Predicted Construction Noise Level by Project Activity/Phase, Hourly Leq, dBA WITHOUT MITIGATION										
			STADIUM-Building Construction-Canopies w/Lighting, Finishes (Phase 1B, PA 1)	STADIUM-Building Construction-Exterior Envolope (Phase 1B, PA 1)	STADIUM-Building Construction-Exterior Envolope (Phase 1B, PA 1)	STADIUM-Building Construction-Foundations, FTGs, & Substructure (Phase 1B, PA 1)	STADIUM-Building Construction-Interior Finishes and Buildouts (Phase 1B, PA 1)	STADIUM-Building Construction-Superstructure-Columns, Elevated Decks (Phase 1B, PA 1)	STADIUM-Finishing/Landscaping (Phase 1B, PA 1)	STADIUM PARK STRUCT-Parking Structure Construction-MEP's, FP Rougn-ins (Phase 1B, PA 1)	PARK STRUCT B-Parking Structure Construction-MEP's, FP Rougn-ins (Phase 2, PA 5)	STADIUM-Utilities Trenching (Phase 1B, PA 1)	STADIUM PARK STRUCT-Utilities Trenching (Phase 1B, PA 1)
Rec_237-G	2	47	48	48	48	48	48	48	48	48	49	48	48
Rec_238-G	2	47	48	48	48	48	47	48	47	48	49	48	48
Rec_239-G	2	47	48	48	48	49	48	49	48	48	49	49	49
Rec_240-G	2	47	49	49	49	49	48	49	48	49	49	50	50
Rec_241-G	2	47	48	48	48	49	48	49	48	48	50	49	49
Rec_242-G	2	47	49	49	49	49	49	49	48	49	53	50	50
Rec_243-G	2	47	51	51	51	51	50	51	50	51	53	53	53
Rec_244-G	2	47	49	49	49	49	49	49	49	49	54	51	51
Rec_245-G	2	47	48	48	48	49	48	49	48	48	50	49	49
Rec_246-G	2	47	49	49	49	49	48	49	48	49	49	50	50
Rec_247-G	2	47	49	49	49	50	49	50	49	49	48	51	51
Rec_248-G	2	47	49	49	49	50	49	50	49	49	48	51	51
Rec_249-G	2	47	50	50	50	50	49	50	49	50	49	52	52
Rec_250-G	2	47	48	48	48	48	48	49	48	48	48	49	49
Rec_251-G	2	47	47	47	47	47	47	47	47	47	48	47	47
Rec_252-G	2	47	47	47	47	47	47	47	47	47	47	47	47
Rec_253-G	2	47	47	47	47	47	47	47	47	47	47	48	48
Rec_254-G	2	47	49	49	49	49	48	49	48	49	49	50	50
Rec_255-G	2	47	48	48	48	48	48	48	48	48	48	49	49
Rec_256-G	2	47	48	48	48	48	48	48	47	48	48	48	48
Rec_257-G	2	47	48	48	48	48	48	48	48	48	48	49	49
Rec_258-G	2	47	47	47	47	47	47	48	47	47	49	48	48
Rec_259-G	2	47	48	48	48	48	48	49	48	48	49	49	49
Rec_260-G	2	47	47	47	47	47	47	47	47	47	48	48	48
Rec_261-G	2	47	48	48	48	48	48	48	48	48	48	49	49
Rec_262-G	2	47	47	47	47	47	47	47	47	47	48	48	48
Rec_263-G	2	47	48	48	48	48	48	48	48	48	49	49	49
Rec_264-G	2	47	48	48	48	48	48	48	47	48	48	48	48
Rec_265-G	2	47	48	48	48	48	48	48	47	48	48	48	48
Rec_266-G	2	47	48	48	48	48	47	48	47	48	48	48	48
Rec_267-G	2	47	48	48	48	48	48	48	47	48	47	48	48
Rec_268-G	2	47	48	48	48	48	48	48	48	48	47	49	49
Rec_269-G	2	47	48	48	48	48	48	49	48	48	48	49	49
Rec_271-G	2	47	48	48	48	48	48	48	48	48	48	49	49
Rec_272-G	2	47	48	48	48	48	48	48	48	48	49	49	49
Rec_273-G	2	47	48	48	48	48	48	48	47	48	48	48	48
Rec_274-G	2	47	48	48	48	48	48	48	48	48	48	49	49
Rec_275-G	2	47	47	47	47	47	47	47	47	47	48	48	48
Rec_276-G	2	47	47	47	47	47	47	48	47	47	48	48	48
Rec_277-G	2	47	48	48	48	48	48	48	47	48	48	48	48
Rec_278-G	2	47	47	47	47	47	47	47	47	47	47	47	47
Rec_279-G	2	47	47	47	47	47	47	47	47	47	47	47	47
Rec_280-G	2	47	48	48	48	48	48	49	48	48	49	49	49
Rec_281-G	2	47	47	47	47	47	47	47	47	47	48	47	47
Rec_282-G	2	47	47	47	47	47	47	47	47	47	48	47	47
Rec_283-G	2	47	48	48	48	48	47	48	47	48	47	48	48
Rec_284-G	2	47	48	48	48	48	48	48	48	48	48	49	49

Ontario Regional Sports Complex EIR - Construction Noise Analysis, Nighttime (7 PM - 7 AM), Without Mitigation

Receptor	Receptor Group	Ambient Noise Level	Predicted Construction Noise Level by Project Activity/Phase, Hourly Leq, dBA WITHOUT MITIGATION										
			STADIUM-Building Construction-Canopies w/Lighting, Finishes (Phase 1B, PA 1)	STADIUM-Building Construction-Exterior Envelope (Phase 1B, PA 1)	STADIUM-Building Construction-Exterior Envelope (Phase 1B, PA 1)	STADIUM-Building Construction-Foundations, FTGs, & Substructure (Phase 1B, PA 1)	STADIUM-Building Construction-Interior Finishes and Buildouts (Phase 1B, PA 1)	STADIUM-Building Construction-Superstructure-Columns, Elevated Decks (Phase 1B, PA 1)	STADIUM-Finishing/Landscaping (Phase 1B, PA 1)	STADIUM PARK STRUCT-Parking Structure Construction-MEP's, FP Rough-ins (Phase 1B, PA 1)	PARK STRUCT B-Parking Structure Construction-MEP's, FP Rough-ins (Phase 2, PA 5)	STADIUM-Utilities Trenching (Phase 1B, PA 1)	STADIUM PARK STRUCT-Utilities Trenching (Phase 1B, PA 1)
Rec_285-G	2	47	47	47	47	48	47	48	47	47	48	48	48
Rec_286-G	2	47	47	47	47	47	47	47	47	47	47	47	47
Rec_287-G	2	47	48	48	48	48	48	48	48	48	48	49	49
Rec_288-G	2	47	47	47	47	47	47	47	47	47	47	47	47
Rec_289-G	1	47	48	48	48	48	47	48	47	48	49	48	48
Rec_290-G	1	47	48	48	48	48	48	48	47	48	50	48	48
Rec_291-G	1	47	48	48	48	48	48	48	48	48	50	48	48
Rec_292-G	1	47	48	48	48	48	48	48	47	48	49	48	48
Rec_293-G	1	47	48	48	48	48	48	48	47	48	49	48	48
Rec_294-G	1	47	48	48	48	48	48	48	47	48	49	48	48
Rec_295-G	1	47	48	48	48	48	47	48	47	48	49	48	48
Rec_296-G	1	47	48	48	48	48	47	48	47	48	49	48	48
Rec_297-G	1	47	48	48	48	48	47	48	47	48	49	48	48
Rec_298-G	1	47	47	47	47	47	47	48	47	47	49	48	48
Rec_299-G	1	47	47	47	47	48	47	47	47	47	49	48	48
Rec_300-G	1	47	47	47	47	47	47	48	47	47	49	48	48
Rec_301-G	1	47	47	47	47	48	47	48	47	47	49	48	48
Rec_302-G	1	47	47	47	47	47	47	47	47	47	48	48	48
Rec_303-G	1	47	47	47	47	47	47	48	47	47	48	48	48
Rec_304-G	1	47	47	47	47	47	47	47	47	47	48	47	47
Rec_305-G	1	47	47	47	47	47	47	47	47	47	48	47	47
Rec_306-G	1	47	47	47	47	47	47	48	47	47	48	48	48
Rec_307-G	1	47	47	47	47	47	47	47	47	47	48	47	47
Rec_308-G	1	47	47	47	47	47	47	47	47	47	48	48	48
Rec_309-G	1	47	48	48	48	48	47	48	47	48	48	48	48
Rec_310-G	1	47	47	47	47	47	47	47	47	47	48	47	47
Rec_311-G	1	47	47	47	47	47	47	47	47	47	48	48	48
Rec_312-G	1	47	48	48	48	48	47	48	47	48	48	48	48
Rec_313-G	1	47	47	47	47	48	47	48	47	47	48	48	48
Rec_314-G	1	47	47	47	47	47	47	47	47	47	47	48	48
Rec_315-G	1	47	47	47	47	47	47	47	47	47	47	47	47
Rec_316-G	1	47	47	47	47	48	47	48	47	47	48	48	48
Rec_317-G	1	47	47	47	47	47	47	47	47	47	48	48	48
Rec_318-G	1	47	47	47	47	47	47	47	47	47	48	48	48
Rec_319-G	1	47	47	47	47	47	47	47	47	47	48	47	47
Rec_320-G	1	47	47	47	47	47	47	47	47	47	47	47	47
Rec_321-G	1	47	47	47	47	47	47	47	47	47	47	47	47
Rec_322-G	1	47	47	47	47	48	47	48	47	47	48	48	48
Rec_323-G	1	47	47	47	47	47	47	47	47	47	48	47	47
Rec_324-G	1	47	47	47	47	47	47	47	47	47	47	47	47
Rec_325-G	1	47	48	48	48	48	48	48	47	48	48	48	48
Rec_326-G	1	47	47	47	47	48	47	48	47	47	48	48	48
Rec_327-G	1	47	47	47	47	48	47	48	47	47	48	48	48
Rec_328-G	1	47	48	48	48	48	48	48	47	48	49	48	48
Rec_329-G	1	47	48	48	48	48	48	48	47	48	50	48	48
Rec_330-G	1	47	48	48	48	48	48	48	48	48	49	49	49
Rec_331-G	1	47	48	48	48	48	48	48	48	48	49	49	49

Ontario Regional Sports Complex EIR - Construction Noise Analysis, Nighttime (7 PM - 7 AM), Without Mitigation

Receptor	Receptor Group	Ambient Noise Level	Predicted Construction Noise Level by Project Activity/Phase, Hourly Leq, dBA WITHOUT MITIGATION										
			STADIUM-Building Construction-Canopies w/Lighting, Finishes (Phase 1B, PA 1)	STADIUM-Building Construction-Exterior Envelope (Phase 1B, PA 1)	STADIUM-Building Construction-Exterior Envelope (Phase 1B, PA 1)	STADIUM-Building Construction-Foundations, FTGs, & Substructure (Phase 1B, PA 1)	STADIUM-Building Construction-Interior Finishes and Buildouts (Phase 1B, PA 1)	STADIUM-Building Construction-Superstructure-Columns, Elevated Decks (Phase 1B, PA 1)	STADIUM-Finishing/Landscaping (Phase 1B, PA 1)	STADIUM PARK STRUCT-Parking Structure Construction-MEP's, FP Rough-ins (Phase 1B, PA 1)	PARK STRUCT B-Parking Structure Construction-MEP's, FP Rough-ins (Phase 2, PA 5)	STADIUM-Utilities Trenching (Phase 1B, PA 1)	STADIUM PARK STRUCT-Utilities Trenching (Phase 1B, PA 1)
Rec_332-G	1	47	48	48	48	48	48	48	48	48	49	49	49
Rec_333-G	1	47	47	47	47	47	47	47	47	47	49	48	48
Rec_334-G	1	47	48	48	48	48	47	48	47	48	48	48	48
Rec_335-G	1	47	47	47	47	48	47	48	47	47	48	48	48
Rec_336-G	1	47	48	48	48	48	48	48	47	48	49	48	48
Rec_337-G	1	47	47	47	47	48	47	48	47	47	48	48	48
Rec_338-G	1	47	48	48	48	48	48	48	48	48	48	49	49
Rec_339-G	1	47	47	47	47	47	47	47	47	47	48	48	48
Rec_340-G	1	47	47	47	47	47	47	48	47	47	48	48	48
Rec_341-G	1	47	48	48	48	48	48	48	47	48	48	48	48
Rec_342-G	1	47	48	48	48	48	48	48	47	48	48	48	48
Rec_343-G	1	47	48	48	48	48	47	48	47	48	48	48	48
Rec_344-G	1	47	47	47	47	47	47	47	47	47	48	47	47
Rec_345-G	1	47	47	47	47	47	47	47	47	47	48	47	47
Rec_346-G	1	47	47	47	47	47	47	47	47	47	47	47	47
Rec_347-G	1	47	47	47	47	47	47	47	47	47	47	47	47
Rec_348-G	1	47	47	47	47	47	47	47	47	47	48	47	47
Rec_349-G	1	47	47	47	47	47	47	47	47	47	48	47	47
Rec_350-G	1	47	47	47	47	47	47	47	47	47	48	48	48
Rec_351-G	1	47	47	47	47	47	47	47	47	47	48	48	48
Rec_352-G	1	47	47	47	47	47	47	47	47	47	48	47	47
Rec_353-G	1	47	47	47	47	47	47	47	47	47	48	47	47
Rec_354-G	1	47	47	47	47	47	47	47	47	47	48	47	47
Rec_355-G	1	47	47	47	47	47	47	47	47	47	48	47	47
Rec_356-G	1	47	47	47	47	47	47	47	47	47	48	47	47
Rec_357-G	1	47	48	48	48	48	48	48	48	48	49	49	49
Rec_358-G	1	47	48	48	48	48	48	48	47	48	48	48	48
Rec_359-G	1	47	48	48	48	48	47	48	47	48	48	48	48
Rec_360-G	1	47	47	47	47	47	47	47	47	47	48	48	48
Rec_361-G	1	47	47	47	47	47	47	47	47	47	48	47	47
Rec_362-G	1	47	47	47	47	48	47	48	47	47	48	48	48
Rec_363-G	1	47	47	47	47	47	47	48	47	47	48	48	48
Rec_364-G	1	47	48	48	48	48	47	48	47	48	48	48	48
Rec_365-G	1	47	48	48	48	48	48	48	47	48	48	48	48
Rec_366-G	1	47	48	48	48	48	48	48	47	48	48	48	48
Rec_367-G	1	47	48	48	48	48	47	48	47	48	48	48	48
Rec_368-G	1	47	48	48	48	48	48	48	47	48	48	48	48
Rec_369-G	1	47	47	47	47	48	47	48	47	47	48	48	48
Rec_370-G	1	47	47	47	47	47	47	47	47	47	48	47	47
Rec_371-G	1	47	48	48	48	48	47	48	47	48	48	48	48
Rec_372-G	1	47	48	48	48	48	47	48	47	48	48	48	48
Rec_373-G	1	47	48	48	48	48	48	48	47	48	48	48	48
Rec_374-G	1	47	47	47	47	47	47	47	47	47	48	47	47
Rec_375-G	1	47	47	47	47	47	47	47	47	47	47	48	48
Rec_376-G	1	47	48	48	48	48	47	48	47	48	48	48	48
Rec_377-G	1	47	47	47	47	47	47	47	47	47	48	48	48
Rec_378-G	1	47	47	47	47	47	47	47	47	47	48	47	47

Ontario Regional Sports Complex EIR - Construction Noise Analysis, Nighttime (7 PM - 7 AM), Without Mitigation

Receptor	Receptor Group	Ambient Noise Level	Predicted Construction Noise Level by Project Activity/Phase, Hourly Leq, dBA WITHOUT MITIGATION										
			STADIUM-Building Construction-Canopies w/Lighting, Finishes (Phase 1B, PA 1)	STADIUM-Building Construction-Exterior Envolope (Phase 1B, PA 1)	STADIUM-Building Construction-Exterior Envolope (Phase 1B, PA 1)	STADIUM-Building Construction-Foundations, FTGs, & Substructure (Phase 1B, PA 1)	STADIUM-Building Construction-Interior Finishes and Buildouts (Phase 1B, PA 1)	STADIUM-Building Construction-Superstructure-Columns, Elevated Decks (Phase 1B, PA 1)	STADIUM-Finishing/Landscaping (Phase 1B, PA 1)	STADIUM PARK STRUCT-Parking Structure Construction-MEP's, FP Rougn-ins (Phase 1B, PA 1)	PARK STRUCT B-Parking Structure Construction-MEP's, FP Rougn-ins (Phase 2, PA 5)	STADIUM-Utilities Trenching (Phase 1B, PA 1)	STADIUM PARK STRUCT-Utilities Trenching (Phase 1B, PA 1)
Rec_379-G	1	47	48	48	48	48	47	48	47	48	47	48	48
Rec_380-G	1	47	47	47	47	47	47	47	47	47	48	48	48
Rec_381-G	1	47	48	48	48	48	48	48	48	48	48	49	49
Rec_382-G	1	47	48	48	48	48	48	48	48	48	48	49	49
Rec_383-G	1	47	48	48	48	48	48	48	47	48	48	48	48
Rec_384-G	1	47	47	47	47	47	47	47	47	47	47	47	47
Rec_385-G	1	47	48	48	48	48	48	48	47	48	48	48	48
Rec_386-G	1	47	48	48	48	48	48	48	48	48	48	49	49
Rec_387-G	1	47	48	48	48	48	48	48	48	48	48	49	49
Rec_388-G	1	47	48	48	48	48	47	48	47	48	48	48	48
Rec_389-G	1	47	47	47	47	47	47	47	47	47	47	47	47
Rec_390-G	1	47	48	48	48	48	48	48	47	48	48	48	48
Rec_391-G	1	47	47	47	47	47	47	47	47	47	47	47	47
Rec_392-G	1	47	47	47	47	47	47	47	47	47	47	48	48
Rec_393-G	1	47	48	48	48	48	47	48	47	48	48	48	48
Rec_394-G	1	47	48	48	48	48	48	48	47	48	48	48	48
Rec_395-G	1	47	48	48	48	48	47	48	47	48	48	48	48
Rec_396-G	1	47	48	48	48	48	47	48	47	48	48	48	48
Rec_397-G	1	47	47	47	47	47	47	47	47	47	48	48	48
Rec_398-G	1	47	47	47	47	47	47	47	47	47	48	47	47
Rec_399-G	1	47	48	48	48	48	47	48	47	48	48	48	48
Rec_400-G	1	47	47	47	47	47	47	47	47	47	48	48	48
Rec_401-G	1	47	47	47	47	47	47	47	47	47	47	47	47
Rec_402-G	4	48	50	50	50	50	49	50	49	50	48	51	51
Rec_403-G	4	48	50	50	50	50	49	50	49	50	48	51	51
Rec_404-G	4	48	50	50	50	50	49	50	49	50	48	51	51
Rec_405-G	4	48	49	49	49	50	49	50	49	49	48	51	51
Rec_406-G	4	48	50	50	50	50	49	50	49	50	48	51	51
Rec_407-G	4	48	50	50	50	50	49	50	49	50	48	51	51
Rec_408-G	4	48	49	49	49	50	49	50	49	49	48	51	51
Rec_409-G	4	48	49	49	49	50	49	50	49	49	48	50	50
Rec_410-G	4	48	49	49	49	50	49	50	49	49	48	51	51
Rec_411-G	4	48	49	49	49	49	49	50	49	49	48	50	50
Rec_412-G	4	48	49	49	49	49	49	49	49	49	48	50	50
Rec_413-G	4	48	49	49	49	49	49	49	49	49	48	50	50
Rec_414-G	6	47	47	47	47	47	47	47	47	47	47	47	47
Rec_415-G	6	47	47	47	47	47	47	47	47	47	47	47	47
Rec_416-G	6	47	47	47	47	47	47	47	47	47	47	47	47
Rec_417a-G	6	47	47	47	47	47	47	47	47	47	48	47	47
Rec_417b-G	6	47	47	47	47	47	47	47	47	47	48	47	47
Rec_418-G	6	47	47	47	47	47	47	47	47	47	48	47	47
Rec_419-G	6	47	47	47	47	47	47	47	47	47	49	47	47
Rec_420-G	2	47	50	50	50	50	50	50	49	50	53	52	52
Rec_421-G	2	47	51	51	51	51	50	51	50	51	53	53	53
Rec_422-G	3	48	50	50	50	51	50	51	50	50	48	52	52
Rec_423-G	1	47	47	47	47	47	47	47	47	47	47	47	47
Rec_424-G	1	47	48	48	48	48	47	48	47	48	49	48	48

Ontario Regional Sports Complex EIR - Construction Noise Analysis, Nighttime (7 PM - 7 AM), Without Mitigation

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			STADIUM-Building Construction-Canopies w/Lighting, Finishes (Phase 1B, PA 1)	STADIUM-Building Construction-Exterior Envolope (Phase 1B, PA 1)	STADIUM-Building Construction-Exterior Envolope (Phase 1B, PA 1)	STADIUM-Building Construction-Foundations, FTGs, & Substructure (Phase 1B, PA 1)	STADIUM-Building Construction-Interior Finishes and Buildouts (Phase 1B, PA 1)	STADIUM-Building Construction-Superstructure-Columns, Elevated Decks (Phase 1B, PA 1)	STADIUM-Finishing/Landscaping (Phase 1B, PA 1)	STADIUM PARK STRUCT-Parking Structure Construction-MEP's, FP Rougn-ins (Phase 1B, PA 1)	PARK STRUCT B-Parking Structure Construction-MEP's, FP Rougn-ins (Phase 2, PA 5)	STADIUM-Utilities Trenching (Phase 1B, PA 1)	STADIUM PARK STRUCT-Utilities Trenching (Phase 1B, PA 1)
Rec_425-G	1	47	48	48	48	48	47	48	47	48	49	48	48
Rec_426a-G	1	47	48	48	48	48	48	48	48	48	50	48	48
Rec_426b-G	1	47	47	47	47	47	47	47	47	47	48	48	48
Rec_427-G	2	47	48	48	48	48	48	48	48	48	47	48	48
Rec_428-G	2	47	50	50	50	50	50	51	49	50	48	52	52
Rec_429-G	2	47	51	51	51	52	51	52	50	51	48	53	53
Rec_430-G	2	47	50	50	50	50	50	51	49	50	47	52	52
Rec_431-G	2	47	51	51	51	52	51	52	50	51	48	53	53
Rec_432-G	2	47	50	50	50	50	50	50	49	50	47	52	52
Rec_433-G	2	47	51	51	51	52	51	52	50	51	47	53	53
Rec_434-G	2	47	50	50	50	50	50	50	49	50	47	52	52
Rec_435-G	2	47	51	51	51	51	51	52	50	51	47	53	53
Rec_436-G	2	47	49	49	49	49	49	50	49	49	47	51	51
Rec_437-G	2	47	50	50	50	51	50	51	49	50	47	52	52
Rec_438-G	2	47	49	49	49	50	49	50	49	49	47	51	51
Rec_439-G	2	47	51	51	51	51	50	51	49	51	47	52	52
Rec_440-G	2	47	47	47	47	47	47	47	47	47	47	47	47
Rec_441-G	2	47	47	47	47	47	47	47	47	47	47	47	47
Rec_442-G	2	47	47	47	47	47	47	47	47	47	47	47	47
Rec_443-G	2	47	47	47	47	47	47	47	47	47	47	47	47
Rec_444-G	2	47	47	47	47	47	47	47	47	47	47	47	47
Rec_445-G	2	47	49	49	49	50	49	50	48	49	49	50	50
Rec_446-G	2	47	50	50	50	50	49	50	49	50	48	51	51
Rec_447-G	2	47	50	50	50	50	49	50	49	50	48	51	51
Rec_448-G	2	47	50	50	50	50	49	50	48	50	48	51	51
Rec_449-G	4	48	50	50	50	51	50	51	50	50	49	52	52
Rec_450-G	4	48	50	50	50	50	49	50	49	50	48	51	51
Rec_451-G	4	48	49	49	49	50	49	50	49	49	48	51	51
Rec_452-G	4	48	49	49	49	49	49	49	49	49	48	50	50
Rec_453-G	4	48	49	49	49	49	49	49	49	49	48	50	50
Rec_454-G	4	48	49	49	49	50	49	50	49	49	48	51	51
Rec_455-G	4	48	49	49	49	49	49	49	49	49	48	50	50
Rec_456-G	3	48	50	50	50	50	49	50	49	50	49	51	51
Rec_457-G	3	48	50	50	50	51	50	51	50	50	49	52	52
Rec_458-G	3	48	51	51	51	51	50	51	50	51	49	53	53
Rec_459-G	3	48	56	56	56	56	55	56	55	56	49	60	60
Rec_460-G	3	48	51	51	51	51	51	52	50	51	49	53	53
Rec_461-G	3	48	51	51	51	52	51	52	51	51	49	54	54
Rec_462-G	5	48	51	51	51	51	50	51	50	51	49	53	53
Rec_463-G	5	48	52	52	52	52	51	52	51	52	49	54	54
Rec_464-G	5	48	52	52	52	52	51	52	51	52	49	54	54
Rec_465-G	5	48	52	52	52	52	51	52	51	52	49	54	54
Rec_466-G	5	48	51	51	51	51	51	52	50	51	49	53	53
Rec_467-G	5	48	51	51	51	51	51	51	50	51	49	53	53
Rec_468-G	5	48	51	51	51	51	50	51	50	51	49	52	52
Rec_469-G	5	48	50	50	50	50	50	51	50	50	49	52	52
Rec_470-G	5	48	50	50	50	50	49	50	49	50	49	51	51

Ontario Regional Sports Complex EIR - Construction Noise Analysis, Nighttime (7 PM - 7 AM), Without Mitigation

Receptor	Receptor Group	Ambient Noise Level	Predicted Construction Noise Level by Project Activity/Phase, Hourly Leq, dBA WITHOUT MITIGATION										
			STADIUM-Building Construction-Canopies w/Lighting, Finishes (Phase 1B, PA 1)	STADIUM-Building Construction-Exterior Envolope (Phase 1B, PA 1)	STADIUM-Building Construction-Exterior Envolope (Phase 1B, PA 1)	STADIUM-Building Construction-Foundations, FTGs, & Substructure (Phase 1B, PA 1)	STADIUM-Building Construction-Interior Finishes and Buildouts (Phase 1B, PA 1)	STADIUM-Building Construction-Superstructure-Columns, Elevated Decks (Phase 1B, PA 1)	STADIUM-Finishing/Landscaping (Phase 1B, PA 1)	STADIUM PARK STRUCT-Parking Structure Construction-MEP's, FP Rougn-ins (Phase 1B, PA 1)	PARK STRUCT B-Parking Structure Construction-MEP's, FP Rougn-ins (Phase 2, PA 5)	STADIUM-Utilities Trenching (Phase 1B, PA 1)	STADIUM PARK STRUCT-Utilities Trenching (Phase 1B, PA 1)
Rec_471-G	5	48	49	49	49	50	49	50	49	49	49	50	50
Rec_472-G	5	48	49	49	49	49	49	49	49	49	49	50	50
Rec_473-G	5	48	49	49	49	49	49	49	49	49	49	50	50
Rec_474-G	5	48	49	49	49	49	49	49	49	49	49	50	50
Rec_475-G	5	48	49	49	49	49	48	49	48	49	49	49	49

Ontario Regional Sports Complex EIR
Construction Noise Analysis, Predicted Construction-Related Traffic Noise

Receptor	Receptor Group	Predicted Traffic Noise Level, Leq,1hr			Increase Over Existing
		Existing	Construction	Total (Existing + Construction)	
Rec_1	5	62.1	55.5	63.0	0.9
Rec_2	5	62.9	56.5	63.8	0.9
Rec_3	5	62.8	56.7	63.8	1.0
Rec_4	5	62.9	56.9	63.9	1.0
Rec_5	5	63.6	57.1	64.5	0.9
Rec_6	5	62.5	56.2	63.4	0.9
Rec_7	5	62.8	56.9	63.8	1.0
Rec_8	5	63.3	56.9	64.2	0.9
Rec_9	5	63.4	56.8	64.3	0.9
Rec_10	5	63	56.5	63.9	0.9
Rec_11	5	63.7	56.2	64.4	0.7
Rec_12	5	62.4	56.1	63.3	0.9
Rec_13	5	58.2	51.7	59.1	0.9
Rec_14	5	56.4	50.5	57.4	1.0
Rec_15	5	41.8	33.9	42.5	0.7
Rec_16	5	43.1	35.3	43.8	0.7
Rec_17	5	42.2	34.1	42.8	0.6
Rec_18	5	41.9	33.7	42.5	0.6
Rec_19	5	42	33.8	42.6	0.6
Rec_20	5	41.2	33	41.8	0.6
Rec_21	5	41.5	33.3	42.1	0.6
Rec_22	5	41.3	33	41.9	0.6
Rec_23	5	41.2	32.4	41.7	0.5
Rec_24	5	41.9	31.1	42.2	0.3
Rec_25	5	46.8	31.4	46.9	0.1
Rec_26	5	57	50.7	57.9	0.9
Rec_27	5	56.1	49.4	56.9	0.8
Rec_28	5	55.5	48.4	56.3	0.8
Rec_29	5	54.6	47.8	55.4	0.8
Rec_30	5	54.2	47.7	55.1	0.9
Rec_31	5	53.7	47	54.5	0.8
Rec_32	5	52.2	45.1	53.0	0.8
Rec_33	5	45.4	37.8	46.1	0.7
Rec_34	5	43	35.1	43.7	0.7
Rec_35	5	43.9	36.1	44.6	0.7
Rec_36	5	43.7	36	44.4	0.7
Rec_37	5	43.6	36.4	44.4	0.8
Rec_38	5	42.2	34.5	42.9	0.7
Rec_39	5	45.4	39.6	46.4	1.0

Ontario Regional Sports Complex EIR
Construction Noise Analysis, Predicted Construction-Related Traffic Noise

Receptor	Receptor Group	Predicted Traffic Noise Level, Leq,1hr			Increase Over Existing
		Existing	Construction	Total (Existing + Construction)	
Rec_40	5	44.7	38	45.5	0.8
Rec_41	5	46.9	40.9	47.9	1.0
Rec_42	5	48.1	40.1	48.7	0.6
Rec_43	5	42	34.2	42.7	0.7
Rec_44	5	40.2	31.7	40.8	0.6
Rec_45	5	39.2	30.4	39.7	0.5
Rec_46	5	39.5	30.7	40.0	0.5
Rec_47	5	38.5	29.5	39.0	0.5
Rec_48	5	38.2	29.2	38.7	0.5
Rec_49	5	38.7	29.9	39.2	0.5
Rec_50	5	39.5	30.5	40.0	0.5
Rec_51	5	38.3	29.3	38.8	0.5
Rec_52	5	39.2	30.2	39.7	0.5
Rec_53	5	42.1	34.5	42.8	0.7
Rec_54	5	40.5	32.1	41.1	0.6
Rec_55	5	40	31.3	40.5	0.5
Rec_56	5	40	31.5	40.6	0.6
Rec_57	5	39	30.3	39.5	0.5
Rec_58	5	39	30.2	39.5	0.5
Rec_59	5	39.5	30.9	40.1	0.6
Rec_60	5	39.3	30.5	39.8	0.5
Rec_61	5	39	30.1	39.5	0.5
Rec_62	5	39.7	31.1	40.3	0.6
Rec_63	5	53.7	39.8	53.9	0.2
Rec_64	5	42.5	31.6	42.8	0.3
Rec_65	5	40.9	30.4	41.3	0.4
Rec_66	5	39.7	29.9	40.1	0.4
Rec_67	5	37.8	28.5	38.3	0.5
Rec_68	5	37.5	28	38.0	0.5
Rec_69	5	38.1	28.7	38.6	0.5
Rec_70	5	36.7	26.9	37.1	0.4
Rec_71	5	37.5	27.7	37.9	0.4
Rec_72	5	37.3	27.8	37.8	0.5
Rec_73	5	37.3	27.6	37.7	0.4
Rec_74	5	37.7	28.1	38.2	0.5
Rec_75	5	37.3	27.5	37.7	0.4
Rec_76	5	37.7	28.1	38.2	0.5
Rec_77	5	38	28.5	38.5	0.5
Rec_78	5	38.2	29	38.7	0.5
Rec_79	5	39.2	30.2	39.7	0.5
Rec_80	5	40	31.2	40.5	0.5

Ontario Regional Sports Complex EIR
Construction Noise Analysis, Predicted Construction-Related Traffic Noise

Receptor	Receptor Group	Predicted Traffic Noise Level, Leq,1hr			Increase Over Existing
		Existing	Construction	Total (Existing + Construction)	
Rec_81	5	39.1	30.1	39.6	0.5
Rec_82	5	38.5	29.3	39.0	0.5
Rec_83	5	38.2	28.8	38.7	0.5
Rec_84	5	38.6	29.3	39.1	0.5
Rec_85	5	37.7	28.2	38.2	0.5
Rec_86	5	37.7	28.2	38.2	0.5
Rec_87	5	38.1	28.9	38.6	0.5
Rec_88	5	37.6	28.2	38.1	0.5
Rec_89	5	37.5	28.1	38.0	0.5
Rec_90	5	37	27.6	37.5	0.5
Rec_91	5	37.6	27.9	38.0	0.4
Rec_92	5	37.4	27	37.8	0.4
Rec_93	5	37.4	27.2	37.8	0.4
Rec_94	5	37.7	27.6	38.1	0.4
Rec_95	5	37.4	27.2	37.8	0.4
Rec_96	5	37.9	27.8	38.3	0.4
Rec_97	5	38	28	38.4	0.4
Rec_98	5	38	28.2	38.4	0.4
Rec_99	5	38.9	29	39.3	0.4
Rec_100	5	39.6	30.5	40.1	0.5
Rec_101	5	38.8	29.5	39.3	0.5
Rec_102	5	38.6	28.9	39.0	0.4
Rec_103	5	38	28.5	38.5	0.5
Rec_104	5	38.2	28.6	38.7	0.5
Rec_105	5	37.9	28.3	38.4	0.5
Rec_106	5	37.6	27.8	38.0	0.4
Rec_107	5	37.6	28	38.1	0.5
Rec_108	5	36.9	27.4	37.4	0.5
Rec_109	5	37.3	27.5	37.7	0.4
Rec_110	5	36.6	26.7	37.0	0.4
Rec_111	5	36.3	25.2	36.6	0.3
Rec_112	5	36.6	25.4	36.9	0.3
Rec_113	5	36.8	25.6	37.1	0.3
Rec_114	5	37.3	25.7	37.6	0.3
Rec_115	5	37.3	25.9	37.6	0.3
Rec_116	5	38	26.6	38.3	0.3
Rec_117	5	38.4	27.2	38.7	0.3
Rec_118	5	38.9	27.2	39.2	0.3
Rec_119	5	40	29.5	40.4	0.4
Rec_120	5	39	28.9	39.4	0.4
Rec_121	5	37.7	26.9	38.0	0.3

Ontario Regional Sports Complex EIR
Construction Noise Analysis, Predicted Construction-Related Traffic Noise

Receptor	Receptor Group	Predicted Traffic Noise Level, Leq,1hr			Increase Over Existing
		Existing	Construction	Total (Existing + Construction)	
Rec_122	5	37.7	27	38.1	0.4
Rec_123	5	37.1	26.6	37.5	0.4
Rec_124	5	37.5	27.1	37.9	0.4
Rec_125	5	36.8	26.4	37.2	0.4
Rec_126	5	37	27	37.4	0.4
Rec_127	5	37.3	26.9	37.7	0.4
Rec_128	5	36.5	26.1	36.9	0.4
Rec_129	5	36	25.9	36.4	0.4
Rec_130	5	36.2	25.3	36.5	0.3
Rec_131	5	37	25.5	37.3	0.3
Rec_132	5	36.8	24.8	37.1	0.3
Rec_133	5	37.5	25.7	37.8	0.3
Rec_134	5	36.7	25.8	37.0	0.3
Rec_135	5	36.8	25.6	37.1	0.3
Rec_136	5	36.6	25.5	36.9	0.3
Rec_137	5	37.1	25.6	37.4	0.3
Rec_138	5	36.8	25	37.1	0.3
Rec_139	5	37.6	26.2	37.9	0.3
Rec_140	5	37.6	26	37.9	0.3
Rec_141	5	38.4	27	38.7	0.3
Rec_142	5	38.4	26.8	38.7	0.3
Rec_143	5	39.2	27.6	39.5	0.3
Rec_144	5	38.7	25.5	38.9	0.2
Rec_145	5	38.3	25.5	38.5	0.2
Rec_146	5	38	25.5	38.2	0.2
Rec_147	5	38	25.2	38.2	0.2
Rec_148	5	37.6	25.3	37.8	0.2
Rec_149	5	37.2	24.5	37.4	0.2
Rec_150	5	36.8	24.9	37.1	0.3
Rec_151	5	36.8	24.4	37.0	0.2
Rec_152	5	36.6	24.9	36.9	0.3
Rec_153	5	36.5	24.3	36.8	0.3
Rec_154	5	39.1	25.2	39.3	0.2
Rec_155	5	40.5	25.5	40.6	0.1
Rec_156	5	39.7	23	39.8	0.1
Rec_157	5	39.5	21.8	39.6	0.1
Rec_158	5	40.2	22.1	40.3	0.1
Rec_159	5	39.3	22.1	39.4	0.1
Rec_160	5	36.5	22.1	36.7	0.2
Rec_161	5	37.9	24.6	38.1	0.2
Rec_162	5	37.6	24.5	37.8	0.2

Ontario Regional Sports Complex EIR
Construction Noise Analysis, Predicted Construction-Related Traffic Noise

Receptor	Receptor Group	Predicted Traffic Noise Level, Leq,1hr			Increase Over Existing
		Existing	Construction	Total (Existing + Construction)	
Rec_163	5	39	24.5	39.2	0.2
Rec_164	5	38.8	25	39.0	0.2
Rec_165	5	39.4	24.9	39.6	0.2
Rec_166	5	39.5	26.9	39.7	0.2
Rec_167	5	38.6	26.1	38.8	0.2
Rec_168	5	38	25.7	38.2	0.2
Rec_169	5	37.7	25.5	38.0	0.3
Rec_170	5	37.3	25.7	37.6	0.3
Rec_171	5	37.5	24.3	37.7	0.2
Rec_172	5	42.4	22.9	42.4	0.0
Rec_173	5	43.7	22.5	43.7	0.0
Rec_174	5	44.9	22.1	44.9	0.0
Rec_175	5	49.2	20.9	49.2	0.0
Rec_176	5	50	22.1	50.0	0.0
Rec_177	5	50.7	23.2	50.7	0.0
Rec_178	5	47.9	24.9	47.9	0.0
Rec_179	5	43.6	24	43.6	0.0
Rec_180	5	43.6	24.5	43.7	0.1
Rec_181	5	42.1	25	42.2	0.1
Rec_182	5	41.3	24.8	41.4	0.1
Rec_183	5	41.6	26.3	41.7	0.1
Rec_184	5	42.2	25.3	42.3	0.1
Rec_185	5	44.9	26.6	45.0	0.1
Rec_186	5	46	26.2	46.0	0.0
Rec_187	5	50	26.1	50.0	0.0
Rec_188	5	64.6	17.9	64.6	0.0
Rec_189	5	65.4	11.5	65.4	0.0
Rec_190	5	64.8	13.2	64.8	0.0
Rec_191	5	65.9	10	65.9	0.0
Rec_192	5	64.6	12.9	64.6	0.0
Rec_193	5	67	7.8	67.0	0.0
Rec_194	5	58.6	32.3	58.6	0.0
Rec_195	5	56.2	32.2	56.2	0.0
Rec_196	5	55.3	33.1	55.3	0.0
Rec_197	5	54.4	32.9	54.4	0.0
Rec_198	5	52.6	33.2	52.6	0.0
Rec_199	5	52.6	33.5	52.7	0.1
Rec_200	5	52.2	33.3	52.3	0.1
Rec_201	5	50.8	33	50.9	0.1
Rec_202	5	50.9	33.4	51.0	0.1
Rec_203	5	50.3	33.5	50.4	0.1

Ontario Regional Sports Complex EIR
Construction Noise Analysis, Predicted Construction-Related Traffic Noise

Receptor	Receptor Group	Predicted Traffic Noise Level, Leq,1hr			Increase Over Existing
		Existing	Construction	Total (Existing + Construction)	
Rec_204	5	48.6	33.5	48.7	0.1
Rec_205	5	48.6	34.2	48.8	0.2
Rec_206	5	47.7	34.4	47.9	0.2
Rec_207	5	47.2	34.2	47.4	0.2
Rec_208	5	46.9	34.6	47.1	0.2
Rec_209	5	46.6	34.8	46.9	0.3
Rec_210	5	45.9	34.3	46.2	0.3
Rec_211	5	46.3	35.3	46.6	0.3
Rec_212	5	46.2	35.5	46.6	0.4
Rec_213	5	49	41.5	49.7	0.7
Rec_214	5	48.5	40.4	49.1	0.6
Rec_215	5	48	39.4	48.6	0.6
Rec_216	5	47.3	39.1	47.9	0.6
Rec_217	5	48.1	39.6	48.7	0.6
Rec_218	5	46.6	35.5	46.9	0.3
Rec_219	5	46.6	36	47.0	0.4
Rec_220	5	46.2	35.5	46.6	0.4
Rec_221	5	52.3	45.1	53.1	0.8
Rec_222	5	50.8	43.4	51.5	0.7
Rec_223	5	50.4	43.3	51.2	0.8
Rec_224	5	50.3	42.8	51.0	0.7
Rec_225	5	49.7	42.2	50.4	0.7
Rec_226	5	59.2	14.1	59.2	0.0
Rec_227	5	66.6	44	66.6	0.0
Rec_228	5	60.4	42.4	60.5	0.1
Rec_229	5	57.1	41.5	57.2	0.1
Rec_230	5	54.9	41.5	55.1	0.2
Rec_231	5	55.5	44.6	55.8	0.3
Rec_232	5	55.4	45.7	55.8	0.4
Rec_233	5	52.3	42.4	52.7	0.4
Rec_234	5	50.5	40.9	51.0	0.5
Rec_235	5	51	41.3	51.4	0.4
Rec_236	5	50.3	41.9	50.9	0.6
Rec_237	5	50.8	42.6	51.4	0.6
Rec_238	5	51	43.2	51.7	0.7
Rec_239	5	54.4	46.2	55.0	0.6
Rec_240	5	53.3	45.1	53.9	0.6
Rec_241	5	60.3	51.2	60.8	0.5
Rec_242	5	68.8	59.4	69.3	0.5
Rec_243	5	66.9	57.6	67.4	0.5
Rec_244	5	72.5	63.2	73.0	0.5

Ontario Regional Sports Complex EIR
Construction Noise Analysis, Predicted Construction-Related Traffic Noise

Receptor	Receptor Group	Predicted Traffic Noise Level, Leq,1hr			Increase Over Existing
		Existing	Construction	Total (Existing + Construction)	
Rec_245	5	61.1	51.9	61.6	0.5
Rec_246	5	56.4	47.4	56.9	0.5
Rec_247	5	53.1	44.8	53.7	0.6
Rec_248	5	50.5	42.4	51.1	0.6
Rec_249	5	51	43	51.6	0.6
Rec_250	5	47.8	39.6	48.4	0.6
Rec_251	5	47.2	38.8	47.8	0.6
Rec_252	5	46.8	38.9	47.5	0.7
Rec_253	5	47.8	38.9	48.3	0.5
Rec_254	5	51.1	41.9	51.6	0.5
Rec_255	5	48.4	40.4	49.0	0.6
Rec_256	5	48.8	40.4	49.4	0.6
Rec_257	5	46.9	39.1	47.6	0.7
Rec_258	5	48.6	41	49.3	0.7
Rec_259	5	48.6	41.9	49.4	0.8
Rec_260	5	48.5	40.2	49.1	0.6
Rec_261	5	47.4	38.8	48.0	0.6
Rec_262	5	46.7	37.6	47.2	0.5
Rec_263	5	48.6	39.8	49.1	0.5
Rec_264	5	48.2	37.8	48.6	0.4
Rec_265	5	46.2	36.1	46.6	0.4
Rec_266	5	44	35.1	44.5	0.5
Rec_267	5	43	35	43.6	0.6
Rec_268	5	40.7	32.5	41.3	0.6
Rec_269	5	45.7	37.7	46.3	0.6
Rec_271	5	48.8	39.8	49.3	0.5
Rec_272	5	49.5	39.7	49.9	0.4
Rec_273	5	49.6	39	50.0	0.4
Rec_274	5	48.1	38.7	48.6	0.5
Rec_275	5	51.1	39.5	51.4	0.3
Rec_276	5	50.1	40	50.5	0.4
Rec_277	5	51.3	40.5	51.6	0.3
Rec_278	5	53.8	35.5	53.9	0.1
Rec_279	5	55.4	34	55.4	0.0
Rec_280	5	52.4	40.2	52.7	0.3
Rec_281	5	57.6	38.4	57.7	0.1
Rec_282	5	61.7	39	61.7	0.0
Rec_283	5	58.4	38.5	58.4	0.0
Rec_284	5	62.3	39.6	62.3	0.0
Rec_285	5	66.8	42.1	66.8	0.0
Rec_286	5	68	39.7	68.0	0.0

Ontario Regional Sports Complex EIR
Construction Noise Analysis, Predicted Construction-Related Traffic Noise

Receptor	Receptor Group	Predicted Traffic Noise Level, Leq,1hr			Increase Over Existing
		Existing	Construction	Total (Existing + Construction)	
Rec_287	5	60.4	38.5	60.4	0.0
Rec_288	5	62.9	36.2	62.9	0.0
Rec_289	5	69.7	60.7	70.2	0.5
Rec_290	5	72.4	63.3	72.9	0.5
Rec_291	5	72.2	62.5	72.6	0.4
Rec_292	5	69.5	60.5	70.0	0.5
Rec_293	5	72.6	63.8	73.1	0.5
Rec_294	5	72.1	63.3	72.6	0.5
Rec_295	5	72.3	63.6	72.8	0.5
Rec_296	5	72.1	63.3	72.6	0.5
Rec_297	5	72.1	63.4	72.6	0.5
Rec_298	5	71.5	62.8	72.0	0.5
Rec_299	5	71.6	62.9	72.1	0.5
Rec_300	5	71.3	62.7	71.9	0.6
Rec_301	5	71.3	62.7	71.9	0.6
Rec_302	5	69.7	61.4	70.3	0.6
Rec_303	5	68.5	60.8	69.2	0.7
Rec_304	5	54.9	46.6	55.5	0.6
Rec_305	5	51.6	43.7	52.3	0.7
Rec_306	5	55	46.8	55.6	0.6
Rec_307	5	53.3	44.2	53.8	0.5
Rec_308	5	49.9	41.1	50.4	0.5
Rec_309	5	50.2	42.4	50.9	0.7
Rec_310	5	58.1	50.3	58.8	0.7
Rec_311	5	54.1	46.8	54.8	0.7
Rec_312	5	51.3	43.9	52.0	0.7
Rec_313	5	53.9	45.9	54.5	0.6
Rec_314	5	53.9	46	54.6	0.7
Rec_315	5	48.7	41.6	49.5	0.8
Rec_316	5	50.9	45.6	52.0	1.1
Rec_317	5	49.9	44.2	50.9	1.0
Rec_318	5	50.8	43.6	51.6	0.8
Rec_319	5	52.6	45.3	53.3	0.7
Rec_320	5	48.1	40.7	48.8	0.7
Rec_321	5	48.8	42.9	49.8	1.0
Rec_322	5	51.5	44.7	52.3	0.8
Rec_323	5	49.4	42.6	50.2	0.8
Rec_324	5	47.5	40.5	48.3	0.8
Rec_325	5	53.5	47.1	54.4	0.9
Rec_326	5	50.3	43.2	51.1	0.8
Rec_327	5	49.3	42	50.0	0.7

Ontario Regional Sports Complex EIR
Construction Noise Analysis, Predicted Construction-Related Traffic Noise

Receptor	Receptor Group	Predicted Traffic Noise Level, Leq,1hr			Increase Over Existing
		Existing	Construction	Total (Existing + Construction)	
Rec_328	5	70	50	70.0	0.0
Rec_329	5	69.6	49.3	69.6	0.0
Rec_330	5	70.1	45.8	70.1	0.0
Rec_331	5	70.2	45.6	70.2	0.0
Rec_332	5	70.6	45	70.6	0.0
Rec_333	5	58.6	48.8	59.0	0.4
Rec_334	5	54.2	42.5	54.5	0.3
Rec_335	5	55.5	46.6	56.0	0.5
Rec_336	5	53.9	44.4	54.4	0.5
Rec_337	5	52.5	42.4	52.9	0.4
Rec_338	5	56.6	42.1	56.8	0.2
Rec_339	5	53.1	43.5	53.6	0.5
Rec_340	5	50.6	41.8	51.1	0.5
Rec_341	5	52.9	43.9	53.4	0.5
Rec_342	5	51.5	45.1	52.4	0.9
Rec_343	5	51.2	44.2	52.0	0.8
Rec_344	5	51.6	45.7	52.6	1.0
Rec_345	5	49.6	43.5	50.6	1.0
Rec_346	5	46.6	39.3	47.3	0.7
Rec_347	5	46	38.2	46.7	0.7
Rec_348	5	47.9	41.2	48.7	0.8
Rec_349	5	48.3	42.2	49.3	1.0
Rec_350	5	48.1	40.2	48.8	0.7
Rec_351	5	46.6	39.1	47.3	0.7
Rec_352	5	47	40	47.8	0.8
Rec_353	5	54.4	46.3	55.0	0.6
Rec_354	5	53.2	45.5	53.9	0.7
Rec_355	5	50.8	40.7	51.2	0.4
Rec_356	5	49.1	39.3	49.5	0.4
Rec_357	5	70.4	44	70.4	0.0
Rec_358	5	68.1	40.7	68.1	0.0
Rec_359	5	52.3	43.6	52.8	0.5
Rec_360	5	50.1	39.9	50.5	0.4
Rec_361	5	50.6	40.1	51.0	0.4
Rec_362	5	50.9	42.2	51.4	0.5
Rec_363	5	50	39.8	50.4	0.4
Rec_364	5	50.7	39.9	51.0	0.3
Rec_365	5	51.3	42.5	51.8	0.5
Rec_366	5	51.5	42.1	52.0	0.5
Rec_367	5	51.1	42.3	51.6	0.5
Rec_368	5	51	41.8	51.5	0.5

Ontario Regional Sports Complex EIR
Construction Noise Analysis, Predicted Construction-Related Traffic Noise

Receptor	Receptor Group	Predicted Traffic Noise Level, Leq,1hr			Increase Over Existing
		Existing	Construction	Total (Existing + Construction)	
Rec_369	5	48.8	42.5	49.7	0.9
Rec_370	5	51.2	43	51.8	0.6
Rec_371	5	49.4	40	49.9	0.5
Rec_372	5	50.1	40.9	50.6	0.5
Rec_373	5	50.1	41.1	50.6	0.5
Rec_374	5	47.3	37.6	47.7	0.4
Rec_375	5	48	38.8	48.5	0.5
Rec_376	5	52.4	44.7	53.1	0.7
Rec_377	5	48.8	39	49.2	0.4
Rec_378	5	49.2	39.2	49.6	0.4
Rec_379	5	50.9	37.6	51.1	0.2
Rec_380	5	54.9	41.8	55.1	0.2
Rec_381	5	69.7	42.2	69.7	0.0
Rec_382	5	70.1	41.8	70.1	0.0
Rec_383	5	64	37.8	64.0	0.0
Rec_384	5	51.2	40.2	51.5	0.3
Rec_385	5	68.8	39.4	68.8	0.0
Rec_386	5	69.6	39.5	69.6	0.0
Rec_387	5	68.3	37.1	68.3	0.0
Rec_388	5	68.2	37.3	68.2	0.0
Rec_389	5	46.1	33.3	46.3	0.2
Rec_390	5	50.4	35.5	50.5	0.1
Rec_391	5	49.8	37.8	50.1	0.3
Rec_392	5	51.7	34.8	51.8	0.1
Rec_393	5	51.5	38.1	51.7	0.2
Rec_394	5	51.1	38	51.3	0.2
Rec_395	5	50.8	37.1	51.0	0.2
Rec_396	5	49.9	36.1	50.1	0.2
Rec_397	5	47.9	38.3	48.4	0.5
Rec_398	5	48.3	37.6	48.7	0.4
Rec_399	5	50.1	40.4	50.5	0.4
Rec_400	5	48.6	38.4	49.0	0.4
Rec_401	5	46.8	37.2	47.3	0.5
Rec_402	5	69	60	69.5	0.5
Rec_403	5	65.4	56.5	65.9	0.5
Rec_404	5	63.8	55	64.3	0.5
Rec_405	5	61.1	52.4	61.6	0.5
Rec_406	5	57.4	49	58.0	0.6
Rec_407	5	58.3	50.2	58.9	0.6
Rec_408	5	56.3	48.7	57.0	0.7
Rec_409	5	55	47.2	55.7	0.7

Ontario Regional Sports Complex EIR
Construction Noise Analysis, Predicted Construction-Related Traffic Noise

Receptor	Receptor Group	Predicted Traffic Noise Level, Leq,1hr			Increase Over Existing
		Existing	Construction	Total (Existing + Construction)	
Rec_410	5	54.1	46.4	54.8	0.7
Rec_411	5	51.3	44.7	52.2	0.9
Rec_412	5	52	45.3	52.8	0.8
Rec_413	5	48.4	41.6	49.2	0.8
Rec_414	5	50.3	19.7	50.3	0.0
Rec_415	5	52.9	21.8	52.9	0.0
Rec_416	5	45.9	23	45.9	0.0
Rec_417a	5	54.4	26.7	54.4	0.0
Rec_417b	5	57.2	26.7	57.2	0.0
Rec_418	5	52	25.4	52.0	0.0
Rec_419	5	56.8	24.8	56.8	0.0
Rec_420	5	68.9	59.6	69.4	0.5
Rec_421	5	66.6	57.4	67.1	0.5
Rec_422	5	48	40.1	48.7	0.7
Rec_423	5	55.5	47.8	56.2	0.7
Rec_424	5	49.2	41.6	49.9	0.7
Rec_425	5	51.9	44.8	52.7	0.8
Rec_426a	5	50.5	43	51.2	0.7
Rec_426b	5	71.1	43	71.1	0.0
Rec_427	5	41.8	32.9	42.3	0.5
Rec_428	5	51.9	43.4	52.5	0.6
Rec_429	5	54.8	45.8	55.3	0.5
Rec_430	5	50.9	42.4	51.5	0.6
Rec_431	5	54.2	45.3	54.7	0.5
Rec_432	5	49.7	41.5	50.3	0.6
Rec_433	5	53.5	44.6	54.0	0.5
Rec_434	5	49.5	41.3	50.1	0.6
Rec_435	5	53.3	44.4	53.8	0.5
Rec_436	5	47.1	38.8	47.7	0.6
Rec_437	5	50.9	42	51.4	0.5
Rec_438	5	47.2	39	47.8	0.6
Rec_439	5	51.2	42.2	51.7	0.5
Rec_440	5	48.6	39.5	49.1	0.5
Rec_441	5	44	35.1	44.5	0.5
Rec_442	5	47.8	37.5	48.2	0.4
Rec_443	5	49.3	38.4	49.6	0.3
Rec_444	5	49.2	38	49.5	0.3
Rec_445	5	42.6	33.9	43.1	0.5
Rec_446	5	43.2	34.2	43.7	0.5
Rec_447	5	43.1	34.2	43.6	0.5
Rec_448	5	43.3	34.2	43.8	0.5

Ontario Regional Sports Complex EIR
Construction Noise Analysis, Predicted Construction-Related Traffic Noise

Receptor	Receptor Group	Predicted Traffic Noise Level, Leq,1hr			Increase Over Existing
		Existing	Construction	Total (Existing + Construction)	
Rec_449	5	57.8	50.2	58.5	0.7
Rec_450	5	60.7	52.4	61.3	0.6
Rec_451	5	57.5	49.6	58.2	0.7
Rec_452	5	55.2	47.5	55.9	0.7
Rec_453	5	56.1	48.1	56.7	0.6
Rec_454	5	65.5	56.5	66.0	0.5
Rec_455	5	51.7	44	52.4	0.7
Rec_456	5	49	41.5	49.7	0.7
Rec_457	5	47.6	40.2	48.3	0.7
Rec_458	5	50.5	43	51.2	0.7
Rec_459	5	63.7	54.5	64.2	0.5
Rec_460	5	62.3	53.8	62.9	0.6
Rec_461	5	57.1	48.7	57.7	0.6
Rec_462	5	73.3	63.6	73.7	0.4
Rec_463	5	63.6	55.1	64.2	0.6
Rec_464	5	59.8	52.1	60.5	0.7
Rec_465	5	56.5	49.3	57.3	0.8
Rec_466	5	53.1	45.2	53.8	0.7
Rec_467	5	50.8	42.2	51.4	0.6
Rec_468	5	49.2	40.1	49.7	0.5
Rec_469	5	48.6	38	49.0	0.4
Rec_470	5	48.9	36.8	49.2	0.3
Rec_471	5	50.5	36	50.7	0.2
Rec_472	5	53.2	35.6	53.3	0.1
Rec_473	5	55.8	34.8	55.8	0.0
Rec_474	5	59.6	33.9	59.6	0.0
Rec_475	5	67.7	30.4	67.7	0.0

ATTACHMENT B. PREDICTED CONSTRUCTION VIBRATION LEVELS

Ontario Regional Sports Complex EIR
FTA Construction Vibration Calcuations - Structural Damage & Annoyance

Receptor	Land Use	FTA Land Use Category	Distance from Work (feet)	Vibe (PPV in/sec)			Vibe (VdB)			Building Type Structural
				Vibratory Roller	Large Bulldozer	Loaded Trucks	Vibratory Roller	Large Bulldozer	Loaded Trucks	Type III
Rec_1	Residential	2	282.7	0.0146	0.0062	0.0062	6.5	6.0	6.0	No
Rec_2	Residential	2	375.2	0.0107	0.0045	0.0045	4.8	4.4	4.4	No
Rec_3	Residential	2	430.5	0.0092	0.0039	0.0039	4.1	3.8	3.8	No
Rec_4	Residential	2	475.3	0.0082	0.0035	0.0035	3.7	3.4	3.4	No
Rec_5	Residential	2	541.6	0.0071	0.0030	0.0030	3.2	3.0	3.0	No
Rec_6	Residential	2	588.2	0.0065	0.0028	0.0028	2.9	2.7	2.7	No
Rec_7	Residential	2	646.9	0.0059	0.0025	0.0025	2.6	2.4	2.4	No
Rec_8	Residential	2	696.9	0.0054	0.0023	0.0023	2.4	2.2	2.2	No
Rec_9	Residential	2	758.6	0.0049	0.0021	0.0021	2.2	2.0	2.0	No
Rec_10	Residential	2	815.1	0.0045	0.0019	0.0019	2.0	1.9	1.9	No
Rec_11	Residential	2	864.5	0.0043	0.0018	0.0018	1.9	1.8	1.8	No
Rec_12	Residential	2	236.3	0.0177	0.0075	0.0075	7.9	7.4	7.4	No
Rec_13	Residential	2	190.2	0.0225	0.0095	0.0095	10.1	9.3	9.3	No
Rec_14	Residential	2	188.1	0.0228	0.0097	0.0097	10.2	9.4	9.4	No
Rec_15	Residential	2	370.9	0.0108	0.0046	0.0046	4.8	4.5	4.5	No
Rec_16	Residential	2	439.0	0.0090	0.0038	0.0038	4.0	3.7	3.7	No
Rec_17	Residential	2	482.0	0.0081	0.0034	0.0034	3.6	3.4	3.4	No
Rec_18	Residential	2	537.9	0.0072	0.0030	0.0030	3.2	3.0	3.0	No
Rec_19	Residential	2	593.2	0.0064	0.0027	0.0027	2.9	2.7	2.7	No
Rec_20	Residential	2	640.3	0.0059	0.0025	0.0025	2.7	2.5	2.5	No
Rec_21	Residential	2	704.2	0.0053	0.0023	0.0023	2.4	2.2	2.2	No
Rec_22	Residential	2	761.3	0.0049	0.0021	0.0021	2.2	2.0	2.0	No
Rec_23	Residential	2	811.8	0.0046	0.0019	0.0019	2.0	1.9	1.9	No
Rec_24	Residential	2	870.6	0.0042	0.0018	0.0018	1.9	1.8	1.8	No
Rec_25	Residential	2	924.7	0.0040	0.0017	0.0017	1.8	1.6	1.6	No
Rec_26	Residential	2	192.4	0.0222	0.0094	0.0094	10.0	9.2	9.2	No
Rec_27	Residential	2	194.4	0.0220	0.0093	0.0093	9.8	9.1	9.1	No
Rec_28	Residential	2	188.8	0.0227	0.0096	0.0096	10.2	9.4	9.4	No
Rec_29	Residential	2	192.0	0.0223	0.0095	0.0095	10.0	9.2	9.2	No
Rec_30	Residential	2	194.5	0.0220	0.0093	0.0093	9.8	9.1	9.1	No
Rec_31	Residential	2	190.7	0.0225	0.0095	0.0095	10.1	9.3	9.3	No
Rec_32	Residential	2	191.5	0.0224	0.0095	0.0095	10.0	9.3	9.3	No
Rec_33	Residential	2	376.3	0.0106	0.0045	0.0045	4.8	4.4	4.4	No
Rec_34	Residential	2	434.5	0.0091	0.0038	0.0038	4.1	3.8	3.8	No
Rec_35	Residential	2	488.0	0.0080	0.0034	0.0034	3.6	3.3	3.3	No
Rec_36	Residential	2	543.8	0.0071	0.0030	0.0030	3.2	2.9	2.9	No
Rec_37	Residential	2	607.3	0.0063	0.0027	0.0027	2.8	2.6	2.6	No

Ontario Regional Sports Complex EIR
FTA Construction Vibration Calcuations - Structural Damage & Annoyance

Receptor	Land Use	FTA Land Use Category	Distance from Work (feet)	Vibe (PPV in/sec)			Vibe (VdB)			Building Type Structural
				Vibratory Roller	Large Bulldozer	Loaded Trucks	Vibratory Roller	Large Bulldozer	Loaded Trucks	Type III
Rec_38	Residential	2	670.6	0.0056	0.0024	0.0024	2.5	2.3	2.3	No
Rec_39	Residential	2	728.8	0.0051	0.0022	0.0022	2.3	2.1	2.1	No
Rec_40	Residential	2	786.4	0.0047	0.0020	0.0020	2.1	2.0	2.0	No
Rec_41	Residential	2	846.3	0.0044	0.0018	0.0018	2.0	1.8	1.8	No
Rec_42	Residential	2	897.5	0.0041	0.0017	0.0017	1.8	1.7	1.7	No
Rec_43	Residential	2	358.0	0.0112	0.0048	0.0048	5.0	4.7	4.7	No
Rec_44	Residential	2	431.9	0.0091	0.0039	0.0039	4.1	3.8	3.8	No
Rec_45	Residential	2	484.9	0.0080	0.0034	0.0034	3.6	3.3	3.3	No
Rec_46	Residential	2	535.5	0.0072	0.0031	0.0031	3.2	3.0	3.0	No
Rec_47	Residential	2	596.0	0.0064	0.0027	0.0027	2.9	2.7	2.7	No
Rec_48	Residential	2	640.2	0.0059	0.0025	0.0025	2.7	2.5	2.5	No
Rec_49	Residential	2	690.8	0.0055	0.0023	0.0023	2.4	2.3	2.3	No
Rec_50	Residential	2	762.9	0.0049	0.0021	0.0021	2.2	2.0	2.0	No
Rec_51	Residential	2	826.3	0.0045	0.0019	0.0019	2.0	1.9	1.9	No
Rec_52	Residential	2	871.1	0.0042	0.0018	0.0018	1.9	1.8	1.8	No
Rec_53	Residential	2	375.0	0.0107	0.0045	0.0045	4.8	4.4	4.4	No
Rec_54	Residential	2	433.2	0.0091	0.0039	0.0039	4.1	3.8	3.8	No
Rec_55	Residential	2	484.4	0.0081	0.0034	0.0034	3.6	3.3	3.3	No
Rec_56	Residential	2	542.6	0.0071	0.0030	0.0030	3.2	2.9	2.9	No
Rec_57	Residential	2	593.8	0.0064	0.0027	0.0027	2.9	2.7	2.7	No
Rec_58	Residential	2	652.0	0.0058	0.0025	0.0025	2.6	2.4	2.4	No
Rec_59	Residential	2	702.6	0.0054	0.0023	0.0023	2.4	2.2	2.2	No
Rec_60	Residential	2	763.6	0.0049	0.0021	0.0021	2.2	2.0	2.0	No
Rec_61	Residential	2	810.8	0.0046	0.0019	0.0019	2.0	1.9	1.9	No
Rec_62	Residential	2	874.2	0.0042	0.0018	0.0018	1.9	1.7	1.7	No
Rec_63	Residential	2	961.5	0.0038	0.0016	0.0016	1.7	1.6	1.6	No
Rec_64	Residential	2	925.6	0.0040	0.0017	0.0017	1.8	1.6	1.6	No
Rec_65	Residential	2	916.0	0.0040	0.0017	0.0017	1.8	1.7	1.7	No
Rec_66	Residential	2	913.9	0.0040	0.0017	0.0017	1.8	1.7	1.7	No
Rec_67	Residential	2	918.5	0.0040	0.0017	0.0017	1.8	1.7	1.7	No
Rec_68	Residential	2	914.8	0.0040	0.0017	0.0017	1.8	1.7	1.7	No
Rec_69	Residential	2	921.5	0.0040	0.0017	0.0017	1.8	1.6	1.6	No
Rec_70	Residential	2	875.7	0.0042	0.0018	0.0018	1.9	1.7	1.7	No
Rec_71	Residential	2	816.3	0.0045	0.0019	0.0019	2.0	1.9	1.9	No
Rec_72	Residential	2	762.2	0.0049	0.0021	0.0021	2.2	2.0	2.0	No
Rec_73	Residential	2	707.6	0.0053	0.0023	0.0023	2.4	2.2	2.2	No
Rec_74	Residential	2	653.4	0.0058	0.0025	0.0025	2.6	2.4	2.4	No

Ontario Regional Sports Complex EIR
FTA Construction Vibration Calcuations - Structural Damage & Annoyance

Receptor	Land Use	FTA Land Use Category	Distance from Work (feet)	Vibe (PPV in/sec)			Vibe (VdB)			Building Type Structural
				Vibratory Roller	Large Bulldozer	Loaded Trucks	Vibratory Roller	Large Bulldozer	Loaded Trucks	Type III
Rec_75	Residential	2	598.2	0.0064	0.0027	0.0027	2.9	2.6	2.6	No
Rec_76	Residential	2	546.4	0.0071	0.0030	0.0030	3.2	2.9	2.9	No
Rec_77	Residential	2	486.5	0.0080	0.0034	0.0034	3.6	3.3	3.3	No
Rec_78	Residential	2	435.9	0.0090	0.0038	0.0038	4.1	3.7	3.7	No
Rec_79	Residential	2	380.1	0.0105	0.0045	0.0045	4.7	4.4	4.4	No
Rec_80	Residential	2	380.8	0.0105	0.0045	0.0045	4.7	4.4	4.4	No
Rec_81	Residential	2	434.9	0.0091	0.0038	0.0038	4.1	3.8	3.8	No
Rec_82	Residential	2	489.0	0.0080	0.0034	0.0034	3.6	3.3	3.3	No
Rec_83	Residential	2	542.0	0.0071	0.0030	0.0030	3.2	3.0	3.0	No
Rec_84	Residential	2	596.6	0.0064	0.0027	0.0027	2.9	2.7	2.7	No
Rec_85	Residential	2	653.0	0.0058	0.0025	0.0025	2.6	2.4	2.4	No
Rec_86	Residential	2	706.6	0.0053	0.0023	0.0023	2.4	2.2	2.2	No
Rec_87	Residential	2	764.1	0.0049	0.0021	0.0021	2.2	2.0	2.0	No
Rec_88	Residential	2	817.1	0.0045	0.0019	0.0019	2.0	1.9	1.9	No
Rec_89	Residential	2	872.9	0.0042	0.0018	0.0018	1.9	1.7	1.7	No
Rec_90	Residential	2	796.9	0.0047	0.0020	0.0020	2.1	1.9	1.9	No
Rec_91	Residential	2	800.6	0.0046	0.0020	0.0020	2.1	1.9	1.9	No
Rec_92	Residential	2	754.7	0.0049	0.0021	0.0021	2.2	2.0	2.0	No
Rec_93	Residential	2	700.6	0.0054	0.0023	0.0023	2.4	2.2	2.2	No
Rec_94	Residential	2	644.7	0.0059	0.0025	0.0025	2.6	2.4	2.4	No
Rec_95	Residential	2	594.7	0.0064	0.0027	0.0027	2.9	2.7	2.7	No
Rec_96	Residential	2	534.2	0.0072	0.0031	0.0031	3.2	3.0	3.0	No
Rec_97	Residential	2	477.2	0.0082	0.0035	0.0035	3.7	3.4	3.4	No
Rec_98	Residential	2	423.0	0.0094	0.0040	0.0040	4.2	3.9	3.9	No
Rec_99	Residential	2	367.2	0.0109	0.0046	0.0046	4.9	4.5	4.5	No
Rec_100	Residential	2	367.4	0.0109	0.0046	0.0046	4.9	4.5	4.5	No
Rec_101	Residential	2	427.3	0.0092	0.0039	0.0039	4.1	3.8	3.8	No
Rec_102	Residential	2	481.4	0.0081	0.0034	0.0034	3.6	3.4	3.4	No
Rec_103	Residential	2	535.6	0.0072	0.0031	0.0031	3.2	3.0	3.0	No
Rec_104	Residential	2	591.4	0.0065	0.0027	0.0027	2.9	2.7	2.7	No
Rec_105	Residential	2	644.9	0.0059	0.0025	0.0025	2.6	2.4	2.4	No
Rec_106	Residential	2	697.3	0.0054	0.0023	0.0023	2.4	2.2	2.2	No
Rec_107	Residential	2	750.2	0.0050	0.0021	0.0021	2.2	2.1	2.1	No
Rec_108	Residential	2	794.1	0.0047	0.0020	0.0020	2.1	1.9	1.9	No
Rec_109	Residential	2	795.6	0.0047	0.0020	0.0020	2.1	1.9	1.9	No
Rec_110	Residential	2	805.0	0.0046	0.0020	0.0020	2.1	1.9	1.9	No
Rec_111	Residential	2	757.0	0.0049	0.0021	0.0021	2.2	2.0	2.0	No

Ontario Regional Sports Complex EIR
FTA Construction Vibration Calcuations - Structural Damage & Annoyance

Receptor	Land Use	FTA Land Use Category	Distance from Work (feet)	Vibe (PPV in/sec)			Vibe (VdB)			Building Type Structural
				Vibratory Roller	Large Bulldozer	Loaded Trucks	Vibratory Roller	Large Bulldozer	Loaded Trucks	Type III
Rec_112	Residential	2	700.0	0.0054	0.0023	0.0023	2.4	2.2	2.2	No
Rec_113	Residential	2	644.1	0.0059	0.0025	0.0025	2.6	2.4	2.4	No
Rec_114	Residential	2	589.5	0.0065	0.0028	0.0028	2.9	2.7	2.7	No
Rec_115	Residential	2	537.7	0.0072	0.0030	0.0030	3.2	3.0	3.0	No
Rec_116	Residential	2	481.3	0.0081	0.0034	0.0034	3.6	3.4	3.4	No
Rec_117	Residential	2	427.2	0.0093	0.0039	0.0039	4.1	3.8	3.8	No
Rec_118	Residential	2	368.4	0.0109	0.0046	0.0046	4.9	4.5	4.5	No
Rec_119	Residential	2	372.1	0.0108	0.0046	0.0046	4.8	4.5	4.5	No
Rec_120	Residential	2	426.3	0.0093	0.0039	0.0039	4.2	3.8	3.8	No
Rec_121	Residential	2	478.0	0.0082	0.0035	0.0035	3.7	3.4	3.4	No
Rec_122	Residential	2	533.9	0.0072	0.0031	0.0031	3.2	3.0	3.0	No
Rec_123	Residential	2	589.7	0.0065	0.0028	0.0028	2.9	2.7	2.7	No
Rec_124	Residential	2	643.8	0.0059	0.0025	0.0025	2.6	2.4	2.4	No
Rec_125	Residential	2	701.4	0.0054	0.0023	0.0023	2.4	2.2	2.2	No
Rec_126	Residential	2	755.5	0.0049	0.0021	0.0021	2.2	2.0	2.0	No
Rec_127	Residential	2	798.9	0.0046	0.0020	0.0020	2.1	1.9	1.9	No
Rec_128	Residential	2	797.4	0.0047	0.0020	0.0020	2.1	1.9	1.9	No
Rec_129	Residential	2	801.7	0.0046	0.0020	0.0020	2.1	1.9	1.9	No
Rec_130	Residential	2	912.1	0.0040	0.0017	0.0017	1.8	1.7	1.7	No
Rec_131	Residential	2	909.9	0.0040	0.0017	0.0017	1.8	1.7	1.7	No
Rec_132	Residential	2	909.3	0.0040	0.0017	0.0017	1.8	1.7	1.7	No
Rec_133	Residential	2	909.9	0.0040	0.0017	0.0017	1.8	1.7	1.7	No
Rec_134	Residential	2	862.2	0.0043	0.0018	0.0018	1.9	1.8	1.8	No
Rec_135	Residential	2	809.2	0.0046	0.0019	0.0019	2.1	1.9	1.9	No
Rec_136	Residential	2	756.9	0.0049	0.0021	0.0021	2.2	2.0	2.0	No
Rec_137	Residential	2	701.0	0.0054	0.0023	0.0023	2.4	2.2	2.2	No
Rec_138	Residential	2	648.1	0.0058	0.0025	0.0025	2.6	2.4	2.4	No
Rec_139	Residential	2	589.9	0.0065	0.0027	0.0027	2.9	2.7	2.7	No
Rec_140	Residential	2	537.0	0.0072	0.0030	0.0030	3.2	3.0	3.0	No
Rec_141	Residential	2	483.5	0.0081	0.0034	0.0034	3.6	3.3	3.3	No
Rec_142	Residential	2	427.6	0.0092	0.0039	0.0039	4.1	3.8	3.8	No
Rec_143	Residential	2	371.2	0.0108	0.0046	0.0046	4.8	4.5	4.5	No
Rec_144	Residential	2	368.9	0.0109	0.0046	0.0046	4.9	4.5	4.5	No
Rec_145	Residential	2	428.8	0.0092	0.0039	0.0039	4.1	3.8	3.8	No
Rec_146	Residential	2	477.1	0.0082	0.0035	0.0035	3.7	3.4	3.4	No
Rec_147	Residential	2	538.7	0.0072	0.0030	0.0030	3.2	3.0	3.0	No
Rec_148	Residential	2	591.7	0.0065	0.0027	0.0027	2.9	2.7	2.7	No

Ontario Regional Sports Complex EIR
FTA Construction Vibration Calcuations - Structural Damage & Annoyance

Receptor	Land Use	FTA Land Use Category	Distance from Work (feet)	Vibe (PPV in/sec)			Vibe (VdB)			Building Type Structural
				Vibratory Roller	Large Bulldozer	Loaded Trucks	Vibratory Roller	Large Bulldozer	Loaded Trucks	Type III
Rec_149	Residential	2	644.6	0.0059	0.0025	0.0025	2.6	2.4	2.4	No
Rec_150	Residential	2	699.3	0.0054	0.0023	0.0023	2.4	2.2	2.2	No
Rec_151	Residential	2	755.7	0.0049	0.0021	0.0021	2.2	2.0	2.0	No
Rec_152	Residential	2	812.1	0.0046	0.0019	0.0019	2.0	1.9	1.9	No
Rec_153	Residential	2	866.2	0.0043	0.0018	0.0018	1.9	1.8	1.8	No
Rec_154	Residential	2	909.9	0.0040	0.0017	0.0017	1.8	1.7	1.7	No
Rec_155	Residential	2	914.0	0.0040	0.0017	0.0017	1.8	1.7	1.7	No
Rec_156	Residential	2	868.6	0.0042	0.0018	0.0018	1.9	1.8	1.8	No
Rec_157	Residential	2	807.0	0.0046	0.0019	0.0019	2.1	1.9	1.9	No
Rec_158	Residential	2	757.5	0.0049	0.0021	0.0021	2.2	2.0	2.0	No
Rec_159	Residential	2	705.2	0.0053	0.0023	0.0023	2.4	2.2	2.2	No
Rec_160	Residential	2	648.2	0.0058	0.0025	0.0025	2.6	2.4	2.4	No
Rec_161	Residential	2	592.3	0.0065	0.0027	0.0027	2.9	2.7	2.7	No
Rec_162	Residential	2	537.6	0.0072	0.0030	0.0030	3.2	3.0	3.0	No
Rec_163	Residential	2	465.1	0.0084	0.0036	0.0036	3.8	3.5	3.5	No
Rec_164	Residential	2	430.6	0.0092	0.0039	0.0039	4.1	3.8	3.8	No
Rec_165	Residential	2	370.1	0.0108	0.0046	0.0046	4.8	4.5	4.5	No
Rec_166	Residential	2	372.4	0.0108	0.0046	0.0046	4.8	4.5	4.5	No
Rec_167	Residential	2	425.9	0.0093	0.0039	0.0039	4.2	3.8	3.8	No
Rec_168	Residential	2	484.1	0.0081	0.0034	0.0034	3.6	3.3	3.3	No
Rec_169	Residential	2	540.0	0.0072	0.0030	0.0030	3.2	3.0	3.0	No
Rec_170	Residential	2	598.1	0.0064	0.0027	0.0027	2.9	2.6	2.6	No
Rec_171	Residential	2	689.5	0.0055	0.0023	0.0023	2.4	2.3	2.3	No
Rec_172	Residential	2	730.2	0.0051	0.0022	0.0022	2.3	2.1	2.1	No
Rec_173	Residential	2	737.2	0.0051	0.0022	0.0022	2.3	2.1	2.1	No
Rec_174	Residential	2	730.2	0.0051	0.0022	0.0022	2.3	2.1	2.1	No
Rec_175	Residential	2	736.1	0.0051	0.0022	0.0022	2.3	2.1	2.1	No
Rec_176	Residential	2	734.9	0.0051	0.0022	0.0022	2.3	2.1	2.1	No
Rec_177	Residential	2	730.9	0.0051	0.0022	0.0022	2.3	2.1	2.1	No
Rec_178	Residential	2	435.3	0.0091	0.0038	0.0038	4.1	3.8	3.8	No
Rec_179	Residential	2	412.6	0.0096	0.0041	0.0041	4.3	4.0	4.0	No
Rec_180	Residential	2	431.8	0.0091	0.0039	0.0039	4.1	3.8	3.8	No
Rec_181	Residential	2	426.0	0.0093	0.0039	0.0039	4.2	3.8	3.8	No
Rec_182	Residential	2	429.5	0.0092	0.0039	0.0039	4.1	3.8	3.8	No
Rec_183	Residential	2	491.1	0.0079	0.0034	0.0034	3.6	3.3	3.3	No
Rec_184	Residential	2	512.7	0.0076	0.0032	0.0032	3.4	3.1	3.1	No
Rec_185	Residential	2	497.0	0.0078	0.0033	0.0033	3.5	3.2	3.2	No

Ontario Regional Sports Complex EIR
FTA Construction Vibration Calcuations - Structural Damage & Annoyance

Receptor	Land Use	FTA Land Use Category	Distance from Work (feet)	Vibe (PPV in/sec)			Vibe (VdB)			Building Type Structural
				Vibratory Roller	Large Bulldozer	Loaded Trucks	Vibratory Roller	Large Bulldozer	Loaded Trucks	Type III
Rec_186	Residential	2	498.7	0.0078	0.0033	0.0033	3.5	3.2	3.2	No
Rec_187	Residential	2	491.2	0.0079	0.0034	0.0034	3.6	3.3	3.3	No
Rec_188	Residential	2	664.0	0.0057	0.0024	0.0024	2.5	2.4	2.4	No
Rec_189	Residential	2	594.8	0.0064	0.0027	0.0027	2.9	2.7	2.7	No
Rec_190	Residential	2	536.6	0.0072	0.0031	0.0031	3.2	3.0	3.0	No
Rec_191	Residential	2	482.6	0.0081	0.0034	0.0034	3.6	3.4	3.4	No
Rec_192	Residential	2	429.0	0.0092	0.0039	0.0039	4.1	3.8	3.8	No
Rec_193	Residential	2	371.0	0.0108	0.0046	0.0046	4.8	4.5	4.5	No
Rec_194	Residential	2	195.7	0.0218	0.0093	0.0093	9.8	9.0	9.0	No
Rec_195	Residential	2	205.0	0.0208	0.0088	0.0088	9.3	8.6	8.6	No
Rec_196	Residential	2	197.4	0.0216	0.0092	0.0092	9.7	9.0	9.0	No
Rec_197	Residential	2	195.6	0.0218	0.0093	0.0093	9.8	9.0	9.0	No
Rec_198	Residential	2	206.7	0.0206	0.0087	0.0087	9.2	8.5	8.5	No
Rec_199	Residential	2	196.8	0.0217	0.0092	0.0092	9.7	9.0	9.0	No
Rec_200	Residential	2	197.4	0.0216	0.0092	0.0092	9.7	9.0	9.0	No
Rec_201	Residential	2	204.9	0.0208	0.0088	0.0088	9.3	8.6	8.6	No
Rec_202	Residential	2	193.8	0.0221	0.0094	0.0094	9.9	9.1	9.1	No
Rec_203	Residential	2	196.2	0.0218	0.0092	0.0092	9.7	9.0	9.0	No
Rec_204	Residential	2	204.3	0.0208	0.0088	0.0088	9.3	8.6	8.6	No
Rec_205	Residential	2	195.6	0.0219	0.0093	0.0093	9.8	9.1	9.1	No
Rec_206	Residential	2	195.5	0.0219	0.0093	0.0093	9.8	9.1	9.1	No
Rec_207	Residential	2	204.3	0.0208	0.0088	0.0088	9.3	8.6	8.6	No
Rec_208	Residential	2	192.0	0.0223	0.0094	0.0094	10.0	9.2	9.2	No
Rec_209	Residential	2	192.6	0.0222	0.0094	0.0094	9.9	9.2	9.2	No
Rec_210	Residential	2	195.9	0.0218	0.0092	0.0092	9.8	9.0	9.0	No
Rec_211	Residential	2	195.8	0.0218	0.0093	0.0093	9.8	9.0	9.0	No
Rec_212	Residential	2	193.8	0.0221	0.0094	0.0094	9.9	9.1	9.1	No
Rec_213	Residential	2	195.3	0.0219	0.0093	0.0093	9.8	9.1	9.1	No
Rec_214	Residential	2	190.2	0.0225	0.0095	0.0095	10.1	9.3	9.3	No
Rec_215	Residential	2	200.4	0.0213	0.0090	0.0090	9.5	8.8	8.8	No
Rec_216	Residential	2	197.7	0.0216	0.0092	0.0092	9.7	8.9	8.9	No
Rec_217	Residential	2	191.0	0.0224	0.0095	0.0095	10.0	9.3	9.3	No
Rec_218	Residential	2	191.9	0.0223	0.0095	0.0095	10.0	9.2	9.2	No
Rec_219	Residential	2	192.7	0.0222	0.0094	0.0094	9.9	9.2	9.2	No
Rec_220	Residential	2	199.3	0.0214	0.0091	0.0091	9.6	8.9	8.9	No
Rec_221	Residential	2	198.7	0.0215	0.0091	0.0091	9.6	8.9	8.9	No
Rec_222	Residential	2	205.3	0.0207	0.0088	0.0088	9.3	8.6	8.6	No

Ontario Regional Sports Complex EIR
FTA Construction Vibration Calcuations - Structural Damage & Annoyance

Receptor	Land Use	FTA Land Use Category	Distance from Work (feet)	Vibe (PPV in/sec)			Vibe (VdB)			Building Type Structural
				Vibratory Roller	Large Bulldozer	Loaded Trucks	Vibratory Roller	Large Bulldozer	Loaded Trucks	Type III
Rec_223	Residential	2	202.1	0.0211	0.0089	0.0089	9.4	8.7	8.7	No
Rec_224	Residential	2	198.8	0.0215	0.0091	0.0091	9.6	8.9	8.9	No
Rec_225	Residential	2	201.4	0.0212	0.0090	0.0090	9.5	8.8	8.8	No
Rec_226	Residential	2	721.5	0.0052	0.0022	0.0022	2.3	2.2	2.2	No
Rec_227	Residential	2	340.7	0.0119	0.0050	0.0050	5.3	4.9	4.9	No
Rec_228	Residential	2	342.1	0.0118	0.0050	0.0050	5.3	4.9	4.9	No
Rec_229	Residential	2	334.9	0.0121	0.0051	0.0051	5.4	5.0	5.0	No
Rec_230	Residential	2	337.2	0.0120	0.0051	0.0051	5.4	5.0	5.0	No
Rec_231	Residential	2	339.2	0.0119	0.0051	0.0051	5.3	4.9	4.9	No
Rec_232	Residential	2	339.5	0.0119	0.0050	0.0050	5.3	4.9	4.9	No
Rec_233	Residential	2	338.4	0.0120	0.0051	0.0051	5.4	5.0	5.0	No
Rec_234	Residential	2	361.4	0.0111	0.0047	0.0047	5.0	4.6	4.6	No
Rec_235	Residential	2	338.8	0.0119	0.0051	0.0051	5.3	4.9	4.9	No
Rec_236	Residential	2	340.2	0.0119	0.0050	0.0050	5.3	4.9	4.9	No
Rec_237	Residential	2	346.4	0.0117	0.0049	0.0049	5.2	4.8	4.8	No
Rec_238	Residential	2	358.1	0.0112	0.0048	0.0048	5.0	4.7	4.7	No
Rec_239	Residential	2	295.2	0.0139	0.0059	0.0059	6.2	5.8	5.8	No
Rec_240	Residential	2	235.7	0.0178	0.0075	0.0075	8.0	7.4	7.4	No
Rec_241	Residential	2	162.1	0.0269	0.0114	0.0114	12.0	11.1	11.1	No
Rec_242	Residential	2	72.8	0.0648	0.0274	0.0274	29.0	26.8	26.8	No
Rec_243	Residential	2	102.8	0.0444	0.0188	0.0188	19.9	18.4	18.4	No
Rec_244	Residential	2	34.5	0.1472	0.0624	0.0624	65.9	61.0	61.0	No
Rec_245	Residential	2	183.7	0.0234	0.0099	0.0099	10.5	9.7	9.7	No
Rec_246	Residential	2	250.5	0.0166	0.0071	0.0071	7.5	6.9	6.9	No
Rec_247	Residential	2	315.7	0.0129	0.0055	0.0055	5.8	5.3	5.3	No
Rec_248	Residential	2	390.1	0.0102	0.0043	0.0043	4.6	4.2	4.2	No
Rec_249	Residential	2	456.0	0.0086	0.0036	0.0036	3.9	3.6	3.6	No
Rec_250	Residential	2	498.7	0.0078	0.0033	0.0033	3.5	3.2	3.2	No
Rec_251	Residential	2	629.0	0.0060	0.0026	0.0026	2.7	2.5	2.5	No
Rec_252	Residential	2	661.8	0.0057	0.0024	0.0024	2.6	2.4	2.4	No
Rec_253	Residential	2	592.1	0.0065	0.0027	0.0027	2.9	2.7	2.7	No
Rec_254	Residential	2	503.4	0.0077	0.0033	0.0033	3.5	3.2	3.2	No
Rec_255	Residential	2	576.1	0.0067	0.0028	0.0028	3.0	2.8	2.8	No
Rec_256	Residential	2	654.6	0.0058	0.0025	0.0025	2.6	2.4	2.4	No
Rec_257	Residential	2	746.6	0.0050	0.0021	0.0021	2.2	2.1	2.1	No
Rec_258	Residential	2	663.5	0.0057	0.0024	0.0024	2.6	2.4	2.4	No
Rec_259	Residential	2	709.6	0.0053	0.0022	0.0022	2.4	2.2	2.2	No

Ontario Regional Sports Complex EIR
FTA Construction Vibration Calcuations - Structural Damage & Annoyance

Receptor	Land Use	FTA Land Use Category	Distance from Work (feet)	Vibe (PPV in/sec)			Vibe (VdB)			Building Type Structural
				Vibratory Roller	Large Bulldozer	Loaded Trucks	Vibratory Roller	Large Bulldozer	Loaded Trucks	Type III
Rec_260	Residential	2	769.1	0.0048	0.0021	0.0021	2.2	2.0	2.0	No
Rec_261	Residential	2	788.0	0.0047	0.0020	0.0020	2.1	2.0	2.0	No
Rec_262	Residential	2	809.2	0.0046	0.0019	0.0019	2.1	1.9	1.9	No
Rec_263	Residential	2	838.9	0.0044	0.0019	0.0019	2.0	1.8	1.8	No
Rec_264	Residential	2	911.8	0.0040	0.0017	0.0017	1.8	1.7	1.7	No
Rec_265	Residential	2	873.7	0.0042	0.0018	0.0018	1.9	1.7	1.7	No
Rec_266	Residential	2	835.3	0.0044	0.0019	0.0019	2.0	1.8	1.8	No
Rec_267	Residential	2	906.0	0.0040	0.0017	0.0017	1.8	1.7	1.7	No
Rec_268	Residential	2	923.2	0.0040	0.0017	0.0017	1.8	1.6	1.6	No
Rec_269	Residential	2	870.5	0.0042	0.0018	0.0018	1.9	1.8	1.8	No
Rec_270	Residential	2	954.1	0.0038	0.0016	0.0016	1.7	1.6	1.6	No
Rec_271	Residential	2	692.8	0.0054	0.0023	0.0023	2.4	2.3	2.3	No
Rec_272	Residential	2	608.6	0.0063	0.0027	0.0027	2.8	2.6	2.6	No
Rec_273	Residential	2	554.9	0.0069	0.0029	0.0029	3.1	2.9	2.9	No
Rec_274	Residential	2	760.6	0.0049	0.0021	0.0021	2.2	2.0	2.0	No
Rec_275	Residential	2	675.4	0.0056	0.0024	0.0024	2.5	2.3	2.3	No
Rec_276	Residential	2	615.2	0.0062	0.0026	0.0026	2.8	2.6	2.6	No
Rec_277	Residential	2	546.8	0.0071	0.0030	0.0030	3.2	2.9	2.9	No
Rec_278	Residential	2	923.9	0.0040	0.0017	0.0017	1.8	1.6	1.6	No
Rec_279	Residential	2	870.2	0.0042	0.0018	0.0018	1.9	1.8	1.8	No
Rec_280	Residential	2	620.7	0.0061	0.0026	0.0026	2.7	2.5	2.5	No
Rec_281	Residential	2	584.5	0.0066	0.0028	0.0028	2.9	2.7	2.7	No
Rec_282	Residential	2	579.8	0.0066	0.0028	0.0028	3.0	2.7	2.7	No
Rec_283	Residential	2	571.2	0.0067	0.0028	0.0028	3.0	2.8	2.8	No
Rec_284	Residential	2	614.8	0.0062	0.0026	0.0026	2.8	2.6	2.6	No
Rec_285	Residential	2	655.2	0.0058	0.0024	0.0024	2.6	2.4	2.4	No
Rec_286	Residential	2	817.2	0.0045	0.0019	0.0019	2.0	1.9	1.9	No
Rec_287	Residential	2	888.2	0.0041	0.0018	0.0018	1.9	1.7	1.7	No
Rec_288	Residential	2	839.4	0.0044	0.0019	0.0019	2.0	1.8	1.8	No
Rec_289	Mobile Home	3	347.9	0.0116	0.0049	0.0049	5.2	4.8	4.8	No
Rec_290	Mobile Home	3	276.5	0.0149	0.0063	0.0063	6.7	6.2	6.2	No
Rec_291	Mobile Home	3	216.6	0.0195	0.0083	0.0083	8.7	8.1	8.1	No
Rec_292	Mobile Home	3	395.6	0.0101	0.0043	0.0043	4.5	4.2	4.2	No
Rec_293	Mobile Home	3	426.5	0.0093	0.0039	0.0039	4.1	3.8	3.8	No
Rec_294	Mobile Home	3	480.4	0.0081	0.0034	0.0034	3.6	3.4	3.4	No
Rec_295	Mobile Home	3	524.3	0.0074	0.0031	0.0031	3.3	3.1	3.1	No
Rec_296	Mobile Home	3	578.7	0.0066	0.0028	0.0028	3.0	2.7	2.7	No

Ontario Regional Sports Complex EIR
FTA Construction Vibration Calcuations - Structural Damage & Annoyance

Receptor	Land Use	FTA Land Use Category	Distance from Work (feet)	Vibe (PPV in/sec)			Vibe (VdB)			Building Type Structural
				Vibratory Roller	Large Bulldozer	Loaded Trucks	Vibratory Roller	Large Bulldozer	Loaded Trucks	Type III
Rec_297	Mobile Home	3	628.0	0.0061	0.0026	0.0026	2.7	2.5	2.5	No
Rec_298	Mobile Home	3	679.4	0.0056	0.0024	0.0024	2.5	2.3	2.3	No
Rec_299	Mobile Home	3	726.0	0.0052	0.0022	0.0022	2.3	2.1	2.1	No
Rec_300	Mobile Home	3	777.8	0.0048	0.0020	0.0020	2.1	2.0	2.0	No
Rec_301	Mobile Home	3	831.9	0.0044	0.0019	0.0019	2.0	1.8	1.8	No
Rec_302	Mobile Home	3	877.2	0.0042	0.0018	0.0018	1.9	1.7	1.7	No
Rec_303	Mobile Home	3	930.0	0.0039	0.0017	0.0017	1.8	1.6	1.6	No
Rec_304	Mobile Home	3	361.0	0.0111	0.0047	0.0047	5.0	4.6	4.6	No
Rec_305	Mobile Home	3	400.1	0.0099	0.0042	0.0042	4.5	4.1	4.1	No
Rec_306	Mobile Home	3	429.4	0.0092	0.0039	0.0039	4.1	3.8	3.8	No
Rec_307	Mobile Home	3	468.4	0.0084	0.0035	0.0035	3.7	3.5	3.5	No
Rec_308	Mobile Home	3	463.9	0.0085	0.0036	0.0036	3.8	3.5	3.5	No
Rec_309	Mobile Home	3	465.9	0.0084	0.0036	0.0036	3.8	3.5	3.5	No
Rec_310	Mobile Home	3	487.6	0.0080	0.0034	0.0034	3.6	3.3	3.3	No
Rec_311	Mobile Home	3	559.1	0.0069	0.0029	0.0029	3.1	2.9	2.9	No
Rec_312	Mobile Home	3	580.7	0.0066	0.0028	0.0028	3.0	2.7	2.7	No
Rec_313	Mobile Home	3	692.7	0.0054	0.0023	0.0023	2.4	2.3	2.3	No
Rec_314	Mobile Home	3	758.8	0.0049	0.0021	0.0021	2.2	2.0	2.0	No
Rec_315	Mobile Home	3	813.6	0.0046	0.0019	0.0019	2.0	1.9	1.9	No
Rec_316	Mobile Home	3	825.0	0.0045	0.0019	0.0019	2.0	1.9	1.9	No
Rec_317	Mobile Home	3	870.5	0.0042	0.0018	0.0018	1.9	1.8	1.8	No
Rec_318	Mobile Home	3	748.4	0.0050	0.0021	0.0021	2.2	2.1	2.1	No
Rec_319	Mobile Home	3	779.6	0.0048	0.0020	0.0020	2.1	2.0	2.0	No
Rec_320	Mobile Home	3	793.6	0.0047	0.0020	0.0020	2.1	1.9	1.9	No
Rec_321	Mobile Home	3	839.0	0.0044	0.0019	0.0019	2.0	1.8	1.8	No
Rec_322	Mobile Home	3	620.0	0.0061	0.0026	0.0026	2.7	2.5	2.5	No
Rec_323	Mobile Home	3	703.7	0.0053	0.0023	0.0023	2.4	2.2	2.2	No
Rec_324	Mobile Home	3	749.4	0.0050	0.0021	0.0021	2.2	2.1	2.1	No
Rec_325	Mobile Home	3	562.5	0.0068	0.0029	0.0029	3.1	2.8	2.8	No
Rec_326	Mobile Home	3	598.4	0.0064	0.0027	0.0027	2.9	2.6	2.6	No
Rec_327	Mobile Home	3	563.2	0.0068	0.0029	0.0029	3.1	2.8	2.8	No
Rec_328	Mobile Home	3	254.5	0.0164	0.0069	0.0069	7.3	6.8	6.8	No
Rec_329	Mobile Home	3	298.1	0.0137	0.0058	0.0058	6.2	5.7	5.7	No
Rec_330	Mobile Home	3	372.0	0.0108	0.0046	0.0046	4.8	4.5	4.5	No
Rec_331	Mobile Home	3	421.3	0.0094	0.0040	0.0040	4.2	3.9	3.9	No
Rec_332	Mobile Home	3	470.4	0.0083	0.0035	0.0035	3.7	3.4	3.4	No
Rec_333	Mobile Home	3	322.5	0.0126	0.0053	0.0053	5.6	5.2	5.2	No

Ontario Regional Sports Complex EIR
FTA Construction Vibration Calcuations - Structural Damage & Annoyance

Receptor	Land Use	FTA Land Use Category	Distance from Work (feet)	Vibe (PPV in/sec)			Vibe (VdB)			Building Type Structural
				Vibratory Roller	Large Bulldozer	Loaded Trucks	Vibratory Roller	Large Bulldozer	Loaded Trucks	Type III
Rec_334	Mobile Home	3	377.6	0.0106	0.0045	0.0045	4.7	4.4	4.4	No
Rec_335	Mobile Home	3	406.9	0.0098	0.0041	0.0041	4.4	4.0	4.0	No
Rec_336	Mobile Home	3	422.1	0.0094	0.0040	0.0040	4.2	3.9	3.9	No
Rec_337	Mobile Home	3	436.9	0.0090	0.0038	0.0038	4.0	3.7	3.7	No
Rec_338	Mobile Home	3	487.7	0.0080	0.0034	0.0034	3.6	3.3	3.3	No
Rec_339	Mobile Home	3	396.0	0.0101	0.0043	0.0043	4.5	4.2	4.2	No
Rec_340	Mobile Home	3	547.6	0.0070	0.0030	0.0030	3.2	2.9	2.9	No
Rec_341	Mobile Home	3	627.0	0.0061	0.0026	0.0026	2.7	2.5	2.5	No
Rec_342	Mobile Home	3	623.9	0.0061	0.0026	0.0026	2.7	2.5	2.5	No
Rec_343	Mobile Home	3	623.0	0.0061	0.0026	0.0026	2.7	2.5	2.5	No
Rec_344	Mobile Home	3	663.7	0.0057	0.0024	0.0024	2.6	2.4	2.4	No
Rec_345	Mobile Home	3	771.4	0.0048	0.0020	0.0020	2.2	2.0	2.0	No
Rec_346	Mobile Home	3	797.3	0.0047	0.0020	0.0020	2.1	1.9	1.9	No
Rec_347	Mobile Home	3	844.4	0.0044	0.0019	0.0019	2.0	1.8	1.8	No
Rec_348	Mobile Home	3	841.2	0.0044	0.0019	0.0019	2.0	1.8	1.8	No
Rec_349	Mobile Home	3	857.8	0.0043	0.0018	0.0018	1.9	1.8	1.8	No
Rec_350	Mobile Home	3	829.4	0.0045	0.0019	0.0019	2.0	1.8	1.8	No
Rec_351	Mobile Home	3	770.0	0.0048	0.0021	0.0021	2.2	2.0	2.0	No
Rec_352	Mobile Home	3	789.9	0.0047	0.0020	0.0020	2.1	1.9	1.9	No
Rec_353	Mobile Home	3	541.3	0.0071	0.0030	0.0030	3.2	3.0	3.0	No
Rec_354	Mobile Home	3	634.7	0.0060	0.0025	0.0025	2.7	2.5	2.5	No
Rec_355	Mobile Home	3	578.0	0.0066	0.0028	0.0028	3.0	2.7	2.7	No
Rec_356	Mobile Home	3	544.7	0.0071	0.0030	0.0030	3.2	2.9	2.9	No
Rec_357	Mobile Home	3	518.4	0.0075	0.0032	0.0032	3.3	3.1	3.1	No
Rec_358	Mobile Home	3	572.6	0.0067	0.0028	0.0028	3.0	2.8	2.8	No
Rec_359	Mobile Home	3	540.9	0.0071	0.0030	0.0030	3.2	3.0	3.0	No
Rec_360	Mobile Home	3	567.9	0.0068	0.0029	0.0029	3.0	2.8	2.8	No
Rec_361	Mobile Home	3	582.8	0.0066	0.0028	0.0028	2.9	2.7	2.7	No
Rec_362	Mobile Home	3	633.9	0.0060	0.0025	0.0025	2.7	2.5	2.5	No
Rec_363	Mobile Home	3	683.9	0.0055	0.0023	0.0023	2.5	2.3	2.3	No
Rec_364	Mobile Home	3	660.6	0.0057	0.0024	0.0024	2.6	2.4	2.4	No
Rec_365	Mobile Home	3	629.1	0.0060	0.0026	0.0026	2.7	2.5	2.5	No
Rec_366	Mobile Home	3	611.8	0.0062	0.0026	0.0026	2.8	2.6	2.6	No
Rec_367	Mobile Home	3	725.5	0.0052	0.0022	0.0022	2.3	2.1	2.1	No
Rec_368	Mobile Home	3	853.7	0.0043	0.0018	0.0018	1.9	1.8	1.8	No
Rec_369	Mobile Home	3	820.0	0.0045	0.0019	0.0019	2.0	1.9	1.9	No
Rec_370	Mobile Home	3	805.5	0.0046	0.0020	0.0020	2.1	1.9	1.9	No

Ontario Regional Sports Complex EIR
FTA Construction Vibration Calcuations - Structural Damage & Annoyance

Receptor	Land Use	FTA Land Use Category	Distance from Work (feet)	Vibe (PPV in/sec)			Vibe (VdB)			Building Type Structural
				Vibratory Roller	Large Bulldozer	Loaded Trucks	Vibratory Roller	Large Bulldozer	Loaded Trucks	Type III
Rec_371	Mobile Home	3	809.4	0.0046	0.0019	0.0019	2.1	1.9	1.9	No
Rec_372	Mobile Home	3	818.1	0.0045	0.0019	0.0019	2.0	1.9	1.9	No
Rec_373	Mobile Home	3	744.7	0.0050	0.0021	0.0021	2.2	2.1	2.1	No
Rec_374	Mobile Home	3	738.4	0.0051	0.0021	0.0021	2.3	2.1	2.1	No
Rec_375	Mobile Home	3	779.7	0.0048	0.0020	0.0020	2.1	2.0	2.0	No
Rec_376	Mobile Home	3	720.0	0.0052	0.0022	0.0022	2.3	2.2	2.2	No
Rec_377	Mobile Home	3	764.0	0.0049	0.0021	0.0021	2.2	2.0	2.0	No
Rec_378	Mobile Home	3	785.8	0.0047	0.0020	0.0020	2.1	2.0	2.0	No
Rec_379	Mobile Home	3	750.4	0.0050	0.0021	0.0021	2.2	2.1	2.1	No
Rec_380	Mobile Home	3	652.8	0.0058	0.0025	0.0025	2.6	2.4	2.4	No
Rec_381	Mobile Home	3	626.4	0.0061	0.0026	0.0026	2.7	2.5	2.5	No
Rec_382	Mobile Home	3	669.8	0.0056	0.0024	0.0024	2.5	2.3	2.3	No
Rec_383	Mobile Home	3	710.3	0.0053	0.0022	0.0022	2.4	2.2	2.2	No
Rec_384	Mobile Home	3	729.2	0.0051	0.0022	0.0022	2.3	2.1	2.1	No
Rec_385	Mobile Home	3	764.1	0.0049	0.0021	0.0021	2.2	2.0	2.0	No
Rec_386	Mobile Home	3	810.0	0.0046	0.0019	0.0019	2.0	1.9	1.9	No
Rec_387	Mobile Home	3	859.7	0.0043	0.0018	0.0018	1.9	1.8	1.8	No
Rec_388	Mobile Home	3	904.0	0.0041	0.0017	0.0017	1.8	1.7	1.7	No
Rec_389	Mobile Home	3	905.8	0.0040	0.0017	0.0017	1.8	1.7	1.7	No
Rec_390	Mobile Home	3	854.0	0.0043	0.0018	0.0018	1.9	1.8	1.8	No
Rec_391	Mobile Home	3	827.7	0.0045	0.0019	0.0019	2.0	1.9	1.9	No
Rec_392	Mobile Home	3	750.7	0.0050	0.0021	0.0021	2.2	2.1	2.1	No
Rec_393	Mobile Home	3	778.4	0.0048	0.0020	0.0020	2.1	2.0	2.0	No
Rec_394	Mobile Home	3	837.2	0.0044	0.0019	0.0019	2.0	1.8	1.8	No
Rec_395	Mobile Home	3	881.3	0.0042	0.0018	0.0018	1.9	1.7	1.7	No
Rec_396	Mobile Home	3	918.2	0.0040	0.0017	0.0017	1.8	1.7	1.7	No
Rec_397	Mobile Home	3	898.1	0.0041	0.0017	0.0017	1.8	1.7	1.7	No
Rec_398	Mobile Home	3	827.6	0.0045	0.0019	0.0019	2.0	1.9	1.9	No
Rec_399	Mobile Home	3	849.6	0.0043	0.0018	0.0018	1.9	1.8	1.8	No
Rec_400	Mobile Home	3	888.0	0.0041	0.0018	0.0018	1.9	1.7	1.7	No
Rec_401	Mobile Home	3	934.9	0.0039	0.0017	0.0017	1.7	1.6	1.6	No
Rec_402	Residential	2	812.7	0.0046	0.0019	0.0019	2.0	1.9	1.9	No
Rec_403	Residential	2	819.7	0.0045	0.0019	0.0019	2.0	1.9	1.9	No
Rec_404	Residential	2	815.4	0.0045	0.0019	0.0019	2.0	1.9	1.9	No
Rec_405	Residential	2	837.0	0.0044	0.0019	0.0019	2.0	1.8	1.8	No
Rec_406	Residential	2	891.9	0.0041	0.0017	0.0017	1.8	1.7	1.7	No
Rec_407	Residential	2	900.5	0.0041	0.0017	0.0017	1.8	1.7	1.7	No

Ontario Regional Sports Complex EIR
FTA Construction Vibration Calcuations - Structural Damage & Annoyance

Receptor	Land Use	FTA Land Use Category	Distance from Work (feet)	Vibe (PPV in/sec)			Vibe (VdB)			Building Type Structural
				Vibratory Roller	Large Bulldozer	Loaded Trucks	Vibratory Roller	Large Bulldozer	Loaded Trucks	Type III
Rec_408	Residential	2	903.1	0.0041	0.0017	0.0017	1.8	1.7	1.7	No
Rec_409	Residential	2	933.8	0.0039	0.0017	0.0017	1.8	1.6	1.6	No
Rec_410	Residential	2	956.9	0.0038	0.0016	0.0016	1.7	1.6	1.6	No
Rec_411	Residential	2	1008.9	0.0036	0.0015	0.0015	1.6	1.5	1.5	No
Rec_412	Residential	2	1028.7	0.0035	0.0015	0.0015	1.6	1.5	1.5	No
Rec_413	Residential	2	1072.5	0.0034	0.0014	0.0014	1.5	1.4	1.4	No
Rec_414	Residential	2	108.5	0.0418	0.0177	0.0177	18.7	17.3	17.3	No
Rec_415	Residential	2	118.6	0.0379	0.0161	0.0161	17.0	15.7	15.7	No
Rec_416	Residential	2	128.3	0.0347	0.0147	0.0147	15.6	14.4	14.4	No
Rec_417	Residential	2	69.4	0.0683	0.0289	0.0289	30.6	28.3	28.3	No
Rec_417	Recreational	3	69.4	0.0683	0.0289	0.0289	30.6	28.3	28.3	No
Rec_418	Residential	2	127.9	0.0349	0.0148	0.0148	15.6	14.5	14.5	No
Rec_419	Residential	2	107.3	0.0423	0.0179	0.0179	18.9	17.5	17.5	No
Rec_420	Institutional	3	70.0	0.0677	0.0287	0.0287	30.3	28.1	28.1	No
Rec_421	Institutional	3	131.8	0.0337	0.0143	0.0143	15.1	14.0	14.0	No
Rec_422	Residential	2	683.8	0.0055	0.0023	0.0023	2.5	2.3	2.3	No
Rec_423	Residential	2	349.8	0.0115	0.0049	0.0049	5.2	4.8	4.8	No
Rec_424	Residential	2	479.3	0.0082	0.0035	0.0035	3.6	3.4	3.4	No
Rec_425	Residential	2	571.4	0.0067	0.0028	0.0028	3.0	2.8	2.8	No
Rec_426	Residential	2	68.5	0.0693	0.0294	0.0294	31.0	28.7	28.7	No
Rec_426	Residential	2	68.5	0.0693	0.0294	0.0294	31.0	28.7	28.7	No
Rec_427	Residential	2	520.8	0.0074	0.0032	0.0032	3.3	3.1	3.1	No
Rec_428	Residential	2	505.1	0.0077	0.0033	0.0033	3.4	3.2	3.2	No
Rec_429	Residential	2	505.1	0.0077	0.0033	0.0033	3.4	3.2	3.2	No
Rec_430	Residential	2	517.6	0.0075	0.0032	0.0032	3.4	3.1	3.1	No
Rec_431	Residential	2	517.6	0.0075	0.0032	0.0032	3.4	3.1	3.1	No
Rec_432	Residential	2	553.7	0.0070	0.0029	0.0029	3.1	2.9	2.9	No
Rec_433	Residential	2	553.7	0.0070	0.0029	0.0029	3.1	2.9	2.9	No
Rec_434	Residential	2	565.4	0.0068	0.0029	0.0029	3.0	2.8	2.8	No
Rec_435	Residential	2	565.4	0.0068	0.0029	0.0029	3.0	2.8	2.8	No
Rec_436	Residential	2	618.7	0.0062	0.0026	0.0026	2.8	2.6	2.6	No
Rec_437	Residential	2	618.7	0.0062	0.0026	0.0026	2.8	2.6	2.6	No
Rec_438	Residential	2	630.6	0.0060	0.0026	0.0026	2.7	2.5	2.5	No
Rec_439	Residential	2	630.6	0.0060	0.0026	0.0026	2.7	2.5	2.5	No
Rec_440	Residential	2	638.1	0.0060	0.0025	0.0025	2.7	2.5	2.5	No
Rec_441	Residential	2	624.3	0.0061	0.0026	0.0026	2.7	2.5	2.5	No
Rec_442	Residential	2	624.3	0.0061	0.0026	0.0026	2.7	2.5	2.5	No

Ontario Regional Sports Complex EIR
FTA Construction Vibration Calcuations - Structural Damage & Annoyance

Receptor	Land Use	FTA Land Use Category	Distance from Work (feet)	Vibe (PPV in/sec)			Vibe (VdB)			Building Type Structural
				Vibratory Roller	Large Bulldozer	Loaded Trucks	Vibratory Roller	Large Bulldozer	Loaded Trucks	Type III
Rec_443	Residential	2	595.7	0.0064	0.0027	0.0027	2.9	2.7	2.7	No
Rec_444	Residential	2	586.8	0.0065	0.0028	0.0028	2.9	2.7	2.7	No
Rec_445	Residential	2	539.1	0.0072	0.0030	0.0030	3.2	3.0	3.0	No
Rec_446	Residential	2	528.6	0.0073	0.0031	0.0031	3.3	3.0	3.0	No
Rec_447	Residential	2	512.9	0.0076	0.0032	0.0032	3.4	3.1	3.1	No
Rec_448	Residential	2	506.5	0.0077	0.0033	0.0033	3.4	3.2	3.2	No

Appendix J2 Traffic Noise

Appendices

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The Ontario Regional Sports Complex EIR

Traffic Noise

Technical Report

HMMH Project Number 23-0251A
March 2024

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Contents

Figures

Tables

Attachments

1. Summary

This technical appendix includes the traffic-noise analysis for The Ontario Regional Sports Complex project (ORSC). The noise analysis was prepared in support of the Environmental Impact Report (EIR), pursuant to the requirements of the California Environmental Quality Act (CEQA). The technical appendix includes the analysis of traffic noise from off-site roadways adjacent to the ORSC.

To predict traffic-noise levels, a detailed geometric model of the noise study area was initially developed using Geographic Information System (GIS) software and the proposed ORSC site plan. The evaluation of traffic noise levels includes a noise monitoring survey and traffic noise predictions using the latest version of the SoundPLAN noise model which implements the latest version of the Federal Highway Administration (FHWA) Traffic Noise Model (TNM Version 2.5).

Traffic noise for the ORSC was evaluated as a Community Noise Equivelent Level (CNEL). Under 2050 Build conditions, a total of two noise-sensitive receptors are predicted to experience traffic-noise levels that exceed the transportation noise thresholds of significance under 2050 Build conditions. Predicted traffic-noise levels are predicted to range between 36 and 73 dBA in the 2023 Existing conditions and range between 39 and 76 in the 2050 Build scenario.

2. Environmental Setting

2.1 Noise

2.1.1 Noise Descriptors

Noise levels are presented on a logarithmic scale to account for the large pressure response range of the human ear. This logarithmic scale is expressed in units of decibels (dB). A decibel is defined as the ratio between a measured value and a reference value usually corresponding to the lower threshold of human hearing. The lower threshold of human hearing is defined as 20 micropascals. Typically, a noise analysis examines 11 octave (or 33 1/3 octave) bands ranging from 16 hertz (low) to 16,000 hertz (high). This octave band encompasses the human audible frequency range. The human ear does not perceive every frequency with equal loudness; therefore, spectrally varying sounds are often adjusted with a weighting filter. The A weighted filter is applied to compensate for the frequency response of the human auditory system, known as a dBA. The A-weighted sound level is commonly used when measuring environmental noise and is widely accepted by acousticians as a proper unit for describing environmental noise.

An inherent property of the logarithmic dB scale is that the sound pressure levels of two separate sources are not directly additive. For example, if a sound of 50 dBA is added to another sound of 50 dBA in the proximity, the result is a 3 dB increase, which is a total of 53 dBA and not an arithmetic doubling to 100 dBA. The human ear perceives changes in sound pressure level relative to changes in "loudness." Scientific research demonstrates the following general relationships between sound level and human perception for two sound levels with the same or very similar frequency characteristics:

- One dBA is the practical limit of accuracy for sound measurement systems and corresponds to an approximate 10 percent variation in the sound pressure level. A 1-dBA increase or decrease is a non-perceptible change in sound.
- A 3-dBA increase or decrease is a doubling (or halving) of acoustic pressure level, and it corresponds to the threshold of change in loudness perceptible in a laboratory environment. In practice, the average person is not able to distinguish a 3-dBA difference in environmental sound outdoors.
- A 5-dBA increase or decrease is described as a perceptible change in sound level and is a discernible change in an outdoor environment.
- A 10-dBA increase or decrease is a tenfold increase or decrease in acoustic pressure level but is perceived as a doubling or halving in loudness (e.g., the average person would judge a 10-dBA change in sound level to be twice or half as loud).

Figure 1 depicts the estimations of common noise sources and outdoor acoustic environments and provides a comparison of relative loudness for each of these sources. Noise levels can be measured, modeled, and presented in various formats. The noise metrics that were employed in this analysis have the following definitions:

- Community noise equivalent level (CNEL): The energy-average of the A-weighted sound levels occurring during a 24-hour period, with 5 dB added to the sound levels occurring during evening hours (7:00 p.m. to 10:00 p.m.) and 10 dB added to noise levels occurring during nighttime hours (10:00 p.m. to 7:00 a.m.).

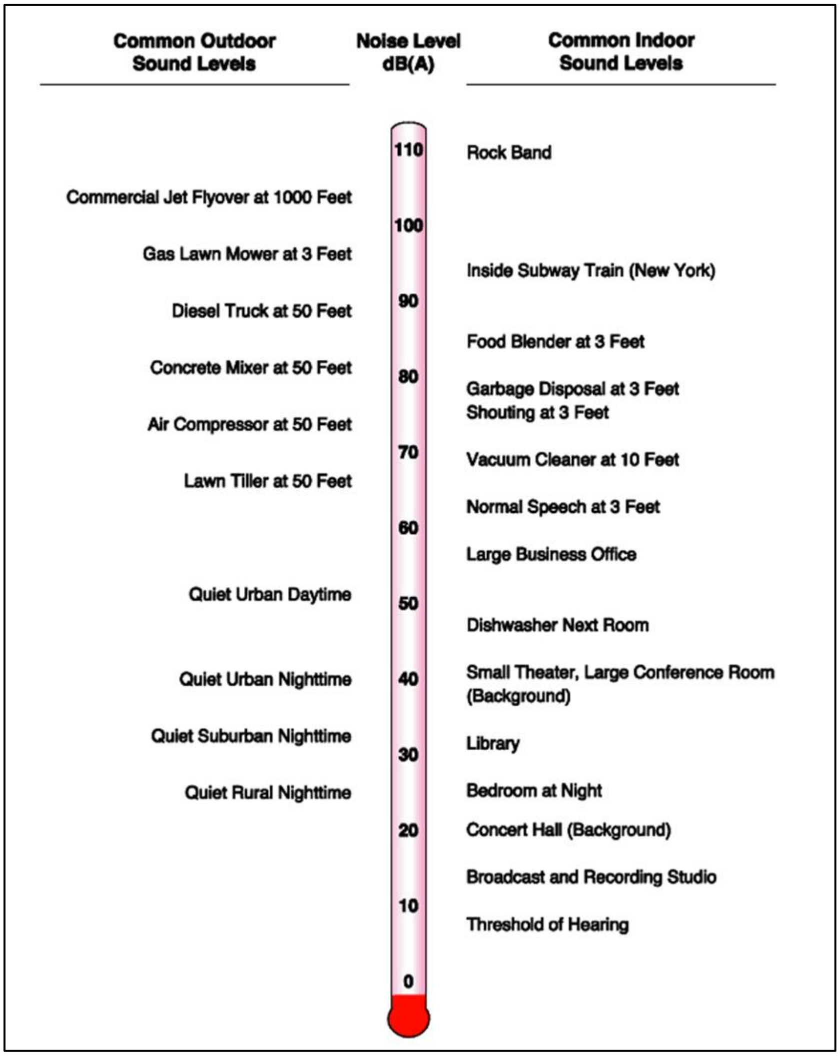

Figure 1. Sound Levels

Source: HMMH 2023

2.1.2 Noise Attenuation

Noise emitted by line sources, in this case roadways, typically dissipates at a rate of approximately 3 dB for each doubling of distance (between the noise source and the receptor). As an example, a residential neighborhood abutting a freeway with rows of homes with outdoor use areas (independent of background ambient noise levels) may experience noise levels of approximately 66 dBA L_{eq} at 50 feet from the noise source. Based on a sound dissipation rate of 3 dB per doubling of distance, a sound level of 66 dBA at 50 feet from the noise source would be approximately 63 dBA at a distance of 100 feet, 60 dBA at a distance of 200 feet, and so on. That sound drop-off rate does not take into account any intervening shielding (including landscaping or trees) or barriers, such as structures or hills between the noise source and noise receptor. A barrier that breaks the line-of-sight between a source and a receiver will typically result in at least 5 dB of noise reduction. A higher barrier may provide as much as 20 dB of noise reduction.

2.1.3 Effects of Noise on Humans

The effects of noise on humans can be grouped into three general categories (USEPA 1979):

- Subjective effects of annoyance, nuisance, dissatisfaction;
- Physiological effects such as starting hearing loss; and,
- Interference with activities such as speech, sleep, and learning.

With respect to annoyance, human response to sound is highly individualized. Many factors influence the response to noise including the character of the noise, the variability of the sound level, the presence of tones or impulses, and the time of day of the occurrence. Additionally, non-acoustical factors, such as individual opinion of the noise source, the ability to adapt to the noise, the attitude towards the source and those associated with it, and the predictability of the noise, all influence the response to noise. These factors result in the reaction to noise being highly subjective, with the perceived effect of a particular noise varying widely among individuals in a community.

Noise-induced hearing loss usually takes years to develop. Hearing loss is one of the most obvious and easily quantifiable effects of excessive exposure to noise. While the loss may be temporary at first, it can become permanent after continued exposure. When combined with hearing loss associated with aging, the amount of hearing loss directly due to the environment is difficult to quantify. Although the major cause of noise-induced hearing loss is occupational, non-occupational sources may also be a factor.

Noise can mask important sounds and disrupt communication between individuals in a variety of settings. This process can cause anything from a slight irritation to a serious safety hazard, depending on the circumstance. Noise can disrupt face-to-face communication and telephone communication, and the enjoyment of music and television in the home. Interference with communication has proved to be one of the most important components of noise-related annoyance.

Relative to noise being a source of annoyance, including sleep disturbance, and having health impacts, there are various uncertainties and debate within the scientific community regarding the exact relationship between noise and these types of impacts, particularly as related to assessing whether there would be a significant impact under CEQA.

3. Methodology

This section discusses the noise prediction model, monitoring of existing noise levels, and traffic data used as input to the noise prediction model.

3.1 Traffic Noise Prediction Model

Traffic noise levels for the existing and future no-build and build case were computed using the latest version of the SoundPLAN noise model which implements TNM Version 2.5 to compute traffic noise. Modeling inputs include a CAD file of the proposed site layout, detailed digital terrain with elevation obtained from the U.S. Geological Survey (USGS) 3D elevation program[1] as well as building footprints, which were obtained from Microsoft Building Footprints, accessed through ArcGIS Online.[2] Existing building heights were estimated based on Microsoft Streetside imagery™, accessed via Bing maps. Aerial photography was obtained from ESRI as well as the U.S. Department of Agriculture's (USDA's) National Agriculture Imagery Program (NAIP).[3].

All data digitized in GIS was imported into SoundPLAN GmbH, and a digital ground model was generated to assign base elevations to all modeled features and account for attenuation effects due to changes in terrain. Ground type on- and off-site was assumed to be "compacted field and gravel" (compacted lawns, park areas). Upon import into SoundPLAN, traffic speeds and hourly traffic volumes, including percentage of medium and heavy trucks, were applied to project roadways.

To fully characterize existing and future noise levels at all noise-sensitive land uses in the study area, noise-sensitive receptor locations within 1,000 feet of the proposed ORSC site were added to the model. Information on noise-sensitive residential land use in the study area includes the number of dwelling units, identified from existing mapping and publicly available parcel data.

3.2 Monitoring of Existing Noise Levels

As discussed in detail below in Section 5, the methods used during the noise monitoring survey were consistent with FHWA and California Department of Transportation (Caltrans) guidance and policies. The objectives of the noise monitoring survey were to document existing ambient noise levels in noise-sensitive locations adjacent to the off-site roadway network and to provide a means for validating the traffic-noise prediction model. Long-term noise measurements were conducted using Bruel and Kjaer 2245 (ANSI Type I, "Precision") integrating sound level meters. The noise measurement instruments are calibrated on an annual basis by an independent certification laboratory, following methods and procedures traceable to the National Institute of Standards and Technology. The equipment was also calibrated in the field using a handheld acoustic calibrator at the beginning and end of each measurement period. **Attachment A** includes details of the noise monitoring survey, including site photos and equipment calibration certificates.

3.3 Traffic Data for Noise Prediction

The traffic data were provided for the 2023 Existing and 2050 No-Build and Build conditions as ADT for passenger vehicles and heavy-duty vehicles during the daytime, evening and nighttime periods. The ADTs were evenly distributed across each time period to determine a 24-hour distribution of vehicles. **Attachment B** provides the traffic data for the roadways used in the traffic noise model for this project.

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[1] https://apps.nationalmap.gov/downloader

[2] The development to the east of the project site (Countryside) was manually digitized using aerial photography, since building footprints were not available.

[3] https://datagateway.nrcs.usda.gov/GDGHome_DirectDownLoad.aspx

4. Regulatory Framework

Several federal, state, and local regulations, ordinances, and guidelines have been established to control noise and vibration and minimize effects on humans and are discussed below. The Noise Control Act of 1972 (42 United States Code Section 4901) was the first comprehensive statement of national noise policy. It declared that "it is the policy of the United States to promote an environment for all Americans free from noise that jeopardizes their health or welfare" (GSA 1972). Significance criteria for traffic noise impacts were developed based on worst-case traffic noise CNEL based upon City of Ontario Plan regulations and guidelines.

4.1 State

California Environmental Quality Act (CEQA)

According to Appendix G of the CEQA Guidelines, a proposed action would have a significant impact on noise and vibration if:

- The project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.
- The project result in generation of excessive groundborne vibration or groundborne noise levels?
- For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

4.2 Local

The Ontario Plan

Section 5.13.2 of The Ontario Plan (TOP) 2050 addresses transportation noise and includes thresholds of significance as it relates to traffic noise. A project will normally have a significant effect on the environment related to traffic noise if it would substantially increase the ambient noise levels for adjoining areas. Most people can detect changes in sound levels of approximately 3 dBA under normal, quiet conditions, and changes of 1 to 3 dBA under quiet, controlled conditions. Changes of less than 1 dBA are usually indiscernible. A change of 5 dBA is readily discernible to most people in an outdoor environment. Based on this, the following thresholds of significance, similar to those recommended by the Federal Aviation Administration, are used to assess traffic noise impacts at sensitive receptor locations. A significant impact would occur if the traffic noise increase would exceed:

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

4.3 Thresholds of Significance

For the purposes of the EIR for the ORSC, traffic noise impact will be determined using criteria found within The Ontario Plan (TOP) 2050. As mentioned in Section 4.2, traffic noise impact will be considered significant if predicted design-year noise levels at receptors exceed the applicable thresholds.

5. Existing Environment

A noise monitoring survey was conducted within the Project study area, consistent with FHWA and Caltrans recommended procedures. The objectives of the monitoring program were to document existing ambient noise levels in noise-sensitive locations around the proposed ORSC site.

Noise monitoring was conducted at two long-term (24-hours) sites in October 2023. Measurement sites were generally located in areas that are representative of noise-sensitive land use exposed to noise from traffic along roadways adjacent to the proposed ORSC site. The long-term measurements characterized existing noise levels in the study area during a typical day. **Figure 2** shows the locations of the noise measurement sites within the Project study area.

The long-term data collection procedure involved measurement of one-second equivalent sound levels (Leq(s)) over a period of 24-hours. Continuous logging of events was conducted during the monitoring, so that intervals that included extraneous events could be excluded during the analysis. The measured noise levels appear in **Table 1** and **Table 2** as equivalent sound levels (Leq). As described above, the Leq is a sound-energy average of the fluctuating sound level (in A-weighted decibels, dBA) measured over a specified time. **Table 1** and **Table 2** provide a description of the measurement location, as well as the start time and the duration of the measurement.

Table 1. Summary of Long-term Noise Measurement Results – LT-01 (Canal Walking Path)

Time Period	Measured Sound Levels (dBA)				
	Type	L_{max}	L_{10}	L_{eq}	L_{90}
Daytime (7 AM-7PM)	Hourly	62 to 80	47 to 57	47 to 56	40 to 55
	Overall	80	56	52	43
Evening (7 PM-10 PM)	Hourly	62 to 67	51 to 53	50 to 51	48 to 49
	Overall	68	52	51	48
Nighttime (10 PM-7 AM)	Hourly	61 to 70	52 to 59	50 to 57	45 to 54
	Overall	70	55	53	48
Total (24 hours)	Hourly	61 to 80	47 to 59	47 to 57	40 to 55
	Overall	80	55	52	45
CNEL	59				

Source: HMMH, 2023.

Table 2. Summary of Long-term Noise Measurement Results – LT-02 (South Whispering Lakes Lane)

Time Period	Measured Sound Levels (dBA)				
	Type	L_{max}	L_{10}	L_{eq}	L_{90}
Daytime (7 AM-7PM)	Hourly	64 to 80	50 to 59	48 to 57	41 to 53
	Overall	80	56	53	44
Evening (7 PM-10 PM)	Hourly	63 to 68	51 to 55	50 to 53	48 to 49
	Overall	68	53	52	48
Nighttime (10 PM-7 AM)	Hourly	57 to 69	49 to 57	47 to 55	43 to 52
	Overall	69	54	51	45
Total (24 hours)	Hourly	57 to 80	49 to 59	47 to 57	41 to 53
	Overall	80	55	52	45
CNEL	58				

Source: HMMH, 2023.

6. Traffic Noise Analysis Results

This section summarizes the evaluation of noise levels due to traffic along the off-site roadways surrounding the proposed ORSC site. **Figure 2** provides an overview of noise modeling receiver locations. **Table 3** provides the CNEL as it relates to traffic-noise for 2023 Existing and 2050 No-Build and Build conditions. **Table 3** also summarizes the change in CNEL between 2023 Existing and 2050 Build scenarios.

Under 2050 Build conditions, a total of two noise-sensitive receptors, located in Receptor Group 1 and Receptor Group 3, are predicted to experience traffic-noise levels that exceed the allowable increases in ambient noise levels under 2050 Build conditions. Increases in traffic-noise levels are predicted to range between 0 and 6 decibels, with the greatest increase occurring in Receptor Group 1. **Attachment C** lists the computed sound levels at all modeled receptors included in the traffic-noise assessment.

Table 3. Summary of Traffic-Noise Levels by Receptor Group

Receptor Group	Land Use Description	Range of Predicted Traffic-Noise Levels, CNEL (dBA)			Changes in Traffic-Noise Levels (2023 Existing to 2050 Build)	Number of Impacted Receptors
		2023 Existing	2050 No-Build	2050 Build		
1	Residential use on the north and south side of East Riverside Drive, between Willow Drive and South Vineyard Avenue	46-72	49-76	49-76	1.2 - 5.6	1
2	Residential and institutional use (Sunrise Childcare Center) on the north side of East Riverside Drive, between Vineyard Avenue and South Whispering Lakes Lane	40-72	43-75	44-76	0.7 - 5	0
3	Recreational use associated with the Whispering Lake Golf Course on the north side of East Riverside Drive, between South Whispering Lakes Lane and Cucamonga Channel	47-73	50-75	50-76	1.7 - 5.3	1
4	Residential and recreational use (Westwind Community Center) on the north side of East Riverside Drive, between Cucamonga Channel and South Colonial Avenue	48-69	51-73	51-73	2.4 – 5.0	0
5	Residential and recreational use (Cucamonga Channel Walking Trail) bounded by the Cucamonga Channell to the west, East Riverside Drive to the north, South Colonial Avenue to the east, and Chino Avenue to the south	36-67	38-70	39-71	0.1 - 4.6	0
6	Residential use on the south side of Chino Avenue, between Vineyard Avenue and Ontario Avenue	45-57	48-60	49-61	2.3 - 4.6	0
TOTAL						2

Source: HMMH, 2024

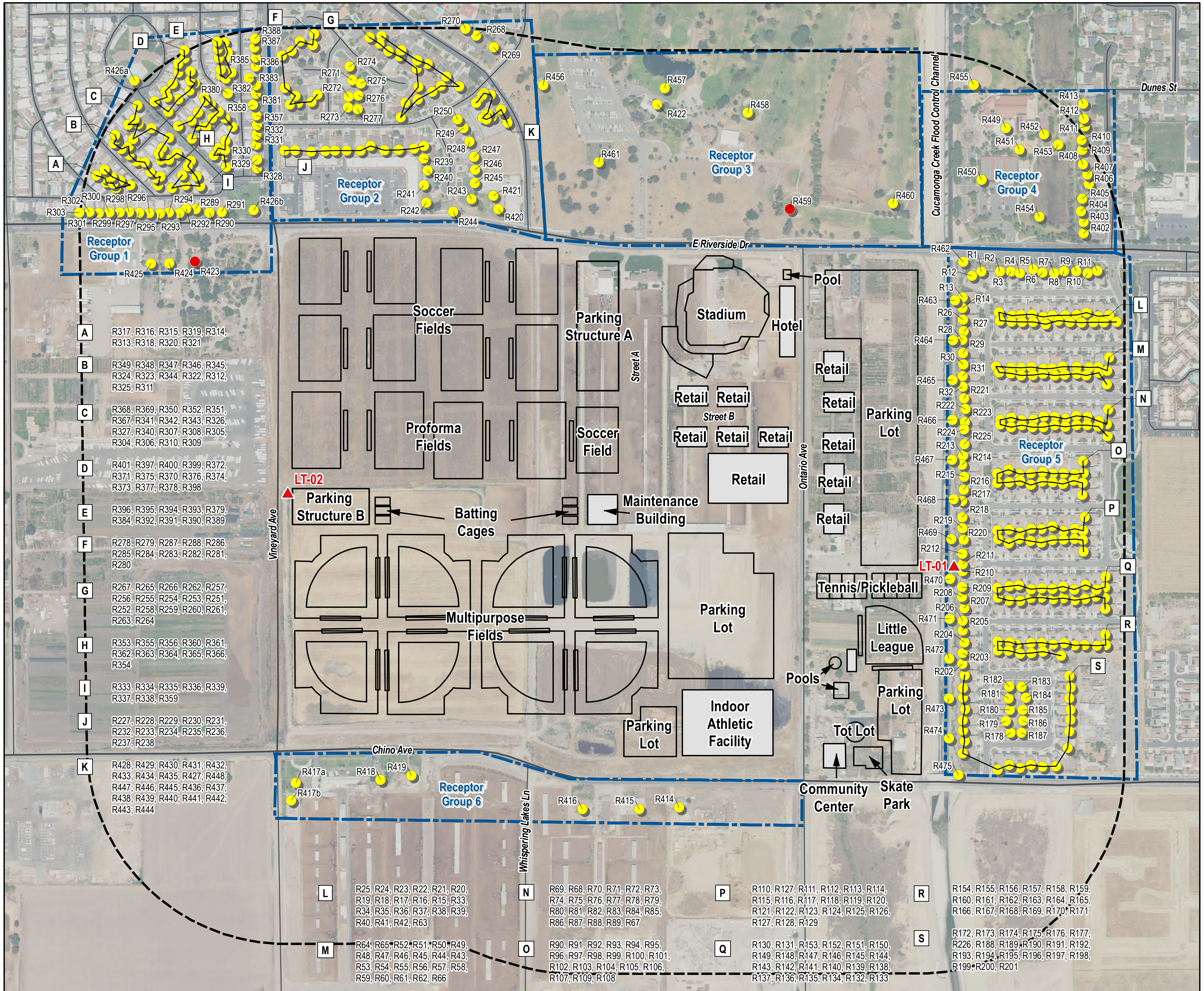

Figure 2
Predicted Traffic-Noise Levels 2050 Build Conditions CNEL (dBA)

Ontario Regional Sports Complex EIR
Ontario, California

Receptor Location, Number, and Impact Status
- Impact
- No Impact

Top Floor Noise Prediction Result
Bottom Floor Noise Prediction Result

Note: Grouped Receptor Labels are in order of Leader Occurrence.

- Long-term Noise Monitoring Location
- Sports Complex Feature
- Sports Complex Building
- Receptor Group
- Study Area

0 500 1,000 Feet

7. Mitigation

In compliance with CEQA, "each public agency shall mitigate or avoid the significant effects on the environment of project it carries out or approves whenever it is feasible to do so" (Public Resources Code, § 21002.1(b)). The term "feasible" is defined in CEQA to mean "capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and technological factors" (Public Resources Code, § 21061.1). A number of measures were considered for mitigating or avoiding the traffic noise impacts, as discussed below.

Special Roadway Paving

Notable reductions in tire noise have been achieved via the implementation of special paving materials, such as rubberized asphalt or open-grade asphalt concrete overlays. For example, Sacramento County conducted a study of pavement noise along the Alta Arden Expressway (County of Sacramento 1999) and found improvements in an average of 4 dB compared to conventional asphalt overlay. While special roadway paving has the potential to reduce traffic noise levels to below the impact threshold for the two impacted receptors, implementation of this mitigation strategy is costly. Therefore, considering the approximate costs versus benefits, this mitigation measure is inadequate for reducing the noise impacts to less than significant levels.

Sound Barrier Walls

Some segments may potentially benefit from the installation of sound barrier walls adjacent to the roadways that are predicted to have excessive sound levels due to the project. However, receptors along East Riverside Drive have direct access (via driveways) to the associated roadway that must be maintained. Therefore, barrier walls would prevent access to their individual properties and would be infeasible. Further, impacts to areas located on private property are outside of the control of future Specific Plan developers, so there would be limited admittance (onto these properties) to construct such walls (while neglecting the high cost of such wall systems). For the reasons listed, this approach would not be able to reduce project noise impacts at all receptor areas to levels that are below significance. Therefore, noise increases along these segments would be significant and unavoidable.

Sound Insulation of Off-Site Residences

The highest roadway noise levels are predicted to reach up to 76 dBA CNEL. Exterior-to-interior noise reductions depend on the materials utilized, the design of the homes, and their conditions. To determine what upgrades would be needed, a noise study would be required for each house to measure exterior-to-interior noise reduction. Sound insulation may require upgraded windows, upgraded doors, and a means of mechanical ventilation to allow for a "windows closed" condition. There are no funding mechanisms and procedures that would guarantee that the implementation of sound insulation features at each affected home would offset the increase in traffic noise to interior areas and ensure that the 45 dBA CNEL would be achieved. Therefore, this method was dropped from further consideration.

As identified above, traffic generated by the Sports Complex would result in a substantial increase in noise levels in the vicinity of noise-sensitive land uses. There are no feasible mitigation measures that would reduce traffic generated by vehicles associated with the Sports Complex. Therefore, traffic noise impacts would be significant and unavoidable.

8. References

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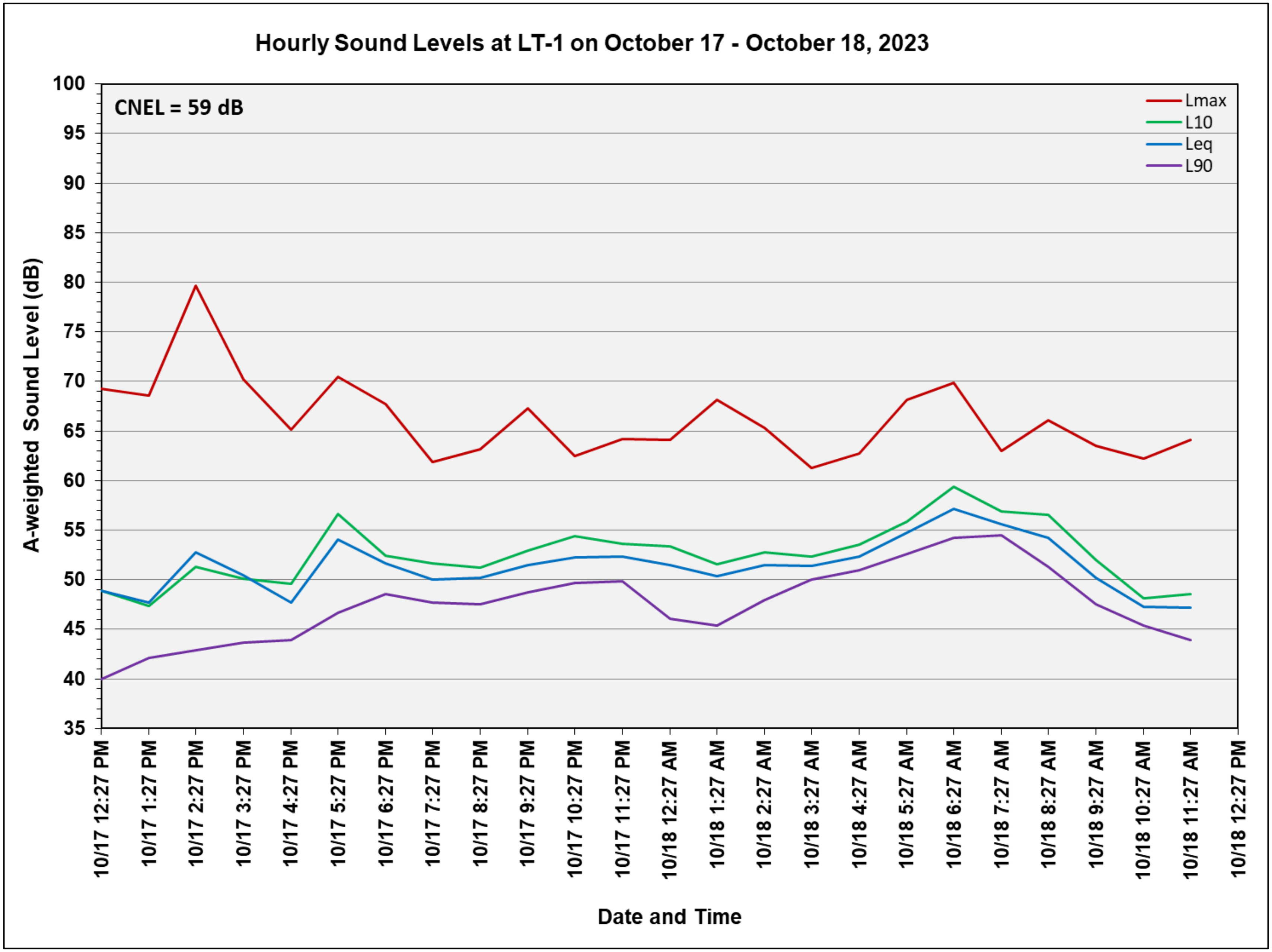
ATTACHMENT A. NOISE MONITORING SURVEY DETAILS

Noise Measurement Site, LT-1

Noise Measurement Site, LT-2


Hourly Sound Levels at LT-1 on October 17 - October 18, 2023
CNEL = 59 dB
Lmax
L10
Leq
L90
A-weighted Sound Level (dB)
100
95
90
85
80
75
70
65
60
55
50
45
40
35
10/17 12:27 PM
10/17 1:27 PM
10/17 2:27 PM
10/17 3:27 PM
10/17 4:27 PM
10/17 5:27 PM
10/17 6:27 PM
10/17 7:27 PM
10/17 8:27 PM
10/17 9:27 PM
10/17 10:27 PM
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10/18 2:27 AM
10/18 3:27 AM
10/18 4:27 AM
10/18 5:27 AM
10/18 6:27 AM
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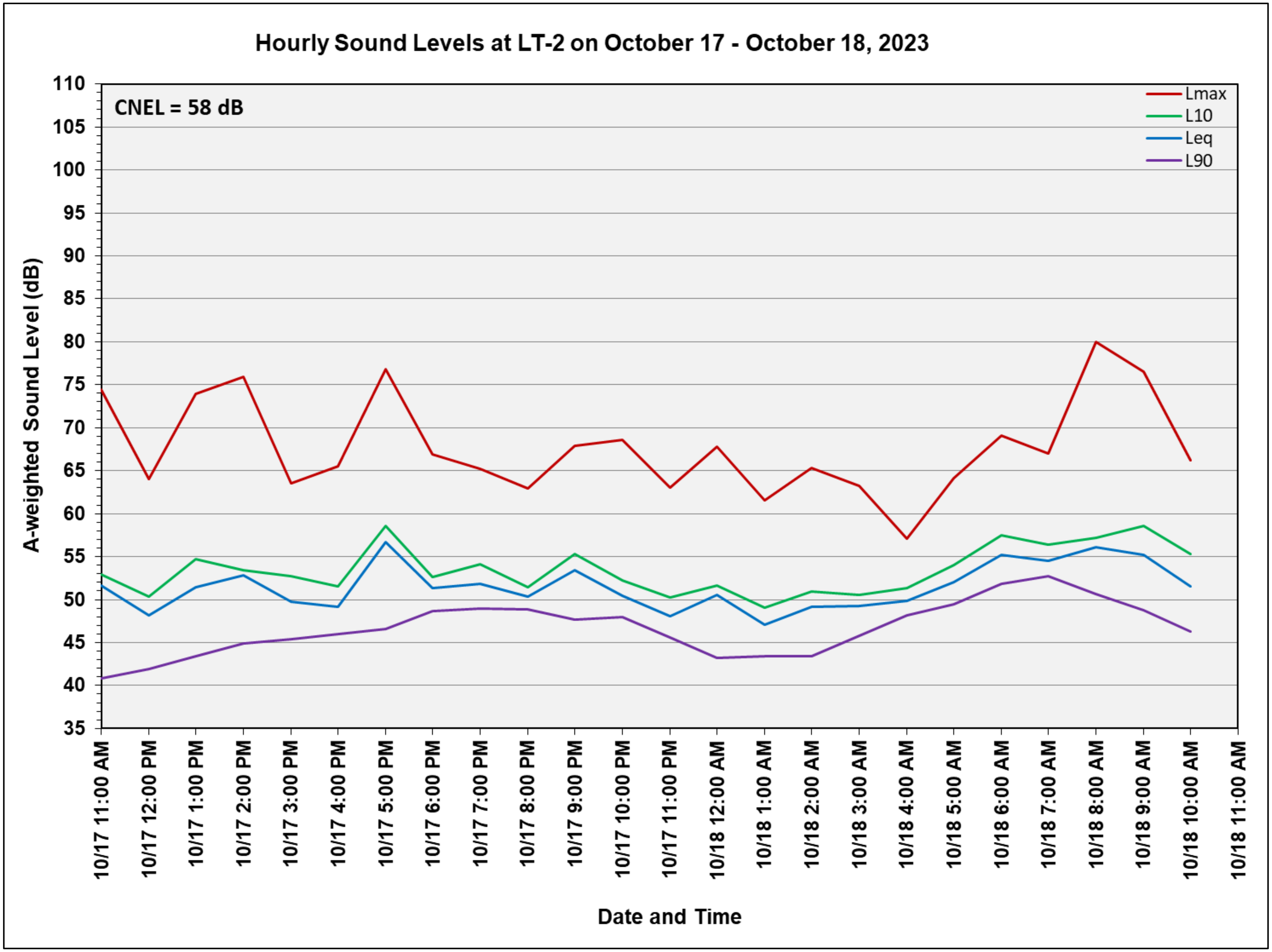
10/18 10:27 AM
10/18 11:27 AM
10/18 12:27 PM
Date and Time


Hourly Sound Levels at LT-2 on October 17 - October 18, 2023
CNEL = 58 dB
Lmax
L10
Leq
L90
A-weighted Sound Level (dB)
110
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
10/17 11:00 AM
10/17 12:00 PM
10/17 1:00 PM
10/17 2:00 PM
10/17 3:00 PM
10/17 4:00 PM
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Date and Time

HBK
HOTTINGER BRÜEL & KJÆR

The Hottinger Bruel & Kjaer Calibration Laboratory
3079 Premiere Parkway Suite 120
Duluth, GA 30097
Telephone: 770/209-6907
Fax: 770/447-4033
Web site address: http://www.hbkworld.com

ACCREDITED Calibration Certificate Number 1568.01

CERTIFICATE OF CALIBRATION

Certificate No: CAS-624660-F1H5W8-803

CALIBRATION OF:

Sound Level Meter:	Brüel & Kjær	2245	Serial No: 2245-100486
Microphone:	Brüel & Kjær	4966	Serial No: 3236858
Supplied Calibrator:	Brüel & Kjær	4231	Serial No: 3024172
Software version:	BZ7301 Version 1.1.2.386		

CLIENT:

Harris Miller Miller & Hanson Inc.
700 District Avenue Suite 800
Burlington, MA 01803

CALIBRATION CONDITIONS:

Preconditioning: 4 hours at 23 ± 3 °C
Environment conditions: See actual values in Environmental Condition sections

SPECIFICATIONS:

This document certifies that the instrument as listed under "Model/Serial Number" has been calibrated and unless otherwise indicated under "Final Data", meets acceptance criteria as prescribed by the referenced Procedure. The reported expanded uncertainty is based on the standard uncertainty multiplied by a coverage factor $k = 2$ providing a level of confidence of approximately 95%. Statements of compliance, where applicable, are based on calibration results falling within specified criteria with no reduction by the uncertainty of the measurement. The calibration of the listed instrumentation, was accomplished using a test system which conforms with the requirements of ISO/IEC 17025, ANSI/NCSL Z540-1, and ISO 10012-1. For "as received" and/or "final" data, see the attached page(s). Items marked with one asterisk (*) are not covered by the scope of the current A2LA accreditation This Certificate and attached data pages shall not be reproduced, except in full, without the written approval of the Hottinger Brüel & Kjær Calibration Laboratory-Duluth, GA. Results relate only to the items tested. This instrument has been calibrated using Measurement Standards with values traceable to the National Institute of Standards and Technology, National Measurement Institutes or derived from natural physical constants.

PROCEDURE:

Hottinger Brüel & Kjær Model 3630 Sound Level Meter Calibration System Software 7763 Version 8.6 - DB: 8.60 Test Collection 2245-E, 4966 (BZ-7301).

RESULTS:

As Received Condition	As Received Data	Final Data
_X_ Received in good condition	_X_ Within acceptance criteria	_X_ Within acceptance criteria
___ Damaged - See attached report	___ Outside acceptance criteria	___ Limited test - See attached details
	___ Inoperative	
	___ Data not taken	

Date of Calibration: Feb. 21. 2023

Certificate issued: Feb. 21. 2023

Grant Kennedy

Calibration Technician

John Avitabile

John Avitabile

Quality Representative

The Hottinger Brüel & Kjær Inc. Calibration Laboratory
3079 Premiere Parkway Suite 120
Duluth, GA 30097
Telephone: 770-209-6907
Fax: 770-447-4033
Web site address: http://www.hbkworld.com

Calibration Certificate # 1568.01

CERTIFICATE OF CALIBRATION

No.: CAS-624660-F1H5W8-701

CALIBRATION OF:

Microphone: Brüel & Kjær Type 4966 Serial No. 3236858

CUSTOMER:

Harris Miller Miller & Hanson, Inc
700 District Ave, Ste 800
Burlington, MA 01803

CALIBRATION CONDITIONS:

Environment conditions:	Air temperature:	24	°C
	Air pressure:	97.74	kPa
	Relative Humidity:	42	%RH
Applied polarization voltage:	0 Vdc		

SPECIFICATIONS:

This document certifies that the instrument as listed under "Type" has been calibrated and unless otherwise indicated under "Final Data", meets acceptance criteria as prescribed by the referenced Procedure. Statements of compliance, where applicable, are based on calibration results falling within specified criteria with no reduction by the uncertainty of the measurements. The calibration of the listed transducer was accomplished using a test system which conforms to the requirements of ISO/IEC 17025, ANSI/NCSL Z540-1, and guidelines of ISO 10012-1. For "as received" and "final" data, see the attached page(s). Items marked with one asterisk (*) are not covered by the scope of the current A2LA accreditation. This Certificate and attached data pages shall not be reproduced, except in full, without written approval of the Hottinger Brüel & Kjær Calibration Laboratory-Duluth, GA. Results relate only to the items tested. The transducer has been calibrated using Measurement Standards with values traceable to the National Institute of Standards and Technology, National Measurement Institutes or derived from natural physical constants.

PROCEDURE:

The measurements have been performed with the assistance of the Hottinger Brüel & Kjær Inc. Microphone Calibration System B&K 9721 with application software WT9649 and WT9650 version 5.3.0.10 using calibration procedure: 4966 S251-FR01

RESULTS:

- [X] "As Received" Data: Within Acceptance Criteria
- [ ] "As Received" Data: Outside Acceptance Criteria
- [X] "Final" Data : Within Acceptance Criteria
- [ ] "Final" Data : Outside Acceptance Criteria

The reported expanded uncertainty is based on the standard uncertainty multiplied by a coverage factor $k=2$ providing a level of confidence of approximately 95%. The uncertainty evaluation has been carried out in accordance with EA-4/02 from elements originating from standards, calibration method, effect of environmental conditions and any short term contribution from the device under calibration.

Date of Calibration: February 17, 2023

Certificate issued: February 17, 2023

William Shipman
Calibration Technician

Meshaun Hobbs
Quality Representative

HBK HOTTINGER BRÜEL & KJÆR
The Hottinger Brüel & Kjær Inc. Calibration Laboratory
3079 Premiere Parkway Suite 120
Duluth, GA 30097
Telephone: 770-209-6907
Fax: 770-447-4033
Web site address: http://www.hbkworld.com

ACCREDITED

Calibration Certificate # 1568.01

CERTIFICATE OF CALIBRATION

No.: CAS-624660-F1H5W8-706

CALIBRATION OF:

Calibrator: Brüel & Kjær Type 4231 Serial No.: 3025172
IEC Class: 1

CUSTOMER:

Harris Miller Miller & Hanson, Inc
700 District Ave, Ste 800
Burlington, MA 01803

CALIBRATION CONDITIONS:

Environment conditions:	Air temperature:	23	°C
	Air pressure:	99.18	kPa
	Relative Humidity:	29	%RH

SPECIFICATIONS:

This document certifies that the acoustic calibrator as listed under "Type" has been calibrated and unless otherwise indicated under "Final Data", meets acceptance criteria as prescribed by the referenced Procedure. Statements of compliance, where applicable, are based on calibration results falling within specified criteria with no reduction by the uncertainty of the measurements. The calibration of the listed transducer was accomplished using a test system which conforms to the requirements of ISO/IEC 17025, ANSI/NCSL Z540-1, and guidelines of ISO 10012-1. For "as received" and "final" data, see the attached page(s). Items marked with one asterisk (*) are not covered by the scope of the current A2LA accreditation. This Certificate and attached data pages shall not be reproduced, except in full, without written approval of the Hottinger Brüel & Kjær Inc. Calibration Laboratory-Duluth, GA. Results relate only to the items tested. The transducer has been calibrated using Measurement Standards with values traceable to the National Institute of Standards and Technology, National Measurement Institutes or derived from natural physical constants. The acoustic calibrator has been calibrated in accordance with the requirements as specified in IEC60942.

PROCEDURE:

The measurements have been performed with the assistance of Hottinger Brüel & Kjær Inc. acoustic calibrator calibration application
Software version 2.3.4 Type 7794 using calibration procedure4231 Complete

RESULTS:

[X] "As Received" Data: Within Acceptance Criteria — [ ] "As Received" Data: Outside Acceptance Criteria

[X] "Final" Data : Within Acceptance Criteria — [ ] "Final" Data : Outside Acceptance Criteria

The reported expanded uncertainty is based on the standard uncertainty multiplied by a coverage factor $k = 2$, providing a level of confidence of approximately 95%. The uncertainty evaluation has been carried out in accordance with EA-4/02from elements originating from the standards, calibration method, effect of environmental conditions and any short time contribution from the calibrator under calibration.

Date of Calibration: February 18, 2023

Certificate issued: February 18, 2023

William Shipman
Calibration Technician

John Avitabile
Quality Representative

HBK
HOTTINGER BRÜEL & KJÆR

The Hottinger Bruel & Kjaer Calibration Laboratory
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Web site address: http://www.hbkworld.com

ACCREDITED

Calibration Certificate Number 1568.01

CERTIFICATE OF CALIBRATION

Certificate No: CAS-624660-F1H5W8-802

CALIBRATION OF:

Sound Level Meter:	Brüel & Kjær	2245	Serial No: 2245-100487
Microphone:	Brüel & Kjær	4966	Serial No: 3236859
Supplied Calibrator:	Brüel & Kjær	4231	Serial No: 3025175
Software version:	BZ7301 Version 1.1.2.386		

CLIENT:

Harris Miller Miller & Hanson Inc.
700 District Avenue Suite 800
Burlington, MA 01803

CALIBRATION CONDITIONS:

Preconditioning: 4 hours at 23 ± 3 °C

Environment conditions: See actual values in Environmental Condition sections

SPECIFICATIONS:

This document certifies that the instrument as listed under "Model/Serial Number" has been calibrated and unless otherwise indicated under "Final Data", meets acceptance criteria as prescribed by the referenced Procedure. The reported expanded uncertainty is based on the standard uncertainty multiplied by a coverage factor $k = 2$ providing a level of confidence of approximately 95%. Statements of compliance, where applicable, are based on calibration results falling within specified criteria with no reduction by the uncertainty of the measurement. The calibration of the listed instrumentation, was accomplished using a test system which conforms with the requirements of ISO/IEC 17025, ANSI/NCSL Z540-1, and ISO 10012-1. For "as received" and/or "final" data, see the attached page(s). Items marked with one asterisk (*) are not covered by the scope of the current A2LA accreditation This Certificate and attached data pages shall not be reproduced, except in full, without the written approval of the Hottinger Brüel & Kjær Calibration Laboratory-Duluth, GA. Results relate only to the items tested. This instrument has been calibrated using Measurement Standards with values traceable to the National Institute of Standards and Technology, National Measurement Institutes or derived from natural physical constants.

PROCEDURE:

Hottinger Brüel & Kjær Model 3630 Sound Level Meter Calibration System Software 7763 Version 8.6 - DB: 8.60 Test Collection 2245-E, 4966 (BZ-7301).

RESULTS:

As Received Condition	As Received Data	Final Data
_X_ Received in good condition	_X_ Within acceptance criteria	_X_ Within acceptance criteria
___ Damaged - See attached report	___ Outside acceptance criteria	___ Limited test - See attached details
	___ Inoperative	
	___ Data not taken	

Date of Calibration: Feb. 17. 2023

Certificate issued: Feb. 21. 2023

Grant Kennedy

Calibration Technician

John Avitabile

Quality Representative

HBK HOTTINGER BRÜEL & KJÆR
The Hottinger Brüel & Kjær Inc. Calibration Laboratory
3079 Premiere Parkway Suite 120
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Telephone: 770-209-6907
Fax: 770-447-4033
Web site address: http://www.hbkworld.com

A2LA ACCREDITED

Calibration Certificate # 1568.01

CERTIFICATE OF CALIBRATION

No.: CAS-624660-F1H5W8-702

CALIBRATION OF:

Microphone: Brüel & Kjær Type 4966 Serial No. 3236859

CUSTOMER:

Harris Miller Miller & Hanson, Inc
700 District Ave, Ste 800
Burlington, MA 01803

CALIBRATION CONDITIONS:

Environment conditions:	Air temperature:	24	°C
	Air pressure:	97.74	kPa
	Relative Humidity:	42	%RH
Applied polarization voltage:	0 Vdc		

SPECIFICATIONS:

This document certifies that the instrument as listed under "Type" has been calibrated and unless otherwise indicated under "Final Data", meets acceptance criteria as prescribed by the referenced Procedure. Statements of compliance, where applicable, are based on calibration results falling within specified criteria with no reduction by the uncertainty of the measurements. The calibration of the listed transducer was accomplished using a test system which conforms to the requirements of ISO/IEC 17025, ANSI/NCSL Z540-1, and guidelines of ISO 10012-1. For "as received" and "final" data, see the attached page(s). Items marked with one asterisk (*) are not covered by the scope of the current A2LA accreditation. This Certificate and attached data pages shall not be reproduced, except in full, without written approval of the Hottinger Brüel & Kjær Calibration Laboratory-Duluth, GA. Results relate only to the items tested. The transducer has been calibrated using Measurement Standards with values traceable to the National Institute of Standards and Technology, National Measurement Institutes or derived from natural physical constants.

PROCEDURE:

The measurements have been performed with the assistance of the Hottinger Brüel & Kjær Inc. Microphone Calibration System B&K 9721 with application software WT9649 and WT9650 version 5.3.0.10 using calibration procedure: 4966 S251-FR01

RESULTS:

[X] "As Received" Data: Within Acceptance Criteria [ ] "As Received" Data: Outside Acceptance Criteria

[X] "Final" Data : Within Acceptance Criteria [ ] "Final" Data : Outside Acceptance Criteria

The reported expanded uncertainty is based on the standard uncertainty multiplied by a coverage factor k =2 providing a level of confidence of approximately 95%. The uncertainty evaluation has been carried out in accordance with EA-4/02 from elements originating from standards, calibration method, effect of environmental conditions and any short term contribution from the device under calibration.

Date of Calibration: February 17, 2023 Certificate issued: February 17, 2023

William Shipman
Calibration Technician

Meshaun Hobbs
Quality Representative

HBK HOTTINGER BRÜEL & KJÆR

The Hottinger Brüel & Kjær Inc. Calibration Laboratory
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Web site address: http://www.hbkworld.com

ACCREDITED

Calibration Certificate # 1568.01

CERTIFICATE OF CALIBRATION

No.: CAS-624660-F1H5W8-707

CALIBRATION OF:

Calibrator:	Brüel & Kjær	Type 4231 IEC Class: 1	Serial No.:	3025175

CUSTOMER:

Harris Miller Miller & Hanson, Inc
700 District Ave, Ste 800
Burlington, MA 01803

CALIBRATION CONDITIONS:

Environment conditions:	Air temperature:	23	°C
	Air pressure:	99.18	kPa
	Relative Humidity:	29	%RH

SPECIFICATIONS:

This document certifies that the acoustic calibrator as listed under "Type" has been calibrated and unless otherwise indicated under "Final Data", meets acceptance criteria as prescribed by the referenced Procedure. Statements of compliance, where applicable, are based on calibration results falling within specified criteria with no reduction by the uncertainty of the measurements. The calibration of the listed transducer was accomplished using a test system which conforms to the requirements of ISO/IEC 17025, ANSI/NCSL Z540-1, and guidelines of ISO 10012-1. For "as received" and "final" data, see the attached page(s). Items marked with one asterisk (*) are not covered by the scope of the current A2LA accreditation. This Certificate and attached data pages shall not be reproduced, except in full, without written approval of the Hottinger Brüel & Kjær Inc. Calibration Laboratory-Duluth, GA. Results relate only to the items tested. The transducer has been calibrated using Measurement Standards with values traceable to the National Institute of Standards and Technology, National Measurement Institutes or derived from natural physical constants. The acoustic calibrator has been calibrated in accordance with the requirements as specified in IEC60942.

PROCEDURE:

The measurements have been performed with the assistance of Hottinger Brüel & Kjær Inc. acoustic calibrator calibration application
Software version 2.3.4 Type 7794 using calibration procedure4231 Complete

RESULTS:

[X] "As Received" Data: Within Acceptance Criteria
[ ] "As Received" Data: Outside Acceptance Criteria
[X] "Final" Data : Within Acceptance Criteria
[ ] "Final" Data : Outside Acceptance Criteria

The reported expanded uncertainty is based on the standard uncertainty multiplied by a coverage factor $k = 2$, providing a level of confidence of approximately 95%. The uncertainty evaluation has been carried out in accordance with EA-4/02from elements originating from the standards, calibration method, effect of environmental conditions and any short time contribution from the calibrator under calibration.

Date of Calibration: February 18, 2023

Certificate issued: February 18, 2023

William Shipman
Calibration Technician

John Avitabile
Quality Representative

ATTACHMENT B. TRAFFIC DATA

Table B-1. Traffic Data – 2023 Existing ADT and Time of Day Distribution

No	Roadway	Vehicle Type	Volumes				Percentages			
			Daytime	Evening	Night	Overall	Daytime	Evening	Night	Overall
1	East Riverside Dr west of S Walker Ave	PV	14,767	1,514	3,093	19,374	70%	7%	15%	92%
		HD	1,394	79	294	1,767	7%	0%	1%	8%
2	East Riverside Dr west of S Vineyard Dr	PV	13,758	1,443	2,765	17,966	70%	7%	14%	91%
		HD	1,341	86	290	1,717	7%	0%	1%	9%
3	S Vineyard Ave north of East Riverside Dr	PV	9,723	1,570	2,586	13,879	65%	10%	17%	92%
		HD	872	69	227	1,167	6%	0%	2%	8%
4	Ontario Ave south of East Riverside Dr	PV	752	98	155	1,005	59%	8%	12%	78%
		HD	232	9	37	278	18%	1%	3%	22%
5	East Riverside Dr west of Ontario Ave	PV	17,540	2,521	4,070	24,130	69%	10%	16%	95%
		HD	1,142	60	182	1,385	4%	0%	1%	5%
6	East Riverside Dr west of S Archibald Ave	PV	17,164	2,596	4,030	23,790	68%	10%	16%	94%
		HD	1,122	64	227	1,413	4%	0%	1%	6%
7	S Archibald Ave north of East Riverside Dr	PV	16,788	2,454	4,306	23,548	62%	9%	16%	86%
		HD	2,745	266	718	3,729	10%	1%	3%	14%
8	East Riverside Dr east of S Archibald Ave	PV	13,793	1,913	3,024	18,730	70%	10%	15%	95%
		HD	820	46	168	1,034	4%	0%	1%	5%
9	S Archibald Ave south of E Chino Ave	PV	14,709	2,208	4,128	21,045	61%	9%	17%	87%
		HD	2,305	216	566	3,087	10%	1%	2%	13%
10	Chino Ave west of Vineyard Ave	PV	1,993	134	357	2,483	59%	4%	11%	73%
		HD	672	57	175	903	20%	2%	5%	27%
11	Chino Ave east of Vineyard Ave	PV	2,099	156	390	2,645	58%	4%	11%	74%
		HD	706	59	182	947	20%	2%	5%	26%
12	Street A south of East Riverside Dr	PV	-	-	-	-	-	-	-	-
		HD	-	-	-	-	-	-	-	-
13	Vineyard Avenue South of East Riverside Dr	PV	-	-	-	-	-	-	-	-
		HD	-	-	-	-	-	-	-	-

Source: Fehr & Peers, 2024.

Table B-2. Traffic Data – 2050 No-Build ADT and Time of Day Distribution

No	Roadway	Vehicle Type	Volumes				Percentages			
			Daytime	Evening	Night	Overall	Daytime	Evening	Night	Overall
1	East Riverside Dr west of S Walker Ave	PV	25,547	2,431	5,109	33,087	75%	7%	15%	97%
		HD	790	75	158	1,023	2%	0%	0%	3%
2	East Riverside Dr west of S Vineyard Dr	PV	24,457	2,152	4,615	31,224	76%	7%	14%	97%
		HD	756	67	143	966	2%	0%	0%	3%
3	S Vineyard Ave north of East Riverside Dr	PV	15,814	2,416	4,050	22,281	69%	11%	18%	97%
		HD	489	75	125	689	2%	0%	1%	3%
4	Ontario Ave south of East Riverside Dr	PV	1,717	221	274	2,212	75%	10%	12%	97%
		HD	53	7	8	68	2%	0%	0%	3%
5	East Riverside Dr west of Ontario Ave	PV	28,098	3,073	5,728	36,899	74%	8%	15%	97%
		HD	869	95	177	1,141	2%	0%	0%	3%
6	East Riverside Dr west of S Archibald Ave	PV	28,421	3,209	5,725	37,355	74%	8%	15%	97%
		HD	879	99	177	1,155	2%	0%	0%	3%
7	S Archibald Ave north of East Riverside Dr	PV	25,424	3,686	5,632	34,742	70%	10%	16%	96%
		HD	1,059	154	235	1,448	3%	0%	1%	4%
8	East Riverside Dr east of S Archibald Ave	PV	23,283	2,791	4,645	30,720	74%	9%	15%	97%
		HD	720	86	144	950	2%	0%	0%	3%
9	S Archibald Ave south of E Chino Ave	PV	24,598	3,281	6,546	34,426	69%	9%	18%	96%
		HD	1,025	137	273	1,434	3%	0%	1%	4%
10	Chino Ave west of Vineyard Ave	PV	7,611	593	1,263	9,467	78%	6%	13%	97%
		HD	235	18	39	293	2%	0%	0%	3%
11	Chino Ave east of Vineyard Ave	PV	8,620	823	1,450	10,893	77%	7%	13%	97%
		HD	267	25	45	337	2%	0%	0%	3%
12	Street A south of East Riverside Dr	PV	2,191	183	517	2,891	75%	6%	18%	99%
		HD	22	2	5	29	1%	0%	0%	1%
13	Vineyard Avenue South of East Riverside Dr	PV	3,398	594	1,120	5,112	64%	11%	21%	97%
		HD	105	18	35	158	2%	0%	1%	3%

Source: Fehr & Peers, 2024.

Table B-3. Traffic Data – 2050 Build ADT and Time of Day Distribution

No	Roadway	Vehicle Type	Volumes				Percentages			
			Daytime	Evening	Night	Overall	Daytime	Evening	Night	Overall
1	East Riverside Dr west of S Walker Ave	PV	26,810	2,921	5,350	35,081	74%	8%	15%	97%
		HD	829	90	165	1,085	2%	0%	0%	3%
2	East Riverside Dr west of S Vineyard Dr	PV	25,452	2,667	4,537	32,656	76%	8%	13%	97%
		HD	787	82	140	1,010	2%	0%	0%	3%
3	S Vineyard Ave north of East Riverside Dr	PV	16,694	2,811	4,236	23,741	68%	11%	17%	97%
		HD	516	87	131	734	2%	0%	1%	3%
4	Ontario Ave south of East Riverside Dr	PV	4,576	1,081	812	6,469	69%	16%	12%	97%
		HD	142	33	25	200	2%	1%	0%	3%
5	East Riverside Dr west of Ontario Ave	PV	30,800	4,217	5,866	40,883	73%	10%	14%	97%
		HD	953	130	181	1,264	2%	0%	0%	3%
6	East Riverside Dr west of S Archibald Ave	PV	31,707	4,508	6,307	42,522	72%	10%	14%	97%
		HD	981	139	195	1,315	2%	0%	0%	3%
7	S Archibald Ave north of East Riverside Dr	PV	27,998	4,797	6,200	38,994	69%	12%	15%	96%
		HD	1,167	200	258	1,625	3%	0%	1%	4%
8	East Riverside Dr east of S Archibald Ave	PV	23,979	3,005	4,714	31,698	73%	9%	14%	97%
		HD	742	93	146	980	2%	0%	0%	3%
9	S Archibald Ave south of E Chino Ave	PV	26,767	4,090	6,962	37,819	68%	10%	18%	96%
		HD	1,115	170	290	1,576	3%	0%	1%	4%
10	Chino Ave west of Vineyard Ave	PV	8,265	936	1,435	10,636	75%	9%	13%	97%
		HD	256	29	44	329	2%	0%	0%	3%
11	Chino Ave east of Vineyard Ave	PV	9,734	1,382	1,674	12,790	74%	10%	13%	97%
		HD	301	43	52	396	2%	0%	0%	3%
12	Street A south of East Riverside Dr	PV	2,504	808	384	3,696	67%	22%	10%	99%
		HD	25	8	4	37	1%	0%	0%	1%
13	Vineyard Avenue South of East Riverside Dr	PV	5,565	1,405	1,756	8,725	62%	16%	20%	97%
		HD	172	43	54	270	2%	0%	1%	3%

Source: Fehr & Peers, 2024.

ATTACHMENT C. PREDICTED TRAFFIC-NOISE LEVELS

Table C-1. Predicted Traffic-Noise Levels for All Receptors, CNEL dBA

Receptor	Receptor Group	Land Use[1]	CNEL (dBA)			Measured Ambient Noise Environment (CNEL)	Allowable Increase in Traffic-Noise Levels (dBA)	Increase in Traffic-Noise Levels (2023 Existing to 2050 Build)	Impact Status
			2023	2050					
			Existing	No Build	Build				
R1	5	Res.	61.6	64.7	65.2	59.0	5	3.6	No Impact
R2	5	Res.	62.4	65.2	65.8	59.0	5	3.4	No Impact
R3	5	Res.	62.3	65.2	65.7	59.0	5	3.4	No Impact
R4	5	Res.	62.4	65.1	65.7	59.0	5	3.3	No Impact
R5	5	Res.	63.2	65.8	66.4	59.0	5	3.2	No Impact
R6	5	Res.	62.0	64.7	65.3	59.0	5	3.3	No Impact
R7	5	Res.	62.3	65.0	65.6	59.0	5	3.3	No Impact
R8	5	Res.	62.8	65.4	66.0	59.0	5	3.2	No Impact
R9	5	Res.	62.9	65.5	66.1	59.0	5	3.2	No Impact
R10	5	Res.	62.6	64.9	65.5	59.0	5	2.9	No Impact
R11	5	Res.	63.2	65.6	66.1	59.0	5	2.9	No Impact
R12	5	Res.	62.0	65.0	65.6	59.0	5	3.6	No Impact
R13	5	Res.	57.7	61.4	62.0	59.0	5	4.3	No Impact
R14	5	Res.	55.9	59.7	60.3	59.0	5	4.4	No Impact
R15	5	Res.	41.3	44.6	45.2	59.0	5	3.9	No Impact
R16	5	Res.	42.6	46.3	46.6	59.0	5	4.0	No Impact
R17	5	Res.	41.7	45.4	45.4	59.0	5	3.7	No Impact
R18	5	Res.	41.4	44.7	45.3	59.0	5	3.9	No Impact
R19	5	Res.	41.5	44.9	45.5	59.0	5	4.0	No Impact
R20	5	Res.	40.7	44.0	44.6	59.0	5	3.9	No Impact
R21	5	Res.	41.1	44.4	45.0	59.0	5	3.9	No Impact
R22	5	Res.	40.8	44.1	44.7	59.0	5	3.9	No Impact
R23	5	Res.	40.7	43.8	44.5	59.0	5	3.8	No Impact
R24	5	Res.	41.4	43.3	43.9	59.0	5	2.5	No Impact

Table C-1. Predicted Traffic-Noise Levels for All Receptors, CNEL dBA

Receptor	Receptor Group	Land Use[1]	CNEL (dBA)			Measured Ambient Noise Environment (CNEL)	Allowable Increase in Traffic-Noise Levels (dBA)	Increase in Traffic-Noise Levels (2023 Existing to 2050 Build)	Impact Status
			2023	2050					
			Existing	No Build	Build				
R25	5	Res.	46.3	47.4	48.0	59.0	5	1.7	No Impact
R26	5	Res.	56.5	60.4	60.8	59.0	5	4.3	No Impact
R27	5	Res.	55.6	59.3	59.8	59.0	5	4.2	No Impact
R28	5	Res.	55.0	58.5	58.9	59.0	5	3.9	No Impact
R29	5	Res.	54.1	57.3	57.8	59.0	5	3.7	No Impact
R30	5	Res.	53.8	57.0	57.2	59.0	5	3.4	No Impact
R31	5	Res.	53.2	56.7	56.8	59.0	5	3.6	No Impact
R32	5	Res.	51.7	55.0	55.3	59.0	5	3.6	No Impact
R33	5	Res.	44.9	48.3	48.3	59.0	5	3.4	No Impact
R34	5	Res.	42.5	45.9	46.5	59.0	5	4.0	No Impact
R35	5	Res.	43.4	46.7	47.3	59.0	5	3.9	No Impact
R36	5	Res.	43.2	46.6	47.0	59.0	5	3.8	No Impact
R37	5	Res.	43.1	46.5	46.9	59.0	5	3.8	No Impact
R38	5	Res.	41.8	45.1	45.7	59.0	5	3.9	No Impact
R39	5	Res.	45.0	48.3	49.0	59.0	5	4.0	No Impact
R40	5	Res.	44.2	47.5	48.0	59.0	5	3.8	No Impact
R41	5	Res.	46.4	49.7	50.3	59.0	5	3.9	No Impact
R42	5	Res.	47.6	50.1	50.7	59.0	5	3.1	No Impact
R43	5	Res.	41.5	44.9	45.2	59.0	5	3.7	No Impact
R44	5	Res.	39.7	43.1	43.4	59.0	5	3.7	No Impact
R45	5	Res.	38.7	42.0	42.4	59.0	5	3.7	No Impact
R46	5	Res.	39.0	42.4	42.8	59.0	5	3.8	No Impact
R47	5	Res.	38.0	41.3	41.8	59.0	5	3.8	No Impact
R48	5	Res.	37.7	41.0	41.5	59.0	5	3.8	No Impact

Table C-1. Predicted Traffic-Noise Levels for All Receptors, CNEL dBA

Receptor	Receptor Group	Land Use[1]	CNEL (dBA)			Measured Ambient Noise Environment (CNEL)	Allowable Increase in Traffic-Noise Levels (dBA)	Increase in Traffic-Noise Levels (2023 Existing to 2050 Build)	Impact Status
			2023	2050					
			Existing	No Build	Build				
R49	5	Res.	38.2	41.6	42.0	59.0	5	3.8	No Impact
R50	5	Res.	39.0	42.0	42.5	59.0	5	3.5	No Impact
R51	5	Res.	37.9	41.1	41.5	59.0	5	3.6	No Impact
R52	5	Res.	38.7	41.9	42.4	59.0	5	3.7	No Impact
R53	5	Res.	41.6	45.0	45.3	59.0	5	3.7	No Impact
R54	5	Res.	40.0	43.5	43.8	59.0	5	3.8	No Impact
R55	5	Res.	39.5	42.8	43.4	59.0	5	3.9	No Impact
R56	5	Res.	39.6	43.0	43.4	59.0	5	3.8	No Impact
R57	5	Res.	38.5	41.9	42.3	59.0	5	3.8	No Impact
R58	5	Res.	38.5	41.8	42.3	59.0	5	3.8	No Impact
R59	5	Res.	39.1	42.4	43.0	59.0	5	3.9	No Impact
R60	5	Res.	38.9	42.1	42.6	59.0	5	3.7	No Impact
R61	5	Res.	38.5	41.7	42.3	59.0	5	3.8	No Impact
R62	5	Res.	39.2	42.5	43.1	59.0	5	3.9	No Impact
R63	5	Res.	53.3	52.8	53.4	59.0	5	0.1	No Impact
R64	5	Res.	42.0	44.2	44.8	59.0	5	2.8	No Impact
R65	5	Res.	40.5	42.3	42.9	59.0	5	2.4	No Impact
R66	5	Res.	39.2	42.0	42.6	59.0	5	3.4	No Impact
R67	5	Res.	37.4	40.5	41.1	59.0	5	3.7	No Impact
R68	5	Res.	37.1	40.2	40.9	59.0	5	3.8	No Impact
R69	5	Res.	37.6	40.6	41.2	59.0	5	3.6	No Impact
R70	5	Res.	36.2	39.3	40.0	59.0	5	3.8	No Impact
R71	5	Res.	37.0	40.1	40.6	59.0	5	3.6	No Impact
R72	5	Res.	36.8	40.0	40.4	59.0	5	3.6	No Impact

Table C-1. Predicted Traffic-Noise Levels for All Receptors, CNEL dBA

Receptor	Receptor Group	Land Use[1]	CNEL (dBA)			Measured Ambient Noise Environment (CNEL)	Allowable Increase in Traffic-Noise Levels (dBA)	Increase in Traffic-Noise Levels (2023 Existing to 2050 Build)	Impact Status
			2023	2050					
			Existing	No Build	Build				
R73	5	Res.	36.9	40.0	40.4	59.0	5	3.5	No Impact
R74	5	Res.	37.3	40.5	40.9	59.0	5	3.6	No Impact
R75	5	Res.	36.8	40.0	40.3	59.0	5	3.5	No Impact
R76	5	Res.	37.2	40.5	40.8	59.0	5	3.6	No Impact
R77	5	Res.	37.5	40.8	40.9	59.0	5	3.4	No Impact
R78	5	Res.	37.7	41.0	40.9	59.0	5	3.2	No Impact
R79	5	Res.	38.7	42.0	42.0	59.0	5	3.3	No Impact
R80	5	Res.	39.5	42.9	42.6	59.0	5	3.1	No Impact
R81	5	Res.	38.7	42.0	42.0	59.0	5	3.3	No Impact
R82	5	Res.	38.0	41.3	41.6	59.0	5	3.6	No Impact
R83	5	Res.	37.7	41.0	41.3	59.0	5	3.6	No Impact
R84	5	Res.	38.1	41.4	41.8	59.0	5	3.7	No Impact
R85	5	Res.	37.2	40.4	40.9	59.0	5	3.7	No Impact
R86	5	Res.	37.3	40.5	41.0	59.0	5	3.7	No Impact
R87	5	Res.	37.6	40.8	41.4	59.0	5	3.8	No Impact
R88	5	Res.	37.1	40.3	41.0	59.0	5	3.9	No Impact
R89	5	Res.	37.0	40.1	40.8	59.0	5	3.8	No Impact
R90	5	Res.	36.5	39.7	40.3	59.0	5	3.8	No Impact
R91	5	Res.	37.1	40.3	41.0	59.0	5	3.9	No Impact
R92	5	Res.	36.9	40.0	40.5	59.0	5	3.6	No Impact
R93	5	Res.	36.9	40.1	40.6	59.0	5	3.7	No Impact
R94	5	Res.	37.2	40.3	40.8	59.0	5	3.6	No Impact
R95	5	Res.	36.9	40.1	40.5	59.0	5	3.6	No Impact
R96	5	Res.	37.4	40.6	40.9	59.0	5	3.5	No Impact

Table C-1. Predicted Traffic-Noise Levels for All Receptors, CNEL dBA

Receptor	Receptor Group	Land Use[1]	CNEL (dBA)			Measured Ambient Noise Environment (CNEL)	Allowable Increase in Traffic-Noise Levels (dBA)	Increase in Traffic-Noise Levels (2023 Existing to 2050 Build)	Impact Status
			2023	2050					
			Existing	No Build	Build				
R97	5	Res.	37.5	40.7	41.0	59.0	5	3.5	No Impact
R98	5	Res.	37.5	40.8	40.9	59.0	5	3.4	No Impact
R99	5	Res.	38.4	41.5	41.8	59.0	5	3.4	No Impact
R100	5	Res.	39.1	42.4	42.6	59.0	5	3.5	No Impact
R101	5	Res.	38.4	41.6	41.9	59.0	5	3.5	No Impact
R102	5	Res.	38.1	41.3	41.6	59.0	5	3.5	No Impact
R103	5	Res.	37.5	40.7	41.2	59.0	5	3.7	No Impact
R104	5	Res.	37.7	41.0	41.4	59.0	5	3.7	No Impact
R105	5	Res.	37.4	40.6	41.2	59.0	5	3.8	No Impact
R106	5	Res.	37.1	40.2	40.8	59.0	5	3.7	No Impact
R107	5	Res.	37.1	40.3	40.9	59.0	5	3.8	No Impact
R108	5	Res.	36.4	39.6	40.2	59.0	5	3.8	No Impact
R109	5	Res.	36.8	39.9	40.6	59.0	5	3.8	No Impact
R110	5	Res.	36.2	39.3	39.9	59.0	5	3.7	No Impact
R111	5	Res.	35.8	38.8	39.4	59.0	5	3.6	No Impact
R112	5	Res.	36.1	39.0	39.8	59.0	5	3.7	No Impact
R113	5	Res.	36.4	39.3	39.9	59.0	5	3.5	No Impact
R114	5	Res.	36.8	39.7	40.3	59.0	5	3.5	No Impact
R115	5	Res.	36.8	39.7	40.2	59.0	5	3.4	No Impact
R116	5	Res.	37.5	40.3	40.7	59.0	5	3.2	No Impact
R117	5	Res.	37.9	40.8	41.1	59.0	5	3.2	No Impact
R118	5	Res.	38.4	41.3	41.5	59.0	5	3.1	No Impact
R119	5	Res.	39.5	42.4	42.5	59.0	5	3.0	No Impact
R120	5	Res.	38.5	41.5	41.0	59.0	5	2.5	No Impact

Table C-1. Predicted Traffic-Noise Levels for All Receptors, CNEL dBA

Receptor	Receptor Group	Land Use[1]	CNEL (dBA)			Measured Ambient Noise Environment (CNEL)	Allowable Increase in Traffic-Noise Levels (dBA)	Increase in Traffic-Noise Levels (2023 Existing to 2050 Build)	Impact Status
			2023	2050					
			Existing	No Build	Build				
R121	5	Res.	37.2	40.1	40.8	59.0	5	3.6	No Impact
R122	5	Res.	37.2	40.2	40.8	59.0	5	3.6	No Impact
R123	5	Res.	36.6	39.7	40.4	59.0	5	3.8	No Impact
R124	5	Res.	37.0	40.0	40.7	59.0	5	3.7	No Impact
R125	5	Res.	36.3	39.4	40.2	59.0	5	3.9	No Impact
R126	5	Res.	36.5	39.6	40.4	59.0	5	3.9	No Impact
R127	5	Res.	36.8	39.9	40.6	59.0	5	3.8	No Impact
R128	5	Res.	36.0	39.1	39.8	59.0	5	3.8	No Impact
R129	5	Res.	35.6	38.7	39.4	59.0	5	3.8	No Impact
R130	5	Res.	35.7	38.5	39.3	59.0	5	3.6	No Impact
R131	5	Res.	36.5	39.2	40.0	59.0	5	3.5	No Impact
R132	5	Res.	36.4	38.9	39.8	59.0	5	3.4	No Impact
R133	5	Res.	37.0	39.6	40.2	59.0	5	3.2	No Impact
R134	5	Res.	36.2	39.1	40.1	59.0	5	3.9	No Impact
R135	5	Res.	36.3	39.2	40.2	59.0	5	3.9	No Impact
R136	5	Res.	36.1	39.0	39.9	59.0	5	3.8	No Impact
R137	5	Res.	36.6	39.5	40.4	59.0	5	3.8	No Impact
R138	5	Res.	36.3	39.1	40.0	59.0	5	3.7	No Impact
R139	5	Res.	37.1	39.9	40.7	59.0	5	3.6	No Impact
R140	5	Res.	37.1	39.9	40.8	59.0	5	3.7	No Impact
R141	5	Res.	37.9	40.6	41.4	59.0	5	3.5	No Impact
R142	5	Res.	37.9	40.6	41.2	59.0	5	3.3	No Impact
R143	5	Res.	38.7	41.4	42.1	59.0	5	3.4	No Impact
R144	5	Res.	38.2	40.7	41.5	59.0	5	3.3	No Impact

Table C-1. Predicted Traffic-Noise Levels for All Receptors, CNEL dBA

Receptor	Receptor Group	Land Use[1]	CNEL (dBA)			Measured Ambient Noise Environment (CNEL)	Allowable Increase in Traffic-Noise Levels (dBA)	Increase in Traffic-Noise Levels (2023 Existing to 2050 Build)	Impact Status
			2023	2050					
			Existing	No Build	Build				
R145	5	Res.	37.9	40.4	40.8	59.0	5	2.9	No Impact
R146	5	Res.	37.5	40.2	40.9	59.0	5	3.4	No Impact
R147	5	Res.	37.5	40.1	40.8	59.0	5	3.3	No Impact
R148	5	Res.	37.1	39.9	40.7	59.0	5	3.6	No Impact
R149	5	Res.	36.7	39.4	40.2	59.0	5	3.5	No Impact
R150	5	Res.	36.3	39.1	39.9	59.0	5	3.6	No Impact
R151	5	Res.	36.3	39.0	40.0	59.0	5	3.7	No Impact
R152	5	Res.	36.1	38.9	39.7	59.0	5	3.6	No Impact
R153	5	Res.	36.0	38.7	39.7	59.0	5	3.7	No Impact
R154	5	Res.	38.6	40.6	41.4	59.0	5	2.8	No Impact
R155	5	Res.	40.0	42.0	42.6	59.0	5	2.6	No Impact
R156	5	Res.	39.3	41.1	41.8	59.0	5	2.5	No Impact
R157	5	Res.	39.0	40.5	41.4	59.0	5	2.4	No Impact
R158	5	Res.	39.8	41.1	41.9	59.0	5	2.1	No Impact
R159	5	Res.	38.8	40.4	41.3	59.0	5	2.5	No Impact
R160	5	Res.	36.0	38.4	39.2	59.0	5	3.2	No Impact
R161	5	Res.	37.5	40.1	40.8	59.0	5	3.3	No Impact
R162	5	Res.	37.1	39.9	40.5	59.0	5	3.4	No Impact
R163	5	Res.	38.5	41.0	41.4	59.0	5	2.9	No Impact
R164	5	Res.	38.4	40.9	41.5	59.0	5	3.1	No Impact
R165	5	Res.	38.9	41.5	42.0	59.0	5	3.1	No Impact
R166	5	Res.	39.0	41.7	42.3	59.0	5	3.3	No Impact
R167	5	Res.	38.1	40.8	41.3	59.0	5	3.2	No Impact
R168	5	Res.	37.6	40.3	40.7	59.0	5	3.1	No Impact

Table C-1. Predicted Traffic-Noise Levels for All Receptors, CNEL dBA

Receptor	Receptor Group	Land Use[1]	CNEL (dBA)			Measured Ambient Noise Environment (CNEL)	Allowable Increase in Traffic-Noise Levels (dBA)	Increase in Traffic-Noise Levels (2023 Existing to 2050 Build)	Impact Status
			2023	2050					
			Existing	No Build	Build				
R169	5	Res.	37.3	40.0	40.8	59.0	5	3.5	No Impact
R170	5	Res.	36.8	39.6	40.4	59.0	5	3.6	No Impact
R171	5	Res.	37.0	39.3	39.9	59.0	5	2.9	No Impact
R172	5	Res.	42.0	43.2	44.0	59.0	5	2.0	No Impact
R173	5	Res.	43.2	44.4	45.1	59.0	5	1.9	No Impact
R174	5	Res.	44.4	45.6	46.4	59.0	5	2.0	No Impact
R175	5	Res.	48.7	50.2	51.0	59.0	5	2.3	No Impact
R176	5	Res.	49.5	51.2	52.0	59.0	5	2.5	No Impact
R177	5	Res.	50.2	52.6	53.4	59.0	5	3.2	No Impact
R178	5	Res.	47.4	51.2	52.0	59.0	5	4.6	No Impact
R179	5	Res.	43.1	46.0	46.7	59.0	5	3.6	No Impact
R180	5	Res.	43.1	45.9	46.6	59.0	5	3.5	No Impact
R181	5	Res.	41.6	44.5	45.3	59.0	5	3.7	No Impact
R182	5	Res.	40.8	43.7	44.4	59.0	5	3.6	No Impact
R183	5	Res.	41.1	44.0	44.7	59.0	5	3.6	No Impact
R184	5	Res.	41.7	44.6	45.3	59.0	5	3.6	No Impact
R185	5	Res.	44.4	47.5	48.2	59.0	5	3.8	No Impact
R186	5	Res.	45.6	48.6	49.3	59.0	5	3.7	No Impact
R187	5	Res.	49.5	52.9	53.7	59.0	5	4.2	No Impact
R188	5	Res.	64.2	67.7	68.5	59.0	5	4.3	No Impact
R189	5	Res.	64.9	68.4	69.3	59.0	5	4.4	No Impact
R190	5	Res.	64.3	67.8	68.6	59.0	5	4.3	No Impact
R191	5	Res.	65.4	69.0	69.8	59.0	5	4.4	No Impact
R192	5	Res.	64.1	67.7	68.5	59.0	5	4.4	No Impact

Table C-1. Predicted Traffic-Noise Levels for All Receptors, CNEL dBA

Receptor	Receptor Group	Land Use[1]	CNEL (dBA)			Measured Ambient Noise Environment (CNEL)	Allowable Increase in Traffic-Noise Levels (dBA)	Increase in Traffic-Noise Levels (2023 Existing to 2050 Build)	Impact Status
			2023	2050					
			Existing	No Build	Build				
R193	5	Res.	66.6	70.2	71.0	59.0	5	4.4	No Impact
R194	5	Res.	58.1	61.0	61.8	59.0	5	3.7	No Impact
R195	5	Res.	55.8	58.3	59.0	59.0	5	3.2	No Impact
R196	5	Res.	54.8	57.4	58.2	59.0	5	3.4	No Impact
R197	5	Res.	53.9	56.4	57.1	59.0	5	3.2	No Impact
R198	5	Res.	52.1	54.4	55.0	59.0	5	2.9	No Impact
R199	5	Res.	52.2	54.9	55.5	59.0	5	3.3	No Impact
R200	5	Res.	51.7	54.8	55.2	59.0	5	3.5	No Impact
R201	5	Res.	50.3	53.0	53.3	59.0	5	3.0	No Impact
R202	5	Res.	50.4	53.2	53.6	59.0	5	3.2	No Impact
R203	5	Res.	49.8	52.6	52.8	59.0	5	3.0	No Impact
R204	5	Res.	48.1	51.1	51.0	59.0	5	2.9	No Impact
R205	5	Res.	48.1	50.8	50.5	59.0	5	2.4	No Impact
R206	5	Res.	47.2	49.9	49.3	59.0	5	2.1	No Impact
R207	5	Res.	46.7	49.4	48.7	59.0	5	2.0	No Impact
R208	5	Res.	46.4	49.1	48.3	59.0	5	1.9	No Impact
R209	5	Res.	46.1	48.7	48.0	59.0	5	1.9	No Impact
R210	5	Res.	45.4	48.2	47.3	59.0	5	1.9	No Impact
R211	5	Res.	45.8	48.6	47.3	59.0	5	1.5	No Impact
R212	5	Res.	45.7	48.5	47.3	59.0	5	1.6	No Impact
R213	5	Res.	48.6	51.6	51.1	59.0	5	2.5	No Impact
R214	5	Res.	48.0	50.9	50.5	59.0	5	2.5	No Impact
R215	5	Res.	47.5	50.4	49.4	59.0	5	1.9	No Impact
R216	5	Res.	46.9	50.2	49.6	59.0	5	2.7	No Impact

Table C-1. Predicted Traffic-Noise Levels for All Receptors, CNEL dBA

Receptor	Receptor Group	Land Use[1]	CNEL (dBA)			Measured Ambient Noise Environment (CNEL)	Allowable Increase in Traffic-Noise Levels (dBA)	Increase in Traffic-Noise Levels (2023 Existing to 2050 Build)	Impact Status
			2023	2050					
			Existing	No Build	Build				
R217	5	Res.	47.6	50.8	49.8	59.0	5	2.2	No Impact
R218	5	Res.	46.1	49.1	47.8	59.0	5	1.7	No Impact
R219	5	Res.	46.1	49.2	47.7	59.0	5	1.6	No Impact
R220	5	Res.	45.8	48.6	47.0	59.0	5	1.2	No Impact
R221	5	Res.	51.8	55.0	55.1	59.0	5	3.3	No Impact
R222	5	Res.	50.3	53.3	53.3	59.0	5	3.0	No Impact
R223	5	Res.	49.9	53.2	53.0	59.0	5	3.1	No Impact
R224	5	Res.	49.9	53.3	53.3	59.0	5	3.4	No Impact
R225	5	Res.	49.2	52.3	52.0	59.0	5	2.8	No Impact
R226	5	Res.	58.7	62.4	63.2	59.0	5	4.5	No Impact
R227	2	Res.	66.1	67.7	67.9	58.0	5	1.8	No Impact
R228	2	Res.	59.9	60.9	61.2	58.0	5	1.3	No Impact
R229	2	Res.	56.6	57.6	57.9	58.0	5	1.3	No Impact
R230	2	Res.	54.4	56.0	56.3	58.0	5	1.9	No Impact
R231	2	Res.	55.0	56.9	57.2	58.0	5	2.2	No Impact
R232	2	Res.	54.9	56.9	57.2	58.0	5	2.3	No Impact
R233	2	Res.	51.8	54.4	54.7	58.0	5	2.9	No Impact
R234	2	Res.	50.0	52.8	53.1	58.0	5	3.1	No Impact
R235	2	Res.	50.5	53.5	53.8	58.0	5	3.3	No Impact
R236	2	Res.	49.8	53.1	53.4	58.0	5	3.6	No Impact
R237	2	Res.	50.3	53.6	53.9	58.0	5	3.6	No Impact
R238	2	Res.	50.5	53.7	54.1	58.0	5	3.6	No Impact
R239	2	Res.	54.0	56.8	57.2	58.0	5	3.2	No Impact
R240	2	Res.	52.8	55.9	56.2	58.0	5	3.4	No Impact

Table C-1. Predicted Traffic-Noise Levels for All Receptors, CNEL dBA

Receptor	Receptor Group	Land Use[1]	CNEL (dBA)			Measured Ambient Noise Environment (CNEL)	Allowable Increase in Traffic-Noise Levels (dBA)	Increase in Traffic-Noise Levels (2023 Existing to 2050 Build)	Impact Status
			2023	2050					
			Existing	No Build	Build				
R241	2	Res.	59.8	64.4	64.8	58.0	5	5.0	No Impact
R242	2	Res.	68.4	72.4	72.8	58.0	5	4.4	No Impact
R243	2	Res.	66.4	70.8	71.2	58.0	5	4.8	No Impact
R244	2	Res.	72.0	75.4	75.8	58.0	5	3.8	No Impact
R245	2	Res.	60.6	64.6	64.9	58.0	5	4.3	No Impact
R246	2	Res.	55.9	58.8	59.1	58.0	5	3.2	No Impact
R247	2	Res.	52.6	55.6	55.8	58.0	5	3.2	No Impact
R248	2	Res.	50.1	52.8	53.2	58.0	5	3.1	No Impact
R249	2	Res.	50.5	53.3	54.0	58.0	5	3.5	No Impact
R250	2	Res.	47.3	50.4	51.0	58.0	5	3.7	No Impact
R251	2	Res.	46.7	49.9	50.2	58.0	5	3.5	No Impact
R252	2	Res.	46.3	49.5	49.8	58.0	5	3.5	No Impact
R253	2	Res.	47.3	50.4	50.8	58.0	5	3.5	No Impact
R254	2	Res.	50.6	53.4	53.7	58.0	5	3.1	No Impact
R255	2	Res.	48.0	51.2	51.6	58.0	5	3.6	No Impact
R256	2	Res.	48.3	51.6	52.0	58.0	5	3.7	No Impact
R257	2	Res.	46.5	49.7	50.0	58.0	5	3.5	No Impact
R258	2	Res.	48.1	51.1	51.6	58.0	5	3.5	No Impact
R259	2	Res.	48.1	51.2	51.6	58.0	5	3.5	No Impact
R260	2	Res.	48.0	51.1	51.5	58.0	5	3.5	No Impact
R261	2	Res.	46.9	50.1	50.4	58.0	5	3.5	No Impact
R262	2	Res.	46.2	49.5	49.8	58.0	5	3.6	No Impact
R263	2	Res.	48.2	51.3	51.6	58.0	5	3.4	No Impact
R264	2	Res.	47.7	50.8	51.2	58.0	5	3.5	No Impact

Table C-1. Predicted Traffic-Noise Levels for All Receptors, CNEL dBA

Receptor	Receptor Group	Land Use[1]	CNEL (dBA)			Measured Ambient Noise Environment (CNEL)	Allowable Increase in Traffic-Noise Levels (dBA)	Increase in Traffic-Noise Levels (2023 Existing to 2050 Build)	Impact Status
			2023	2050					
			Existing	No Build	Build				
R265	2	Res.	45.7	48.9	49.2	58.0	5	3.5	No Impact
R266	2	Res.	43.5	46.7	47.0	58.0	5	3.5	No Impact
R267	2	Res.	42.5	45.7	46.1	58.0	5	3.6	No Impact
R268	2	Res.	40.2	43.3	43.7	58.0	5	3.5	No Impact
R269	2	Res.	45.2	47.8	48.5	58.0	5	3.3	No Impact
R271	2	Res.	48.3	51.3	51.5	58.0	5	3.2	No Impact
R272	2	Res.	49.0	51.9	52.1	58.0	5	3.1	No Impact
R273	2	Res.	49.1	51.7	52.0	58.0	5	2.9	No Impact
R274	2	Res.	47.7	50.5	50.8	58.0	5	3.1	No Impact
R275	2	Res.	50.7	53.0	53.3	58.0	5	2.6	No Impact
R276	2	Res.	49.6	52.6	52.8	58.0	5	3.2	No Impact
R277	2	Res.	50.8	53.5	53.8	58.0	5	3.0	No Impact
R278	2	Res.	53.3	54.5	54.8	58.0	5	1.5	No Impact
R279	2	Res.	54.9	56.0	56.2	58.0	5	1.3	No Impact
R280	2	Res.	51.9	53.9	54.2	58.0	5	2.3	No Impact
R281	2	Res.	57.1	57.6	57.8	58.0	5	0.7	No Impact
R282	2	Res.	61.2	61.6	61.9	58.0	5	0.7	No Impact
R283	2	Res.	57.9	58.8	59.1	58.0	5	1.2	No Impact
R284	2	Res.	61.9	62.4	62.6	58.0	5	0.7	No Impact
R285	2	Res.	66.3	67.5	67.7	58.0	5	1.4	No Impact
R286	2	Res.	67.5	69.1	69.3	58.0	5	1.8	No Impact
R287	2	Res.	59.9	60.7	61.0	58.0	5	1.1	No Impact
R288	2	Res.	62.4	63.1	63.4	58.0	5	1.0	No Impact
R289	1	Res.	69.2	72.8	72.9	58.0	5	3.7	No Impact

Table C-1. Predicted Traffic-Noise Levels for All Receptors, CNEL dBA

Receptor	Receptor Group	Land Use[1]	CNEL (dBA)			Measured Ambient Noise Environment (CNEL)	Allowable Increase in Traffic-Noise Levels (dBA)	Increase in Traffic-Noise Levels (2023 Existing to 2050 Build)	Impact Status
			2023	2050					
			Existing	No Build	Build				
R290	1	Res.	72.0	75.3	75.4	58.0	5	3.4	No Impact
R291	1	Res.	71.7	75.1	75.2	58.0	5	3.5	No Impact
R292	1	Res.	69.0	72.6	72.8	58.0	5	3.8	No Impact
R293	1	Res.	72.1	75.5	75.6	58.0	5	3.5	No Impact
R294	1	Res.	71.6	75.0	75.1	58.0	5	3.5	No Impact
R295	1	Res.	71.8	75.2	75.4	58.0	5	3.6	No Impact
R296	1	Res.	71.6	75.0	75.1	58.0	5	3.5	No Impact
R297	1	Res.	71.6	75.0	75.2	58.0	5	3.6	No Impact
R298	1	Res.	71.0	74.5	74.6	58.0	5	3.6	No Impact
R299	1	Res.	71.1	74.6	74.7	58.0	5	3.6	No Impact
R300	1	Res.	70.8	74.3	74.5	58.0	5	3.7	No Impact
R301	1	Res.	70.8	74.2	74.4	58.0	5	3.6	No Impact
R302	1	Res.	69.2	72.7	72.8	58.0	5	3.6	No Impact
R303	1	Res.	68.0	71.2	71.4	58.0	5	3.4	No Impact
R304	1	Res.	54.4	57.8	58.0	58.0	5	3.6	No Impact
R305	1	Res.	51.1	54.1	54.3	58.0	5	3.2	No Impact
R306	1	Res.	54.5	58.1	58.2	58.0	5	3.7	No Impact
R307	1	Res.	52.8	55.0	55.4	58.0	5	2.6	No Impact
R308	1	Res.	49.4	52.2	52.5	58.0	5	3.1	No Impact
R309	1	Res.	49.7	52.7	52.9	58.0	5	3.2	No Impact
R310	1	Res.	57.6	61.4	61.5	58.0	5	3.9	No Impact
R311	1	Res.	53.6	57.0	57.1	58.0	5	3.5	No Impact
R312	1	Res.	50.8	53.8	53.9	58.0	5	3.1	No Impact
R313	1	Res.	53.5	56.9	56.9	58.0	5	3.4	No Impact

Table C-1. Predicted Traffic-Noise Levels for All Receptors, CNEL dBA

Receptor	Receptor Group	Land Use[1]	CNEL (dBA)			Measured Ambient Noise Environment (CNEL)	Allowable Increase in Traffic-Noise Levels (dBA)	Increase in Traffic-Noise Levels (2023 Existing to 2050 Build)	Impact Status
			2023	2050					
			Existing	No Build	Build				
R314	1	Res.	53.5	56.5	56.6	58.0	5	3.1	No Impact
R315	1	Res.	48.2	51.1	51.2	58.0	5	3.0	No Impact
R316	1	Res.	50.4	53.1	53.1	58.0	5	2.7	No Impact
R317	1	Res.	49.4	52.2	52.4	58.0	5	3.0	No Impact
R318	1	Res.	50.3	53.3	53.4	58.0	5	3.1	No Impact
R319	1	Res.	52.1	55.2	55.3	58.0	5	3.2	No Impact
R320	1	Res.	47.6	50.6	50.7	58.0	5	3.1	No Impact
R321	1	Res.	48.4	51.2	51.3	58.0	5	2.9	No Impact
R322	1	Res.	51.0	53.9	54.0	58.0	5	3.0	No Impact
R323	1	Res.	48.9	51.8	51.9	58.0	5	3.0	No Impact
R324	1	Res.	47.0	50.0	50.2	58.0	5	3.2	No Impact
R325	1	Res.	53.1	56.1	56.2	58.0	5	3.1	No Impact
R326	1	Res.	49.8	52.7	52.9	58.0	5	3.1	No Impact
R327	1	Res.	48.8	51.7	51.9	58.0	5	3.1	No Impact
R328	1	Res.	69.5	71.2	71.5	58.0	5	2.0	No Impact
R329	1	Res.	69.2	70.8	71.0	58.0	5	1.8	No Impact
R330	1	Res.	69.6	70.9	71.1	58.0	5	1.5	No Impact
R331	1	Res.	69.7	70.9	71.2	58.0	5	1.5	No Impact
R332	1	Res.	70.1	71.2	71.4	58.0	5	1.3	No Impact
R333	1	Res.	58.1	60.9	61.0	58.0	5	2.9	No Impact
R334	1	Res.	53.7	56.1	56.3	58.0	5	2.6	No Impact
R335	1	Res.	55.0	57.8	58.0	58.0	5	3.0	No Impact
R336	1	Res.	53.4	56.0	56.2	58.0	5	2.8	No Impact
R337	1	Res.	52.0	54.5	54.7	58.0	5	2.7	No Impact

Table C-1. Predicted Traffic-Noise Levels for All Receptors, CNEL dBA

Receptor	Receptor Group	Land Use[1]	CNEL (dBA)			Measured Ambient Noise Environment (CNEL)	Allowable Increase in Traffic-Noise Levels (dBA)	Increase in Traffic-Noise Levels (2023 Existing to 2050 Build)	Impact Status
			2023	2050					
			Existing	No Build	Build				
R338	1	Res.	56.1	57.8	58.1	58.0	5	2.0	No Impact
R339	1	Res.	52.7	55.4	55.7	58.0	5	3.0	No Impact
R340	1	Res.	50.1	52.9	53.2	58.0	5	3.1	No Impact
R341	1	Res.	52.4	54.9	55.2	58.0	5	2.8	No Impact
R342	1	Res.	51.1	53.8	54.1	58.0	5	3.0	No Impact
R343	1	Res.	50.7	53.6	53.8	58.0	5	3.1	No Impact
R344	1	Res.	51.1	53.9	54.0	58.0	5	2.9	No Impact
R345	1	Res.	49.1	51.9	52.0	58.0	5	2.9	No Impact
R346	1	Res.	46.2	49.2	49.4	58.0	5	3.2	No Impact
R347	1	Res.	45.5	48.5	48.7	58.0	5	3.2	No Impact
R348	1	Res.	47.4	50.3	50.4	58.0	5	3.0	No Impact
R349	1	Res.	47.8	50.6	50.8	58.0	5	3.0	No Impact
R350	1	Res.	47.7	50.7	50.9	58.0	5	3.2	No Impact
R351	1	Res.	46.1	49.1	49.3	58.0	5	3.2	No Impact
R352	1	Res.	46.5	49.4	49.6	58.0	5	3.1	No Impact
R353	1	Res.	54.0	56.3	56.4	58.0	5	2.4	No Impact
R354	1	Res.	52.7	55.1	55.2	58.0	5	2.5	No Impact
R355	1	Res.	50.3	53.3	53.6	58.0	5	3.3	No Impact
R356	1	Res.	48.7	51.8	52.0	58.0	5	3.3	No Impact
R357	1	Res.	69.9	70.8	71.1	58.0	5	1.2	No Impact
R358	1	Res.	67.6	68.5	68.8	58.0	5	1.2	No Impact
R359	1	Res.	51.9	54.4	54.6	58.0	5	2.7	No Impact
R360	1	Res.	49.6	52.7	53.0	58.0	5	3.4	No Impact
R361	1	Res.	50.1	53.1	53.3	58.0	5	3.2	No Impact

Table C-1. Predicted Traffic-Noise Levels for All Receptors, CNEL dBA

Receptor	Receptor Group	Land Use[1]	CNEL (dBA)			Measured Ambient Noise Environment (CNEL)	Allowable Increase in Traffic-Noise Levels (dBA)	Increase in Traffic-Noise Levels (2023 Existing to 2050 Build)	Impact Status
			2023	2050					
			Existing	No Build	Build				
R362	1	Res.	50.4	53.3	53.5	58.0	5	3.1	No Impact
R363	1	Res.	49.5	52.6	52.8	58.0	5	3.3	No Impact
R364	1	Res.	50.2	53.3	53.6	58.0	5	3.4	No Impact
R365	1	Res.	50.8	53.8	54.0	58.0	5	3.2	No Impact
R366	1	Res.	51.0	54.0	54.3	58.0	5	3.3	No Impact
R367	1	Res.	50.6	53.5	53.7	58.0	5	3.1	No Impact
R368	1	Res.	50.5	53.3	53.6	58.0	5	3.1	No Impact
R369	1	Res.	48.3	51.2	51.4	58.0	5	3.1	No Impact
R370	1	Res.	50.7	53.5	53.8	58.0	5	3.1	No Impact
R371	1	Res.	48.9	52.0	52.3	58.0	5	3.4	No Impact
R372	1	Res.	49.6	52.5	52.8	58.0	5	3.2	No Impact
R373	1	Res.	49.7	52.6	52.9	58.0	5	3.2	No Impact
R374	1	Res.	46.8	49.9	50.2	58.0	5	3.4	No Impact
R375	1	Res.	47.6	50.6	50.8	58.0	5	3.2	No Impact
R376	1	Res.	51.9	54.6	54.8	58.0	5	2.9	No Impact
R377	1	Res.	48.3	51.4	51.6	58.0	5	3.3	No Impact
R378	1	Res.	48.8	51.8	52.1	58.0	5	3.3	No Impact
R379	1	Res.	50.4	53.3	53.5	58.0	5	3.1	No Impact
R380	1	Res.	54.4	56.7	57.0	58.0	5	2.6	No Impact
R381	1	Res.	69.2	70.5	70.8	58.0	5	1.6	No Impact
R382	1	Res.	69.7	71.1	71.3	58.0	5	1.6	No Impact
R383	1	Res.	63.5	64.6	64.9	58.0	5	1.4	No Impact
R384	1	Res.	50.7	53.2	53.4	58.0	5	2.7	No Impact
R385	1	Res.	68.4	69.7	70.0	58.0	5	1.6	No Impact

Table C-1. Predicted Traffic-Noise Levels for All Receptors, CNEL dBA

Receptor	Receptor Group	Land Use[1]	CNEL (dBA)			Measured Ambient Noise Environment (CNEL)	Allowable Increase in Traffic-Noise Levels (dBA)	Increase in Traffic-Noise Levels (2023 Existing to 2050 Build)	Impact Status
			2023	2050					
			Existing	No Build	Build				
R386	1	Res.	69.1	70.4	70.7	58.0	5	1.6	No Impact
R387	1	Res.	67.8	68.8	69.1	58.0	5	1.3	No Impact
R388	1	Res.	67.7	68.7	68.9	58.0	5	1.2	No Impact
R389	1	Res.	45.6	48.6	48.9	58.0	5	3.3	No Impact
R390	1	Res.	49.9	52.6	52.8	58.0	5	2.9	No Impact
R391	1	Res.	49.3	52.2	52.4	58.0	5	3.1	No Impact
R392	1	Res.	51.2	53.0	53.2	58.0	5	2.0	No Impact
R393	1	Res.	51.0	53.9	54.1	58.0	5	3.1	No Impact
R394	1	Res.	50.6	53.7	53.9	58.0	5	3.3	No Impact
R395	1	Res.	50.3	53.3	53.5	58.0	5	3.2	No Impact
R396	1	Res.	49.4	52.6	52.8	58.0	5	3.4	No Impact
R397	1	Res.	47.4	50.4	50.7	58.0	5	3.3	No Impact
R398	1	Res.	47.8	50.8	51.1	58.0	5	3.3	No Impact
R399	1	Res.	49.6	52.6	52.8	58.0	5	3.2	No Impact
R400	1	Res.	48.1	51.1	51.3	58.0	5	3.2	No Impact
R401	1	Res.	46.3	49.2	49.5	58.0	5	3.2	No Impact
R402	4	Res.	68.5	72.8	73.3	59.0	5	4.8	No Impact
R403	4	Res.	64.9	69.4	69.9	59.0	5	5.0	No Impact
R404	4	Res.	63.4	67.5	68.0	59.0	5	4.6	No Impact
R405	4	Res.	60.6	63.8	64.4	59.0	5	3.8	No Impact
R406	4	Res.	56.9	59.1	59.7	59.0	5	2.8	No Impact
R407	4	Res.	57.8	59.7	60.2	59.0	5	2.4	No Impact
R408	4	Res.	55.9	58.1	58.6	59.0	5	2.7	No Impact
R409	4	Res.	54.5	57.3	57.8	59.0	5	3.3	No Impact

Table C-1. Predicted Traffic-Noise Levels for All Receptors, CNEL dBA

Receptor	Receptor Group	Land Use[1]	CNEL (dBA)			Measured Ambient Noise Environment (CNEL)	Allowable Increase in Traffic-Noise Levels (dBA)	Increase in Traffic-Noise Levels (2023 Existing to 2050 Build)	Impact Status
			2023	2050					
			Existing	No Build	Build				
R410	4	Res.	53.6	56.5	57.0	59.0	5	3.4	No Impact
R411	4	Res.	50.8	53.6	54.2	59.0	5	3.4	No Impact
R412	4	Res.	51.5	54.4	54.9	59.0	5	3.4	No Impact
R413	4	Res.	48.0	50.9	51.5	59.0	5	3.5	No Impact
R414	6	Res.	49.8	53.0	53.8	58.0	5	4.0	No Impact
R415	6	Res.	52.4	55.5	56.4	58.0	5	4.0	No Impact
R416	6	Res.	45.4	48.0	48.6	58.0	5	3.2	No Impact
R417b	6	Rec.	56.7	59.4	60.1	58.0	5	3.4	No Impact
R417a	6	Res.	53.9	55.5	56.2	58.0	5	2.3	No Impact
R418	6	Res.	51.5	54.4	55.2	58.0	5	3.7	No Impact
R419	6	Res.	56.3	60.1	60.9	58.0	5	4.6	No Impact
R420	2	Rec.	68.5	72.3	72.7	58.0	5	4.2	No Impact
R421	2	Int.	66.2	70.5	70.9	58.0	5	4.7	No Impact
R422	3	Rec.	47.5	49.9	50.3	59.0	5	2.8	No Impact
R423	1	Res.	55.0	60.4	60.6	58.0	5	5.6	Impact
R424	1	Res.	48.7	52.8	53.3	58.0	5	4.6	No Impact
R425	1	Res.	51.4	55.6	55.7	58.0	5	4.3	No Impact
R426a	1	Rec.	50.0	52.8	53.1	58.0	5	3.1	No Impact
R426b	1	Rec.	70.6	73.5	73.7	58.0	5	3.1	No Impact
R427	2	Res.	41.3	44.4	44.7	58.0	5	3.4	No Impact
R428	2	Res.	51.5	53.4	53.9	58.0	5	2.4	No Impact
R429	2	Res.	54.3	58.8	59.2	58.0	5	4.9	No Impact
R430	2	Res.	50.4	52.6	53.0	58.0	5	2.6	No Impact
R431	2	Res.	53.7	58.1	58.6	58.0	5	4.9	No Impact

Table C-1. Predicted Traffic-Noise Levels for All Receptors, CNEL dBA

Receptor	Receptor Group	Land Use[1]	CNEL (dBA)			Measured Ambient Noise Environment (CNEL)	Allowable Increase in Traffic-Noise Levels (dBA)	Increase in Traffic-Noise Levels (2023 Existing to 2050 Build)	Impact Status
			2023	2050					
			Existing	No Build	Build				
R432	2	Res.	49.2	51.5	51.9	58.0	5	2.7	No Impact
R433	2	Res.	53.0	57.2	57.7	58.0	5	4.7	No Impact
R434	2	Res.	49.0	51.3	51.7	58.0	5	2.7	No Impact
R435	2	Res.	52.8	56.9	57.3	58.0	5	4.5	No Impact
R436	2	Res.	46.7	48.9	49.3	58.0	5	2.6	No Impact
R437	2	Res.	50.4	54.0	54.3	58.0	5	3.9	No Impact
R438	2	Res.	46.7	49.0	49.4	58.0	5	2.7	No Impact
R439	2	Res.	50.7	54.0	54.3	58.0	5	3.6	No Impact
R440	2	Res.	48.1	51.3	51.6	58.0	5	3.5	No Impact
R441	2	Res.	43.5	46.8	47.1	58.0	5	3.6	No Impact
R442	2	Res.	47.3	50.2	50.5	58.0	5	3.2	No Impact
R443	2	Res.	48.8	51.7	52.0	58.0	5	3.2	No Impact
R444	2	Res.	48.7	51.5	51.8	58.0	5	3.1	No Impact
R445	2	Res.	42.1	45.9	46.2	58.0	5	4.1	No Impact
R446	2	Res.	42.7	46.0	46.4	58.0	5	3.7	No Impact
R447	2	Res.	42.7	45.9	46.3	58.0	5	3.6	No Impact
R448	2	Res.	42.8	46.5	46.9	58.0	5	4.1	No Impact
R449	4	Rec.	57.3	60.3	60.8	59.0	5	3.5	No Impact
R450	4	Rec.	60.2	63.3	63.7	59.0	5	3.5	No Impact
R451	4	Rec.	57.0	59.8	60.3	59.0	5	3.3	No Impact
R452	4	Rec.	54.7	57.6	58.2	59.0	5	3.5	No Impact
R453	4	Rec.	55.6	58.2	58.9	59.0	5	3.3	No Impact
R454	4	Rec.	65.0	69.4	70.0	59.0	5	5.0	No Impact
R455	4	Rec.	51.2	54.4	55.2	59.0	5	4.0	No Impact

Table C-1. Predicted Traffic-Noise Levels for All Receptors, CNEL dBA

Receptor	Receptor Group	Land Use[1]	CNEL (dBA)			Measured Ambient Noise Environment (CNEL)	Allowable Increase in Traffic-Noise Levels (dBA)	Increase in Traffic-Noise Levels (2023 Existing to 2050 Build)	Impact Status
			2023	2050					
			Existing	No Build	Build				
R456	3	Rec.	48.5	50.9	52.0	59.0	5	3.5	No Impact
R457	3	Rec.	47.1	49.7	50.2	59.0	5	3.1	No Impact
R458	3	Rec.	50.1	52.6	52.9	59.0	5	2.8	No Impact
R459	3	Rec.	63.2	68.0	68.5	59.0	5	5.3	Impact
R460	3	Rec.	61.9	66.3	66.9	59.0	5	5.0	No Impact
R461	3	Rec.	56.6	58.9	59.6	59.0	5	3.0	No Impact
R462	3	Rec.	72.8	75.0	75.6	59.0	5	2.8	No Impact
R463	3	Rec.	63.1	67.5	67.9	59.0	5	4.8	No Impact
R464	3	Rec.	59.3	63.3	63.8	59.0	5	4.5	No Impact
R465	3	Rec.	56.0	59.6	59.9	59.0	5	3.9	No Impact
R466	3	Rec.	52.6	55.8	55.9	59.0	5	3.3	No Impact
R467	3	Rec.	50.3	53.6	53.2	59.0	5	2.9	No Impact
R468	3	Rec.	48.7	51.8	51.0	59.0	5	2.3	No Impact
R469	3	Rec.	48.2	51.1	50.1	59.0	5	1.9	No Impact
R470	3	Rec.	48.4	50.9	50.1	59.0	5	1.7	No Impact
R471	3	Rec.	50.1	52.7	52.7	59.0	5	2.6	No Impact
R472	3	Rec.	52.7	55.4	55.4	59.0	5	2.7	No Impact
R473	3	Rec.	55.3	57.9	58.3	59.0	5	3.0	No Impact
R474	3	Rec.	59.1	62.4	63.2	59.0	5	4.1	No Impact
R475	3	Rec.	67.2	70.7	71.6	59.0	5	4.4	No Impact

1-"Res." = Residential; "Rec." = Recreational; "Int" = Institutional; "Com." = Commercial.

Source: HMMH, 2024.

Appendix J 3 Stadium Noise

Appendices

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The Ontario Regional Sports Complex
Draft EIR

Stadium Noise Analysis

Technical Report

HMMH Project Number 23-0251A
March 2024

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1. Summary

This technical appendix includes a noise analysis related to the entertainment events that will take place at the proposed baseball stadium at The Ontario Regional Sports Complex (ORSC). The noise analysis was prepared in support of the Environmental Impact Report (SEIR), pursuant to the requirements of the California Environmental Quality Act (CEQA). The technical appendix is divided into sections that address anticipated noise from minor league baseball games, including regular season weeknight and weekend games. Details include assumptions developed to define number of games, time of games, number of anticipated spectators and PA systems. Reference source levels and predicted levels at individual receptors are provided in **Attachments A and B.**

A detailed geometric model of the noise study area was developed using Geographic Information System (GIS) software and the proposed ORSC site plan. SoundPLAN GmbH was used for computing the proposed stadium equivalent sound level ($L_{eq(h)}$), Community Noise Equivalent Level (CNEL) and maximum sound level (L_{max}) from minor league baseball games and concerts at neighboring residences and other noise-sensitive uses[1] throughout the surrounding adjacent community.

Noise from stadium events, including baseball games and concerts, would not exceed applicable thresholds.

1 Noise-sensitive uses are places that might contain noise-sensitive equipment; individuals who are particularly susceptible to noise stimuli, such as children or the elderly; or accommodations for people to sleep. Such uses include residences, hospitals, hotels, and schools.

2. Environmental Setting

2.1 Noise Descriptors

Noise levels are presented on a logarithmic scale to account for the large pressure response range of the human ear. This logarithmic scale is expressed in units of decibels (dB). A dB is defined as the ratio between a measured value and a reference value usually corresponding to the lower threshold of human hearing. The lower threshold of human hearing is defined as 20 micropascals. Typically, a noise analysis examines 11 octave (or 33 1/3 octave) bands ranging from 16 hertz (low) to 16,000 hertz (high). This octave band encompasses the human audible frequency range. The human ear does not perceive every frequency with equal loudness; therefore, spectrally varying sounds are often adjusted with a weighting filter. The A weighted filter is applied to compensate for the frequency response of the human auditory system, known as a dBA. The A-weighted sound level is commonly used when measuring environmental noise and is widely accepted by acousticians as a proper unit for describing environmental noise.

An inherent property of the logarithmic dB scale is that the sound pressure levels of two separate sources are not directly additive. For example, if a sound of 50 dBA is added to another sound of 50 dBA in the proximity, the result is a 3 dB increase, which is a total of 53 dBA and not an arithmetic doubling to 100 dBA. The human ear perceives changes in sound pressure level relative to changes in "loudness." Scientific research demonstrates the following general relationships between sound level and human perception for two sound levels with the same or very similar frequency characteristics:

- One dBA is the practical limit of accuracy for sound measurement systems and corresponds to an approximate 10 percent variation in the sound pressure level. A 1-dBA increase or decrease is a non-perceptible change in sound.
- A 3-dBA increase or decrease is a doubling (or halving) of acoustic pressure level, and it corresponds to the threshold of change in loudness perceptible in a laboratory environment. In practice, the average person is not able to distinguish a 3-dBA difference in environmental sound outdoors.
- A 5-dBA increase or decrease is described as a perceptible change in sound level and is a discernible change in an outdoor environment.
- A 10-dBA increase or decrease is a tenfold increase or decrease in acoustic pressure level but is perceived as a doubling or halving in loudness (e.g., the average person would judge a 10-dBA change in sound level to be twice or half as loud).

Some common sounds on the dBA scale are listed in **Table 1**. As shown, the relative perceived loudness of a sound doubles for each increase of 10 dBA, and a 10 dBA change in the sound level corresponds to a factor of 10 increase or decrease in relative sound energy. **Figure 1** depicts the estimations of common noise sources and outdoor acoustic environments and provides a comparison of relative loudness for each of these sources.

Table 1. Common Sounds on the A-Weighted Decibel Scale

Sound	Sound Level (dBA)	Relative Loudness (approximate)	Relative Sound Energy
Rock music, with amplifier	120	64	1,000,000
Thunder, snowmobile (operator)	110	32	100,000
Boiler shop, power mower	100	16	10,000
Orchestral crescendo at 25 feet, noisy kitchen	90	8	1,000
Busy street	80	4	100
Interior of department store	70	2	10
Ordinary conversation, 3 feet away	60	1	1
Quiet automobiles at low speed	50	½	.1
Average office	40	¼	.01
City residence	30	1/8	.001
Quiet country residence	20	1/16	.0001
Rustle of leaves	10	1/32	.00001
Threshold of hearing	0	1/64	.000001

Source: U.S. Department of Housing and Urban Development. Aircraft Noise Impact--Planning Guidelines for Local Agencies, Figure 2-2. 1972.

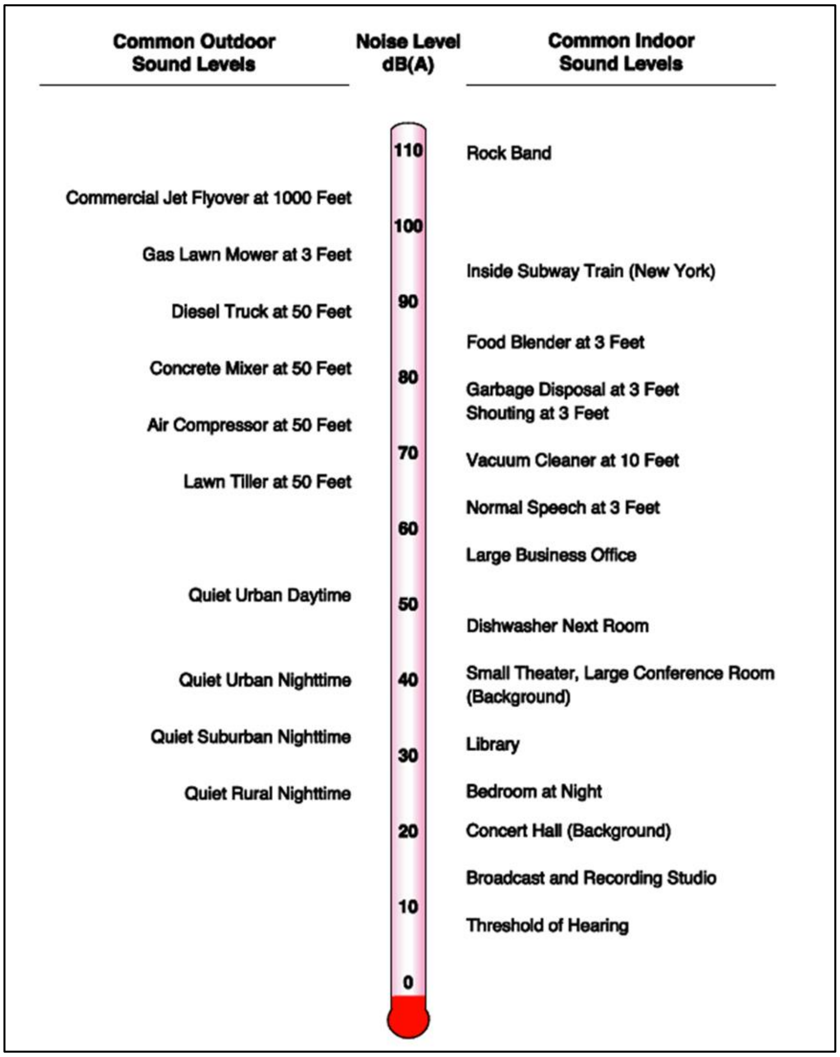

Figure 1. Sound Levels
Source: HMMH 2019

Noise levels can be measured, modeled, and presented in various formats. The noise metrics that were employed in this analysis have the following definitions:

- L_{eq}: Most environmental noise fluctuates from moment to moment, and it is common practice to characterize the fluctuating level by a single number, L_{eq}. Conventionally expressed in dBA, the L_{eq} is the energy-averaged, A-weighted sound level. It is defined as the steady, continuous sound level over a specified time, which has the same acoustic energy as the actual varying sound levels over the specified period. The daytime L_{eq} is the energy-averaged sound level for the daytime period (7:00 a.m. to 10:00 p.m.), and the nighttime L_{eq} is the energy averaged sound level for the nighttime period (10:00 p.m. to 7:00 a.m.). For traffic noise assessment, L_{eq} is typically evaluated over a one-hour period and may be denoted as $L_{eq(h)}$.
- Community noise equivalent level (CNEL): The energy-average of the A-weighted sound levels occurring during a 24-hour period, with 5 dB added to the sound levels occurring during

evening hours (7:00 p.m. to 10:00 p.m.) and 10 dB added to noise levels occurring during nighttime hours (10:00 p.m. to 7:00 a.m.).

- L_{max}: The maximum noise level is the highest instantaneous noise level during a specified time period.

2.2 Effects of Noise on Humans

The effects of noise on humans can be grouped into three general categories (U.S. EPA 1979):

- Subjective effects of annoyance, nuisance, dissatisfaction;
- Physiological effects such as starting hearing loss; and,
- Interference with activities such as speech, sleep, and learning.

With respect to annoyance, human response to sound is highly individualized. Many factors influence the response to noise including the character of the noise, the variability of the sound level, the presence of tones or impulses, and the time of day of the occurrence. Additionally, non-acoustical factors, such as individual opinion of the noise source, the ability to adapt to the noise, the attitude towards the source and those associated with it, and the predictability of the noise, all influence the response to noise. These factors result in the reaction to noise being highly subjective, with the perceived effect of a particular noise varying widely among individuals in a community.

Noise-induced hearing loss usually takes years to develop. Hearing loss is one of the most obvious and easily quantifiable effects of excessive exposure to noise. While the loss may be temporary at first, it can become permanent after continued exposure. When combined with hearing loss associated with aging, the amount of hearing loss directly due to the environment is difficult to quantify. Although the major cause of noise-induced hearing loss is occupational, nonoccupational sources may also be a factor.

Noise can mask important sounds and disrupt communication between individuals in a variety of settings. This process can cause anything from a slight irritation to a serious safety hazard, depending on the circumstance. Noise can disrupt face-to-face communication and telephone communication, and the enjoyment of music and television in the home. Interference with communication has proved to be one of the most important components of noise-related annoyance.

Relative to noise being a source of annoyance, including sleep disturbance, and having health impacts, there are various uncertainties and debate within the scientific community regarding the exact relationship between noise and these types of impacts, particularly as related to assessing whether there would be a significant impact under CEQA.

3. Methodology

To evaluate the compatibility of the proposed stadium with the surrounding existing land use and determine the potential for significant effect on the environment, the CNEL, L_{eq} and L_{max} were calculated using the commercially available SoundPLAN GmbH three-dimensional (3-D) acoustical prediction software package. An industry standard, SoundPLAN GmbH was developed by Braunstein + Berndt GmbH to provide estimates of sound levels at distances from specific noise sources accounting for the effects of terrain features including relative elevations of noise sources, receivers, and intervening objects (buildings, hills, trees), and ground effects due to areas of hard ground (pavement, water) and soft ground (grass, field, forest). In addition to computing sound levels at specific receiver positions, SoundPLAN GmbH computes color noise contour maps showing areas of equal and similar sound level. SoundPLAN GmbH also accounts for shielding and reflections from intervening buildings, walls, earthen berms, and other structures.

A detailed geometric model of the noise study area was first developed using GIS software. Data included detailed digital terrain with elevation obtained from the U.S. Geological Survey (USGS) 3D elevation program[2] as well as building footprints, which were obtained from Microsoft Building Footprints, accessed through ArcGIS Online.[3] Existing building heights were estimated based on Microsoft Streetside imagery™, accessed via Bing maps. Aerial photography was obtained from ESRI as well as the U.S. Department of Agriculture's (USDA's) National Agriculture Imagery Program (NAIP).[4] Placeworks provided a CAD file of the proposed site layout, including proposed buildings and other features of the site, planned number of stories for each building, which was used to estimate on-site building heights. For the stadium data, Populous provided concept plans and sections with above ground heights to help us determine the stadium heights.

All data digitized in GIS was imported into SoundPLAN GmbH, and a digital ground model was generated to assign base elevations to all modeled features and account for attenuation effects due to changes in terrain. Ground type on- and off-site was assumed to be "compacted field and gravel" (compacted lawns, park areas).

As detailed within Section 3 of the EIR, the stadium will have a seating capacity of 6,000 people with 4,500 of those being fixed seats. The remaining would be standing room or field seating in grassy areas around the stadium. The proposed hotel on the northeast end of the site is an important feature included in the modeling as it is very close to the stadium.

Two scenarios were evaluated to address noise from the stadium:

1. Minor League Regular Season Game – Minor league season games that start at 6:30 p.m. Monday – Friday or 2:00 p.m. on Sundays from April to September
2. Concerts – Evening concerts starting at 5:00 p.m. and concluding before 10:00 p.m.

Source level data for the baseball game scenarios were established via sound measurements conducted during Rancho Cucamonga Quakes minor league baseball games in September of 2023 and supplemented, as needed, with source data from the SoundPLAN library. The Quakes baseball team is

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[2] https://apps.nationalmap.gov/downloader

[3] The development to the east of the project site (Countryside) was manually digitized using aerial photography, since building footprints were not available.

[4] https://datagateway.nrcs.usda.gov/GDGHome_DirectDownLoad.aspx

a Low-A minor league affiliate of the Los Angeles Dodgers who play in the California league. Low-A teams are the starting place for high school and college draft picks of the Major League Baseball (MLB) team and serve as a developmental league. These games can generate high attendance as fans can see closeup heralded prospects which generates excitement and increased fan participation and noise.

For the concert scenario source levels are based on data included in the SoundPLAN library for musical concerts. Source levels used in the Stadium noise model are provided in **Attachment A** along with the source of each, either via measurements at the Quakes Stadium or from the SoundPLAN library.

Schedules for games, attendance, seating, and quantity of events were supplied by the Quakes and the City of Ontario. Average game duration of three hours 39 minutes is based on data collected and analyzed by Baseball America.[5] Based on discussions with the Quakes baseball operations staff, Thursday and Saturday nights are the most popular nights for games. Measurements were conducted at games on these nights to obtain various sources such as fans cheering and the public address (PA) system. Handheld spot measurements were recorded before the game prior to the stadium being open to the public to characterize the PA system under various conditions. Additional monitoring was conducted during the game to characterize in game PA system sounds, such as music and announcements, as well as fans reactions during game action (hits, double plays, fans upset with umpires, etc.).

Game durations were used to define the time active for each noise source during a game or event operating hours. All usage information for the stadium was vetted with the City of Ontario Recreation and Community Department.

[5] https://www.baseballamerica.com/stories/pitch-clocks-shortened-minor-league-games-by-26-minutes-in-2022/

4. Regulatory Framework

Several federal, state, and local regulations, ordinances, and guidelines have been established to control noise and minimize effects on humans. The Noise Control Act of 1972 (42 United States Code Section 4901) was the first comprehensive statement of national noise policy. It declared that "it is the policy of the United States to promote an environment for all Americans free from noise that jeopardizes their health or welfare" (GSA 1972).

The State of California and the City of Ontario have adopted a number of policies that are based in part on federal and state regulations and are directed at controlling or mitigating environmental noise effects. The government agency policies that are relevant to the stadium noise analysis for the ORSC are discussed below.

4.1 State

CEQA Thresholds of Significance

According to Appendix G of the CEQA Guidelines, a project would normally have a significant effect on the environment if the project would result in:

- **Threshold A**: Would the project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?
- **Threshold B**: Would the project result in generation of excessive groundborne vibration or groundborne noise levels?
- **Threshold C:** For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

General Plan Guidelines

The Governor's Office of Planning and Research (OPR) is required to adopt and periodically revise the State of California's General Plan Guidelines (GPG), which establishes the framework for the development of general plans for cities and counties. With respect to noise, the GPG provides a basis for the control and abatement of environmental noise and limiting excessive noise exposure for California residents. The GPG focuses on land use compatibility with the existing ambient environment and establishes CNEL and L_{dn} thresholds for community noise exposure by land use category that define normally acceptable, conditionally acceptable, normally unacceptable, and clearly unacceptable conditions. The recommended thresholds within the GPG may be adopted by cities or modified based on site-specific conditions.

4.2 Local

The Ontario Plan and City of Ontario Code provide the local regulatory environment for the project.

The Ontario Plan

The Ontario Plan (TOP) 2050 includes a "Safety Element" designed to limit excessive community noise exposure through effective and guided land use compatible planning. **Table 2** summarizes the City of Ontario's land use compatibility standards to facilitate land use compatibility, relative to existing and future noise levels.

Table 2. Ontario Noise Level Exposure and Land Use Compatibility Guidelines

Categories	Uses	CNEL (dBA)			
		Clearly Acceptable[1]	Normally Acceptable[2]	Normally Unacceptable[3]	Clearly Unacceptable[4]
Residential/Lodging	Single Family/Duplex	<60	60-65	65-70	70-85
	Multifamily	<60	60-65	65-75	75-85
	Mobile Homes	<60	60-65	-	65-85
	Hotel/Motel	<65	65-70	70-80	80-85
Public/Institutional	Schools/Hospitals	<60	60-65	65-70	70-85
	Churches/Libraries	<60	60-65	65-70	70-85
	Auditoriums/Concert Halls	<55	55-60	60-70	70-85
Commercial	Offices	<65	65-75	75-80	80-85
	Retail	<70	70-75	75-80	80-85
Industrial	Manufacturing	<70	70-75	75-85	-
	Warehousing	<70	70-80	80-85	-
Recreational/Open Space	Parks/Playgrounds	<65	65-70	70-75	75-85
	Golf Course/Riding Stables	<65	65-70	70-75	75-85
	Outdoor Spectator Sports	<60	60-65	65-70	
	Outdoor Music Shells/Amphitheaters	-	<60	60-65	65-85
	Livestock/Wildlife Preserves	<70	-	70-75	75-85
	Crop Agriculture	<55-85	-	-	-

Notes:
1. No special noise insulation required, assuming buildings of normal conventional construction.
2. Acoustical reports will be required for major new residential construction. Conventional construction with closed windows and fresh air supply systems of air conditioning will normally suffice.
3. New construction should be discouraged. Noise/aviation easements required for all new construction. If new construction does proceed, a detailed analysis of noise reduction requirements must be made, and necessary noise insulation features included.
4. No new construction should be permitted.

Source: City of Ontario 2022.

City of Ontario Municipal Code

The City of Ontario Municipal Code, Chapter 29: Noise (hereafter referred to as "the City's noise code"), establishes both exterior and interior noise standards for various land use types grouped into "noise zones." Maximum permissible noise level limits are established for each noise zone from 7:00 a.m. to 10:00 p.m. and 10:00 p.m. to 7:00 a.m., based on the L_{eq} metric and a duration of 15 minutes. Pursuant to §5-29.04 Exterior noise standards, the ambient noise level shall be the standard if ambient exceeds the established permissible limit at any time in any zone. The code also establishes a maximum instantaneous (L_{max}) permissible noise level limit of the established noise standard for the applicable zone plus 20 dBA during any period, measured in A-weighting on slow response. The limits established for Noise Zone I shall also apply to the exterior of schools, daycare centers, hospitals or other similar healthcare institutions, churches, libraries, or museums during hours of use, pursuant to §5-29.11. **Table 3** summarizes the allowable exterior noise level limits pursuant to §5-29.04(a).

Table 3. Exterior Noise Standards

Noise Zone	Land Use	Allowable Equivalent Noise Level, L_{eq} (dBA)	
		7:00 a.m. – 10:00 p.m.	10:00 p.m. – 7:00 a.m.
I	Single-Family Residential	65	45
II	Multi-Family Residential, Mobile Home Parks	65	50
III	Commercial Property	65	60
IV	Residential Portion of Mixed Use	70	70
V	Manufacturing and Industrial, Other Uses	70	70

Notes:
1. If the ambient level exceeds the standard, the ambient noise level shall be the standard.
2. Compliance is determined on the affected property.
3. Noise standards are based on a 15-min L_{eq}.
4. Maximum instantaneous noise levels (L_{max}) equal to the noise standard limit plus 20 dBA shall not be exceeded at any time, measured using A-weighted with the meter set to slow response. However, if ambient exceeds the standard, the standard shall be increased to reflect the maximum ambient noise level.
5. Noise Zone I noise standards also apply to the exterior of schools, daycare centers, hospitals or other similar healthcare institutions, churches, libraries, or museums during hours of use.
6. Noise Zone IV applies to the portion of the residential property within 100 feet of a commercial property or use, if the noise originates from the commercial property or use.
7. If the compliance location is on the boundary of two different noise zones, the lower noise level standard shall apply.

Source: City of Ontario 2023.

The City's noise code exempts various sources of noise, pursuant to §5-29.06 Exemptions, which are applicable to the proposed stadium and include:

- Activities on public or private property conducted by any public entity or its authorized representatives including sporting and recreational activities that are sponsored, co-sponsored, permitted, or allowed by the City. This also includes sporting and entertainment events conducted pursuant to an approval, authorization, contract, lease, permit, or sublease by the appropriate public entity, specifically the planning commission or City Council.
- Noise sources associated with construction, repair, remodeling, demolition, or grading of any real property, as construction activities are instead subject to the provisions of §5-29.09.
- Noise sources associated with the maintenance of real property. Such activities shall instead be subject to the provisions of §5-29.08.
- Activities regulated by state or federal law.

5. Impact Analysis Results

Modeling receivers were placed in areas of outdoor use within approximately 1,000 feet of the proposed ORSC site boundary. Receivers were combined into six groups, as illustrated in **Figure 2** through **Figure 4** and described in **Table 4**.

Table 4. Summary of Analysis Locations

Receiver Group	Location Relative to Project Site	Land Use Description
1	Northwest of Project Site	Residential use on the north and south side of East Riverside Drive, between Willow Drive and South Vineyard Avenue
2	North of Project Site	Residential and institutional use (Sunrise Childcare Center) on the north side of East Riverside Drive, between Vineyard Avenue and South Whispering Lakes Lane
3	North of Project Site	Recreational use associated with the Whispering Lake Golf Course on the north side of East Riverside Drive, between South Whispering Lakes Lane and Cucamonga Channel
4	Northeast of Project Site	Residential and recreational use (Westwind Community Center) on the north side of East Riverside Drive, between Cucamonga Channel and South Colonial Avenue
5	East of Project Site	Residential and recreational use (Cucamonga Channel Walking Trail) bounded by the Cucamonga Channell to the west, East Riverside Drive to the north, South Colonial Avenue to the east, and Chino Avenue to the south
6	South of Project Site	Residential use on the south side of Chino Avenue, between Vineyard Avenue and Ontario Avenue

Source: HMMH, 2023

The L_{eq} from stadium activities, namely minor league baseball games and concerts, was calculated at each noise-sensitive receptor. The predicted 1-hour L_{eq} was compared to the City's exterior noise limits established within the noise code and presented in **Table 3**. Since most activities are active for a full hour, the 1-hour L_{eq} was used as a surrogate to assess compliance with the 15-minute L_{eq} noise limits in the noise code. **Attachment C** includes a table of predicted sound levels for each modeled receiver.

5.1 Scenario 1 – Minor League Baseball Games

Minor league games would occur Monday through Friday and Saturday and Sunday, totaling 54 home games over the course of a regular season. As described in Section 3, first pitch for these minor league games is assumed to be 6:30 p.m. for weekday and Saturday games and 2:00 p.m. for games on Sundays. Games would last a little over two and a half hours. The following sources and timing are assumed in the noise predictions based on field observations conducted at Quakes baseball games:

- Batting practice and warmups would start four hours before the first pitch. During this time the PA system plays music and various verbal announcements are made.

- The stadium opens to the public two hours before the first pitch; however, crowd noise is minimal with the PA system dominating. For this reason, the analysis only includes the PA system noise during this time.
- During the game, observations indicated that the PA system is active approximately 51% of the time (e.g., between innings, walk up music, and public announcements).
- There are two settings included in the modeling for the PA system:
  - Typical PA setting, representing the sound level that the system operates at for most announcements, music, and other purposes.
  - PA high energy setting, representing the sound level when the PA system sound level is increased to be audible over the crowd during exciting plays such as double plays and scoring plays. The high energy setting is assumed to occur 3% of each game.
- Crowd noise is assumed to occur 3% of each game and is associated with exciting plays.

Source levels used in the predictions are summarized in **Table 5**.

Table 5. Baseball Game Source Levels (dBA)

Source	LwA	Lw Max
PA Typical	88.2	95.97
PA High Energy	116.3	119.5
Crowd	75.4	76.4

Source: HMMH, 2023

Table 6 summarizes the range of predicted $L_{eq(h)}$ by receiver group and land use categories for receptors in the noise study area. As shown in **Table 6**, the highest predicted $L_{eq(h)}$ for each category of land use would be below the corresponding limit per the City's code. For this reason, Scenario 1 noise would be considered insignificant. **Figure 2** illustrates predicted $L_{eq(h)}$ noise level contours for Scenario 1 baseball games.

Table 6. Summary of Predicted $L_{eq(h)}$ – Scenario 1: Regular Weekday Minor League Baseball

Noise Zone[1]	Land Use	Daytime[2] Exterior L_{eq} Criteria (dBA)	Predicted $L_{eq(h)}$ (dBA) Range					
			RCV Group 1	RCV Group 2	RCV Group 3	RCV Group 4	RCV Group 5	RCV Group 6
I	Single-Family Residential	65	19 - 32	21 - 43	NA	43 - 47	22 - 50	13 - 19
II	Multi-Family Residential, Mobile Home Parks	65	18 - 36	21 - 43	NA	NA	NA	NA
V	Manufacturing and industrial, other uses	70	NA	NA	40 - 55	45 - 50	39 - 50	NA

Notes:

1. Pursuant to §5-29.11, the maximum permissible noise level limit established for Noise Zone I also applies to the exterior of schools, daycare centers, hospitals or other similar healthcare institutions, churches, libraries, or museums during hours of use.
2. The City of Ontario's noise code includes both "daytime" (7:00 a.m. – 10:00 p.m.) and "nighttime" (10:00 p.m. - 7:00 a.m.) limits. Since the proposed ORSC is only open between 8:00 a.m. and 10:00 p.m., the "nighttime" limits do not apply.

Source: HMMH, 2023.

Table 7 summarizes the range in predicted hourly L_{max} for each "noise zone" within each receiver group based on definitions in the City's noise code (see **Table 3**). As shown in **Table 7,** the highest predicted L_{max} would be well below applicable criteria for each land use category. For this reason, Scenario 1 noise would be considered insignificant.

Table 7. Summary of Predicted L_{max} – Scenario 1: Regular Weekday Minor League Baseball

Noise Zone[1]	Land Use	Daytime Exterior L_{max} Criteria (dBA)	Predicted $L_{eq(h)}$ (dBA) Range					
			RCV Group 1	RCV Group 2	RCV Group 3	RCV Group 4	RCV Group 5	RCV Group 6
I	Single-Family Residential	85	27 - 46	30 - 56	NA	50 - 55	28 - 58	21 - 26
II	Multi-Family Residential, Mobile Home Parks	85	26 - 50	31 - 54	NA	NA	NA	NA
V	Manufacturing and industrial, other uses	90	NA	NA	51 - 66	53 - 56	46 - 58	NA

Source: HMMH, 2023.

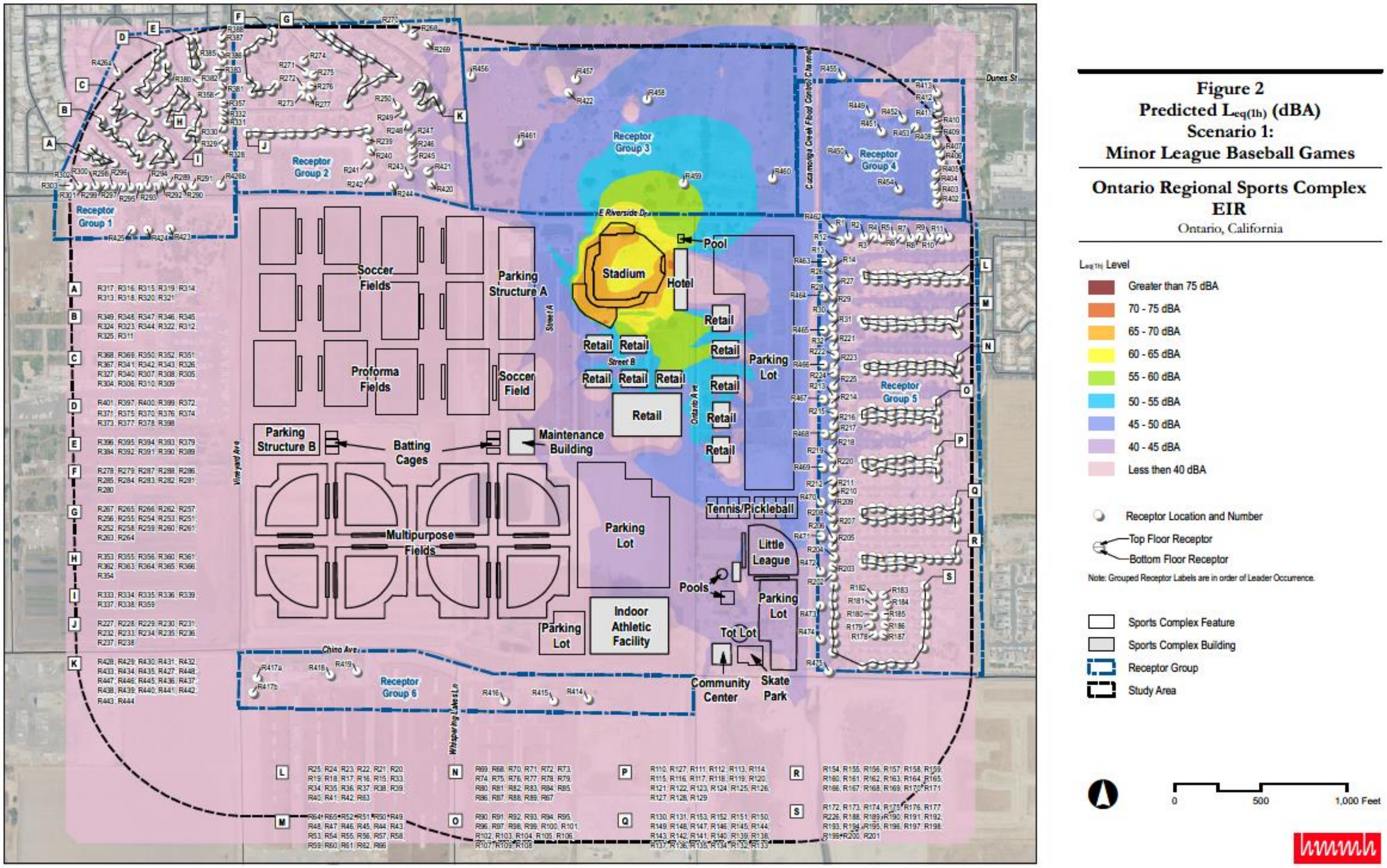

Figure 2. Scenario 1 Leq(h) Noise Contours

5.2 Scenario 2 – Concerts

Concerts would occur periodically throughout the year at the stadium. Music events are assumed to occur from 5:00 p.m. to just before 10:00 p.m. The Scenario 2 analysis assumes that the stage would be roughly in the same location as the baseball infield with the band sound source propagating towards the fans in the stands. The band is assumed to be actively playing 90% of the time and the crowd is assumed to be cheering 10% of the time. Sound sources used in the analysis are from the SoundPLAN default library and are summarized in **Table 8**.

Table 8. Concert Source Levels

Source	Lw[1]
Public Festivals (Band)	75.0 dB
Spectators	73.0 dBA

1. Public festivals and Spectators sound power levels (Lw) on a dB/m^2 basis for area sources.
Source: SoundPLAN, 2017

Table 9 summarizes the range in predicted hourly $L_{eq(h)}$ for each "noise zone" that exists within each receiver group based on definitions in the municipal noise code (see **Table 3**). As shown in **Table 9**, the maximum predicted $L_{eq(h)}$ would be well below applicable criteria for each land use category. **Figure 3** shows predicted L_{eq} noise level contours, representing concerts.

Table 9. Summary of Predicted $L_{eq(h)}$ – Scenario 2: Concerts

Noise Zone[1]	Land Use	Daytime[2] Exterior L_{eq} Criteria (dBA)	Predicted $L_{eq(h)}$ (dBA) Range					
			RCV Group 1	RCV Group 2	RCV Group 3	RCV Group 4	RCV Group 5	RCV Group 6
I	Single-Family Residential	65	7 - 19	14 - 29	NA	27 - 30	8 - 33	5 - 8
II	Multi-Family Residential, Mobile Home Parks	65	10 - 22	14 - 35	NA	NA	NA	NA
V	Manufacturing and industrial, other uses	70	NA	NA	29 - 40	28 - 35	21 - 33	NA

Notes:
1. Pursuant to §5-29.11, the maximum permissible noise level limit established for Noise Zone I also applies to the exterior of schools, daycare centers, hospitals or other similar healthcare institutions, churches, libraries, or museums during hours of use.
2. The City of Ontario's noise code includes both "daytime" (7:00 a.m. – 10:00 p.m.) and "nighttime" (10:00 p.m. - 7:00 a.m.) limits. Since the proposed ORSC is only open between 8:00 a.m. and 10:00 p.m., the "nighttime" limits do not apply.
Source: HMMH, 2023.

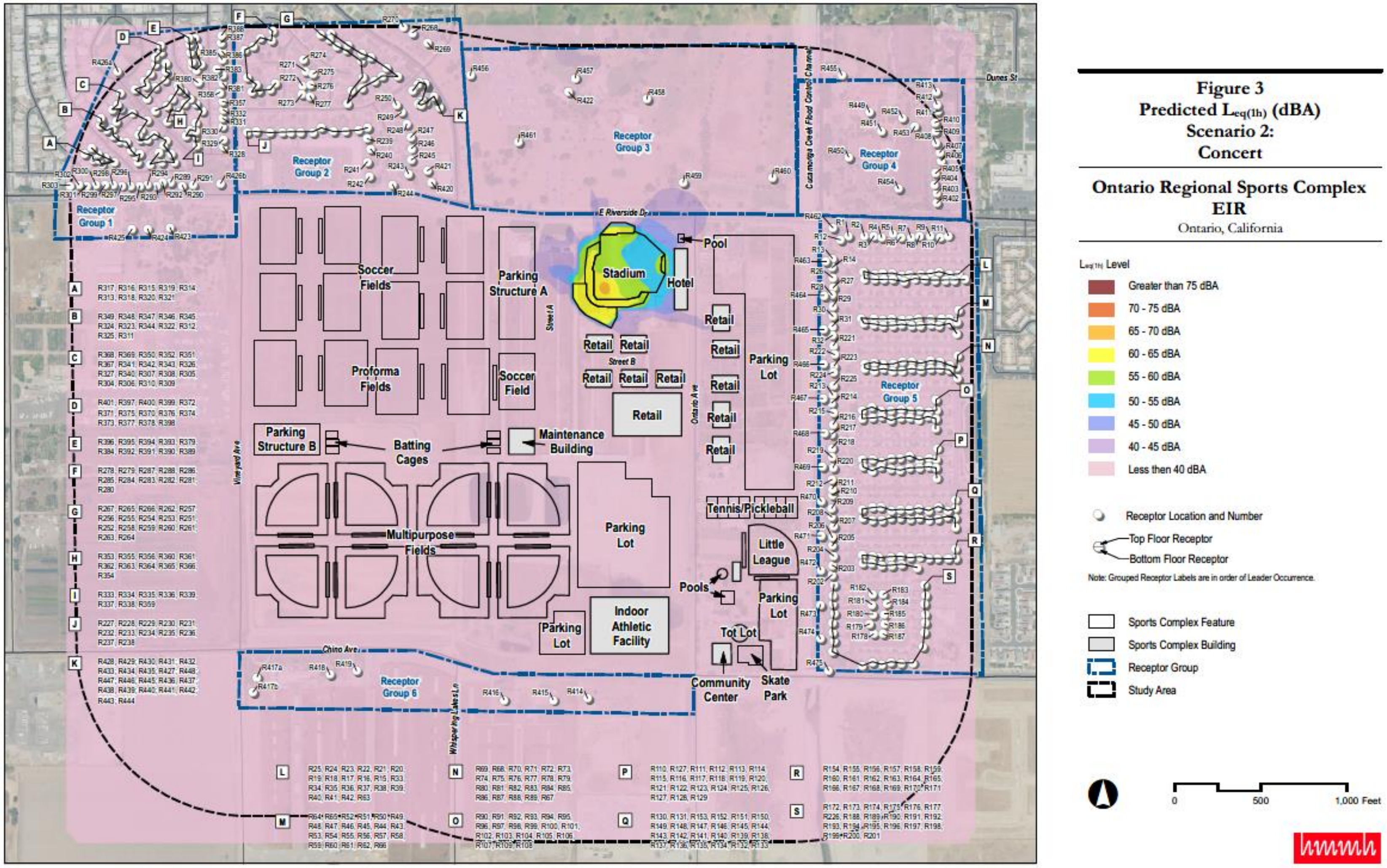

Figure 3. Scenario 3 $L_{eq(h)}$ Noise Contours
Source: HMMH 2023

6. Mitigation

Predicted average hourly and peak noise levels for both Scenario 1 (Regular Season Games) and Scenario 2 (Concerts) would be below the applicable criteria for each land use category. Therefore, future noise levels from the Stadium would be considered less than significant and no mitigation would be required.

7. References

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ATTACHMENT A. SOUNDPLAN SOURCE LEVELS

Table A-1. Baseball Game Source Levels

Sound Source	Lw	Lw Max	Reference
PA Typical	88.2 dBA	96.0 dBA	Quakes Measurements
PA High Energy	116.3 dBA	119.5 dBA	Quakes Measurements
Crowd	75.4 dBA	76.4 dBA	Quakes Measurements
Public Festivals (Band)	75.0 dB	N/A	SoundPLAN
Spectators	73.0 dBA	N/A	SoundPLAN

Source: HMMH, 2023, SoundPLAN, 2017

ATTACHMENT B. PREDICTED SOUND LEVELS AT INDIVIDUAL RECEPTORS

Table B-1. Scenario 1 Evening Minor League Baseball Game

Receptor ID	Land Use	CNEL (dBA)	Leq,1hr (dBA)	Lmax (dBA)	State of CA Exterior Noise Standards (dBA)	Ontario Municipal Code Exterior Noise Standards (dBA)	Lmax Limit
Rec_1	Residential	44.1	48.1	55.6	65	65	85
Rec_2	Residential	37.4	41.3	53.6	65	65	85
Rec_3	Residential	37.8	41.7	53.2	65	65	85
Rec_4	Residential	36.8	40.7	53	65	65	85
Rec_5	Residential	37.6	41.5	52.4	65	65	85
Rec_6	Residential	29.6	33.5	47	65	65	85
Rec_7	Residential	30.7	34.6	44.2	65	65	85
Rec_8	Residential	36.1	40.1	51.4	65	65	85
Rec_9	Residential	36.2	40.1	51.1	65	65	85
Rec_10	Residential	33.5	37.4	49	65	65	85
Rec_11	Residential	35	39	50.4	65	65	85
Rec_12	Residential	43.9	47.9	56.9	65	65	85
Rec_13	Residential	45.6	49.5	57.7	65	65	85
Rec_14	Residential	45.5	49.4	57.5	65	65	85
Rec_15	Residential	38.5	42.4	54.4	65	65	85
Rec_16	Residential	40.3	44.3	54	65	65	85
Rec_17	Residential	38.2	42.1	53	65	65	85
Rec_18	Residential	31.3	35.2	48.8	65	65	85
Rec_19	Residential	38.6	42.6	51.6	65	65	85
Rec_20	Residential	38.5	42.4	51.2	65	65	85
Rec_21	Residential	39.1	43.1	52.3	65	65	85
Rec_22	Residential	39.7	43.6	52	65	65	85
Rec_23	Residential	39.7	43.7	53	65	65	85
Rec_24	Residential	38.4	42.3	50.3	65	65	85
Rec_25	Residential	35.8	39.8	50	65	65	85
Rec_26	Residential	45.5	49.5	57.6	65	65	85
Rec_27	Residential	45.4	49.3	57.5	65	65	85
Rec_28	Residential	45.3	49.3	57.5	65	65	85
Rec_29	Residential	45.3	49.2	57.3	65	65	85
Rec_30	Residential	45.4	49.3	57.1	65	65	85

Table B-1. Scenario 1 Evening Minor League Baseball Game

Receptor ID	Land Use	CNEL (dBA)	Leq,1hr (dBA)	Lmax (dBA)	State of CA Exterior Noise Standards (dBA)	Ontario Municipal Code Exterior Noise Standards (dBA)	Lmax Limit
Rec_31	Residential	45.9	49.8	57.6	65	65	85
Rec_32	Residential	46.1	50.1	57.9	65	65	85
Rec_33	Residential	40.7	44.7	54.1	65	65	85
Rec_34	Residential	39	43	52.5	65	65	85
Rec_35	Residential	39.1	43	51.3	65	65	85
Rec_36	Residential	39.1	43	52.4	65	65	85
Rec_37	Residential	39.4	43.3	52.8	65	65	85
Rec_38	Residential	39.3	43.3	51.9	65	65	85
Rec_39	Residential	37.9	41.8	50.3	65	65	85
Rec_40	Residential	36.7	40.7	51.7	65	65	85
Rec_41	Residential	36.1	40	49.5	65	65	85
Rec_42	Residential	36.4	40.4	49.7	65	65	85
Rec_43	Residential	37.6	41.5	51.6	65	65	85
Rec_44	Residential	37.7	41.7	52.8	65	65	85
Rec_45	Residential	38	41.9	51.6	65	65	85
Rec_46	Residential	37.2	41.1	50.7	65	65	85
Rec_47	Residential	38.9	42.9	52.2	65	65	85
Rec_48	Residential	39.1	43.1	52.2	65	65	85
Rec_49	Residential	38	41.9	50.9	65	65	85
Rec_50	Residential	36.5	40.5	49.7	65	65	85
Rec_51	Residential	36.6	40.5	51.7	65	65	85
Rec_52	Residential	36.8	40.7	51.6	65	65	85
Rec_53	Residential	37.7	41.6	52.6	65	65	85
Rec_54	Residential	38.9	42.8	52.7	65	65	85
Rec_55	Residential	38.1	42.1	51.3	65	65	85
Rec_56	Residential	38.5	42.4	51.3	65	65	85
Rec_57	Residential	40.3	44.3	53.3	65	65	85
Rec_58	Residential	40.4	44.3	53.1	65	65	85
Rec_59	Residential	39.6	43.6	53	65	65	85
Rec_60	Residential	39.5	43.4	52.5	65	65	85
Rec_61	Residential	38.6	42.6	52	65	65	85
Rec_62	Residential	39.1	43.1	52.3	65	65	85

Table B-1. Scenario 1 Evening Minor League Baseball Game

Receptor ID	Land Use	CNEL (dBA)	Leq,1hr (dBA)	Lmax (dBA)	State of CA Exterior Noise Standards (dBA)	Ontario Municipal Code Exterior Noise Standards (dBA)	Lmax Limit
Rec_63	Residential	37	40.9	51.7	65	65	85
Rec_64	Residential	35.2	39.2	49.6	65	65	85
Rec_65	Residential	38.6	42.6	52.3	65	65	85
Rec_66	Residential	32.8	36.8	49.3	65	65	85
Rec_67	Residential	37.3	41.3	50.6	65	65	85
Rec_68	Residential	35.2	39.2	48.8	65	65	85
Rec_69	Residential	38.2	42.2	50.6	65	65	85
Rec_70	Residential	35.8	39.7	49.2	65	65	85
Rec_71	Residential	34.6	38.6	48.5	65	65	85
Rec_72	Residential	33.8	37.7	48.5	65	65	85
Rec_73	Residential	35.9	39.9	49.8	65	65	85
Rec_74	Residential	34.8	38.8	49.2	65	65	85
Rec_75	Residential	31.9	35.8	48.6	65	65	85
Rec_76	Residential	36.5	40.5	50.6	65	65	85
Rec_77	Residential	36.7	40.7	52.6	65	65	85
Rec_78	Residential	34.1	38.1	49.3	65	65	85
Rec_79	Residential	39.4	43.3	54.4	65	65	85
Rec_80	Residential	38.1	42	51.2	65	65	85
Rec_81	Residential	36.6	40.6	49.5	65	65	85
Rec_82	Residential	40.5	44.4	55	65	65	85
Rec_83	Residential	40	44	54.2	65	65	85
Rec_84	Residential	38.2	42.2	53.6	65	65	85
Rec_85	Residential	34.9	38.8	50.8	65	65	85
Rec_86	Residential	36.4	40.4	49.8	65	65	85
Rec_87	Residential	34.1	38	47.4	65	65	85
Rec_88	Residential	33.8	37.7	48.1	65	65	85
Rec_89	Residential	34.7	38.7	49.1	65	65	85
Rec_90	Residential	36.2	40.2	50.9	65	65	85
Rec_91	Residential	37.5	41.4	52	65	65	85
Rec_92	Residential	36.4	40.4	51.6	65	65	85
Rec_93	Residential	36.7	40.7	50.1	65	65	85
Rec_94	Residential	38.8	42.8	52.1	65	65	85

Table B-1. Scenario 1 Evening Minor League Baseball Game

Receptor ID	Land Use	CNEL (dBA)	Leq,1hr (dBA)	Lmax (dBA)	State of CA Exterior Noise Standards (dBA)	Ontario Municipal Code Exterior Noise Standards (dBA)	Lmax Limit
Rec_95	Residential	38.1	42.1	52.3	65	65	85
Rec_96	Residential	37.5	41.5	51.6	65	65	85
Rec_97	Residential	38.4	42.4	52.6	65	65	85
Rec_98	Residential	33	37	47.5	65	65	85
Rec_99	Residential	34.4	38.3	48	65	65	85
Rec_100	Residential	33.8	37.7	50.5	65	65	85
Rec_101	Residential	35.2	39.1	51.3	65	65	85
Rec_102	Residential	37.6	41.6	50.8	65	65	85
Rec_103	Residential	35.7	39.7	50.8	65	65	85
Rec_104	Residential	34.3	38.2	48.7	65	65	85
Rec_105	Residential	36.3	40.2	50.3	65	65	85
Rec_106	Residential	35.7	39.6	51.4	65	65	85
Rec_107	Residential	37.7	41.7	52.9	65	65	85
Rec_108	Residential	35.6	39.6	48.4	65	65	85
Rec_109	Residential	36.8	40.8	50.9	65	65	85
Rec_110	Residential	35.2	39.1	48.1	65	65	85
Rec_111	Residential	34.9	38.9	50.7	65	65	85
Rec_112	Residential	31.4	35.4	45.7	65	65	85
Rec_113	Residential	33.7	37.6	48.3	65	65	85
Rec_114	Residential	35.4	39.4	49.6	65	65	85
Rec_115	Residential	34.9	38.8	47.5	65	65	85
Rec_116	Residential	33.9	37.8	47.7	65	65	85
Rec_117	Residential	31.7	35.7	47	65	65	85
Rec_118	Residential	38.1	42	50.7	65	65	85
Rec_119	Residential	33.5	37.4	48	65	65	85
Rec_120	Residential	35.8	39.8	49.6	65	65	85
Rec_121	Residential	32.8	36.7	45.9	65	65	85
Rec_122	Residential	34.4	38.3	48.2	65	65	85
Rec_123	Residential	36.6	40.5	50.3	65	65	85
Rec_124	Residential	37	41	50.6	65	65	85
Rec_125	Residential	33.6	37.5	47.3	65	65	85
Rec_126	Residential	34.6	38.5	48.4	65	65	85

Table B-1. Scenario 1 Evening Minor League Baseball Game

Receptor ID	Land Use	CNEL (dBA)	Leq,1hr (dBA)	Lmax (dBA)	State of CA Exterior Noise Standards (dBA)	Ontario Municipal Code Exterior Noise Standards (dBA)	Lmax Limit
Rec_127	Residential	36.3	40.2	49.7	65	65	85
Rec_128	Residential	33.1	37.1	47.9	65	65	85
Rec_129	Residential	33	37	46.8	65	65	85
Rec_130	Residential	35.4	39.4	48.9	65	65	85
Rec_131	Residential	31.6	35.5	44.7	65	65	85
Rec_132	Residential	35.8	39.8	47.8	65	65	85
Rec_133	Residential	36	40	49.6	65	65	85
Rec_134	Residential	33.4	37.4	46	65	65	85
Rec_135	Residential	33.5	37.4	49.1	65	65	85
Rec_136	Residential	35.1	39.1	48.6	65	65	85
Rec_137	Residential	35.6	39.6	49.4	65	65	85
Rec_138	Residential	33.1	37.1	50.3	65	65	85
Rec_139	Residential	36.9	40.9	51.1	65	65	85
Rec_140	Residential	32.7	36.6	47	65	65	85
Rec_141	Residential	32.2	36.1	46.2	65	65	85
Rec_142	Residential	34	37.9	49.9	65	65	85
Rec_143	Residential	33.5	37.5	47.6	65	65	85
Rec_144	Residential	30.5	34.4	46.8	65	65	85
Rec_145	Residential	32.6	36.6	45.4	65	65	85
Rec_146	Residential	31.5	35.5	43.8	65	65	85
Rec_147	Residential	37	41	49.4	65	65	85
Rec_148	Residential	33.5	37.5	47.1	65	65	85
Rec_149	Residential	34.3	38.3	47	65	65	85
Rec_150	Residential	30.5	34.5	44.9	65	65	85
Rec_151	Residential	32.5	36.5	46.3	65	65	85
Rec_152	Residential	32.3	36.2	46.3	65	65	85
Rec_153	Residential	34.4	38.4	49.1	65	65	85
Rec_154	Residential	33.9	37.8	46	65	65	85
Rec_155	Residential	32.3	36.2	45.6	65	65	85
Rec_156	Residential	28.7	32.6	42.3	65	65	85
Rec_157	Residential	26.5	30.4	40.3	65	65	85
Rec_158	Residential	27.1	31	43.2	65	65	85

Table B-1. Scenario 1 Evening Minor League Baseball Game

Receptor ID	Land Use	CNEL (dBA)	Leq,1hr (dBA)	Lmax (dBA)	State of CA Exterior Noise Standards (dBA)	Ontario Municipal Code Exterior Noise Standards (dBA)	Lmax Limit
Rec_159	Residential	31.5	35.4	46.4	65	65	85
Rec_160	Residential	31	35	45.2	65	65	85
Rec_161	Residential	32.4	36.3	45.3	65	65	85
Rec_162	Residential	32.9	36.8	48.5	65	65	85
Rec_163	Residential	33.4	37.4	47	65	65	85
Rec_164	Residential	30.8	34.7	46.8	65	65	85
Rec_165	Residential	27.8	31.7	41.9	65	65	85
Rec_166	Residential	32.7	36.6	47.9	65	65	85
Rec_167	Residential	31.2	35.1	46.7	65	65	85
Rec_168	Residential	33.7	37.6	47.8	65	65	85
Rec_169	Residential	32.5	36.4	46.4	65	65	85
Rec_170	Residential	29.1	33	41.7	65	65	85
Rec_171	Residential	28.4	32.3	42	65	65	85
Rec_172	Residential	32.4	36.4	47.4	65	65	85
Rec_173	Residential	27.3	31.3	39.4	65	65	85
Rec_174	Residential	26.5	30.4	42.1	65	65	85
Rec_175	Residential	22.6	26.4	34.5	65	65	85
Rec_176	Residential	24.8	28.7	36.3	65	65	85
Rec_177	Residential	25.5	29.4	37.2	65	65	85
Rec_178	Residential	33.4	37.4	47.6	65	65	85
Rec_179	Residential	34.1	38.1	47.7	65	65	85
Rec_180	Residential	34.8	38.8	46.8	65	65	85
Rec_181	Residential	33.2	37.2	46.8	65	65	85
Rec_182	Residential	31.9	35.8	45.4	65	65	85
Rec_183	Residential	32.9	36.9	46.6	65	65	85
Rec_184	Residential	35.2	39.1	48.7	65	65	85
Rec_185	Residential	33.1	37.1	47	65	65	85
Rec_186	Residential	36.6	40.6	49.9	65	65	85
Rec_187	Residential	32.7	36.6	45.6	65	65	85
Rec_188	Residential	30.9	34.9	43.5	65	65	85
Rec_189	Residential	18	21.8	28.1	65	65	85
Rec_190	Residential	18.9	22.7	31.3	65	65	85

Table B-1. Scenario 1 Evening Minor League Baseball Game

Receptor ID	Land Use	CNEL (dBA)	Leq,1hr (dBA)	Lmax (dBA)	State of CA Exterior Noise Standards (dBA)	Ontario Municipal Code Exterior Noise Standards (dBA)	Lmax Limit
Rec_191	Residential	19.9	23.7	30.2	65	65	85
Rec_192	Residential	19	22.8	30.5	65	65	85
Rec_193	Residential	17.8	21.6	28	65	65	85
Rec_194	Residential	38.5	42.4	49.2	65	65	85
Rec_195	Residential	38	42	49.2	65	65	85
Rec_196	Residential	39	43	49.8	65	65	85
Rec_197	Residential	39.3	43.3	50.1	65	65	85
Rec_198	Residential	40.5	44.5	51.6	65	65	85
Rec_199	Residential	39.9	43.9	50.8	65	65	85
Rec_200	Residential	40.2	44.2	51.1	65	65	85
Rec_201	Residential	40.3	44.2	51.4	65	65	85
Rec_202	Residential	40.8	44.8	51.7	65	65	85
Rec_203	Residential	41.2	45.1	52.1	65	65	85
Rec_204	Residential	41.9	45.8	53.6	65	65	85
Rec_205	Residential	41.8	45.8	52.8	65	65	85
Rec_206	Residential	42.1	46.1	53.1	65	65	85
Rec_207	Residential	42.4	46.3	53.4	65	65	85
Rec_208	Residential	42.7	46.7	53.8	65	65	85
Rec_209	Residential	43	47	54.2	65	65	85
Rec_210	Residential	41.2	45.2	52.3	65	65	85
Rec_211	Residential	43.6	47.6	54.8	65	65	85
Rec_212	Residential	43.9	47.9	55.2	65	65	85
Rec_213	Residential	46	49.9	57.8	65	65	85
Rec_214	Residential	45.9	49.8	57.7	65	65	85
Rec_215	Residential	45.6	49.6	57.3	65	65	85
Rec_216	Residential	45.3	49.3	56.9	65	65	85
Rec_217	Residential	45.2	49.1	56.7	65	65	85
Rec_218	Residential	44.8	48.8	56.2	65	65	85
Rec_219	Residential	44.5	48.5	55.9	65	65	85
Rec_220	Residential	44.2	48.2	55.5	65	65	85
Rec_221	Residential	46.1	50.1	57.9	65	65	85
Rec_222	Residential	46	50	57.8	65	65	85

Table B-1. Scenario 1 Evening Minor League Baseball Game

Receptor ID	Land Use	CNEL (dBA)	Leq,1hr (dBA)	Lmax (dBA)	State of CA Exterior Noise Standards (dBA)	Ontario Municipal Code Exterior Noise Standards (dBA)	Lmax Limit
Rec_223	Residential	46	49.9	57.8	65	65	85
Rec_224	Residential	45.9	49.9	57.8	65	65	85
Rec_225	Residential	46.1	50.1	57.9	65	65	85
Rec_226	Residential	17.7	21.6	28	65	65	85
Rec_227	Residential	24.9	28.8	41.9	65	65	85
Rec_228	Residential	29	32.9	45.4	65	65	85
Rec_229	Residential	24.6	28.4	38	65	65	85
Rec_230	Residential	31.3	35.2	48.4	65	65	85
Rec_231	Residential	26	29.8	42.9	65	65	85
Rec_232	Residential	30.4	34.3	47.4	65	65	85
Rec_233	Residential	31.9	35.8	49.7	65	65	85
Rec_234	Residential	32	35.9	49.8	65	65	85
Rec_235	Residential	29	32.9	47.1	65	65	85
Rec_236	Residential	32.2	36.1	50	65	65	85
Rec_237	Residential	26.9	30.8	39.6	65	65	85
Rec_238	Residential	29.2	33.1	49.6	65	65	85
Rec_239	Residential	30.6	34.4	43.9	65	65	85
Rec_240	Residential	33	36.9	45.7	65	65	85
Rec_241	Residential	30.5	34.3	45.8	65	65	85
Rec_242	Residential	35.2	39.1	52.3	65	65	85
Rec_243	Residential	38.9	42.8	55.8	65	65	85
Rec_244	Residential	34.3	38.1	50.5	65	65	85
Rec_245	Residential	32.2	36.1	49.4	65	65	85
Rec_246	Residential	32.1	36	49.9	65	65	85
Rec_247	Residential	36.7	40.6	54.1	65	65	85
Rec_248	Residential	36.4	40.3	53	65	65	85
Rec_249	Residential	37	40.9	52.8	65	65	85
Rec_250	Residential	28.9	32.8	41.3	65	65	85
Rec_251	Residential	22.5	26.3	36.6	65	65	85
Rec_252	Residential	17.5	21.1	30.2	65	65	85
Rec_253	Residential	29	32.9	43	65	65	85
Rec_254	Residential	32.7	36.6	48.6	65	65	85

Table B-1. Scenario 1 Evening Minor League Baseball Game

Receptor ID	Land Use	CNEL (dBA)	Leq,1hr (dBA)	Lmax (dBA)	State of CA Exterior Noise Standards (dBA)	Ontario Municipal Code Exterior Noise Standards (dBA)	Lmax Limit
Rec_255	Residential	27.9	31.7	40	65	65	85
Rec_256	Residential	31.2	35.2	46.4	65	65	85
Rec_257	Residential	31	34.9	46.4	65	65	85
Rec_258	Residential	20.9	24.6	33.9	65	65	85
Rec_259	Residential	25.2	29	37.7	65	65	85
Rec_260	Residential	31.1	35	48.6	65	65	85
Rec_261	Residential	33.1	37.1	49.8	65	65	85
Rec_262	Residential	25.6	29.4	38.5	65	65	85
Rec_263	Residential	32.5	36.4	47.8	65	65	85
Rec_264	Residential	29.9	33.7	47.2	65	65	85
Rec_265	Residential	32.1	36	49.6	65	65	85
Rec_266	Residential	27.3	31.1	40.1	65	65	85
Rec_267	Residential	31.7	35.5	47.9	65	65	85
Rec_268	Residential	31.6	35.5	49.2	65	65	85
Rec_269	Residential	33.5	37.4	49.8	65	65	85
Rec_270	Residential	29.4	33.3	46.8	65	65	85
Rec_271	Residential	27.7	31.5	45.5	65	65	85
Rec_272	Residential	29.9	33.8	45.6	65	65	85
Rec_273	Residential	25.8	29.6	38.8	65	65	85
Rec_274	Residential	31.9	35.8	50	65	65	85
Rec_275	Residential	30.3	34.3	44.8	65	65	85
Rec_276	Residential	31.1	35.1	47.9	65	65	85
Rec_277	Residential	31.5	35.4	48.6	65	65	85
Rec_278	Residential	24	27.9	36.2	65	65	85
Rec_279	Residential	29.5	33.5	47	65	65	85
Rec_280	Residential	32.9	36.8	50	65	65	85
Rec_281	Residential	19.9	23.6	34.3	65	65	85
Rec_282	Residential	27.2	31.2	45.1	65	65	85
Rec_283	Residential	24.8	28.7	37.4	65	65	85
Rec_284	Residential	29.9	33.8	46.3	65	65	85
Rec_285	Residential	21.8	25.6	33.3	65	65	85
Rec_286	Residential	26	30	42.4	65	65	85

Table B-1. Scenario 1 Evening Minor League Baseball Game

Receptor ID	Land Use	CNEL (dBA)	Leq,1hr (dBA)	Lmax (dBA)	State of CA Exterior Noise Standards (dBA)	Ontario Municipal Code Exterior Noise Standards (dBA)	Lmax Limit
Rec_287	Residential	29.6	33.5	46.5	65	65	85
Rec_288	Residential	25.8	29.8	43.6	65	65	85
Rec_289	Residential	21.2	25	34.2	65	65	85
Rec_290	Residential	30.3	34.2	48.2	65	65	85
Rec_291	Residential	28	31.8	45	65	65	85
Rec_292	Residential	25.4	29.2	42.3	65	65	85
Rec_293	Residential	27.5	31.4	44.7	65	65	85
Rec_294	Residential	27.1	30.9	44	65	65	85
Rec_295	Residential	27.2	31	44	65	65	85
Rec_296	Residential	28.4	32.3	46	65	65	85
Rec_297	Residential	28.2	32.1	45.8	65	65	85
Rec_298	Residential	26.4	30.2	43.3	65	65	85
Rec_299	Residential	26.6	30.4	43.3	65	65	85
Rec_300	Residential	27.8	31.7	45.3	65	65	85
Rec_301	Residential	27.8	31.6	45.1	65	65	85
Rec_302	Residential	25.8	29.7	42.6	65	65	85
Rec_303	Residential	25.8	29.7	42.4	65	65	85
Rec_304	Residential	17.9	21.7	30.9	65	65	85
Rec_305	Residential	17	20.7	29.7	65	65	85
Rec_306	Residential	18.8	22.6	32.5	65	65	85
Rec_307	Residential	16.7	20.3	27.9	65	65	85
Rec_308	Residential	19.7	23.4	32.7	65	65	85
Rec_309	Residential	22	25.7	32.6	65	65	85
Rec_310	Residential	24.6	28.5	42.1	65	65	85
Rec_311	Residential	23.8	27.7	41.3	65	65	85
Rec_312	Residential	20.7	24.4	35.5	65	65	85
Rec_313	Residential	20.7	24.5	37.2	65	65	85
Rec_314	Residential	18.9	22.6	33.8	65	65	85
Rec_315	Residential	16.1	19.8	29.9	65	65	85
Rec_316	Residential	18.4	22.1	33.4	65	65	85
Rec_317	Residential	23	26.7	37.8	65	65	85
Rec_318	Residential	19.7	23.3	32.6	65	65	85

Table B-1. Scenario 1 Evening Minor League Baseball Game

Receptor ID	Land Use	CNEL (dBA)	Leq,1hr (dBA)	Lmax (dBA)	State of CA Exterior Noise Standards (dBA)	Ontario Municipal Code Exterior Noise Standards (dBA)	Lmax Limit
Rec_319	Residential	19.1	22.7	31	65	65	85
Rec_320	Residential	19.1	22.8	34.2	65	65	85
Rec_321	Residential	22.7	26.6	40.3	65	65	85
Rec_322	Residential	20.3	24	34.1	65	65	85
Rec_323	Residential	17	20.7	31.1	65	65	85
Rec_324	Residential	16	19.7	30.7	65	65	85
Rec_325	Residential	23	26.8	41.4	65	65	85
Rec_326	Residential	26.8	30.7	44.6	65	65	85
Rec_327	Residential	21.7	25.5	36.8	65	65	85
Rec_328	Residential	28.5	32.3	45.5	65	65	85
Rec_329	Residential	27.6	31.5	44.1	65	65	85
Rec_330	Residential	30.8	34.7	47.9	65	65	85
Rec_331	Residential	29.3	33.2	46.1	65	65	85
Rec_332	Residential	32.3	36.2	50.3	65	65	85
Rec_333	Residential	24.2	28.1	42.4	65	65	85
Rec_334	Residential	26.4	30.3	43.5	65	65	85
Rec_335	Residential	22.2	26	37.4	65	65	85
Rec_336	Residential	23.5	27.2	35.3	65	65	85
Rec_337	Residential	21.5	25.3	34.6	65	65	85
Rec_338	Residential	26.1	29.9	41.1	65	65	85
Rec_339	Residential	22.9	26.8	35.5	65	65	85
Rec_340	Residential	25.7	29.5	45.2	65	65	85
Rec_341	Residential	29.1	32.9	46.2	65	65	85
Rec_342	Residential	26.6	30.4	42.8	65	65	85
Rec_343	Residential	20.8	24.5	36.8	65	65	85
Rec_344	Residential	20.4	24.2	35.1	65	65	85
Rec_345	Residential	18.2	21.9	32	65	65	85
Rec_346	Residential	15.4	19.2	31	65	65	85
Rec_347	Residential	16.7	20.5	32	65	65	85
Rec_348	Residential	17.8	21.5	31	65	65	85
Rec_349	Residential	19.2	22.9	33.6	65	65	85
Rec_350	Residential	20.5	24.3	36.7	65	65	85

Table B-1. Scenario 1 Evening Minor League Baseball Game

Receptor ID	Land Use	CNEL (dBA)	Leq,1hr (dBA)	Lmax (dBA)	State of CA Exterior Noise Standards (dBA)	Ontario Municipal Code Exterior Noise Standards (dBA)	Lmax Limit
Rec_351	Residential	22.8	26.6	37.3	65	65	85
Rec_352	Residential	14.8	18.5	25.9	65	65	85
Rec_353	Residential	25.4	29.2	43	65	65	85
Rec_354	Residential	24.5	28.3	42.4	65	65	85
Rec_355	Residential	20.2	24	33.7	65	65	85
Rec_356	Residential	24.8	28.7	41.6	65	65	85
Rec_357	Residential	30.9	34.8	47.8	65	65	85
Rec_358	Residential	29.2	33.1	45.2	65	65	85
Rec_359	Residential	25.1	28.9	42.4	65	65	85
Rec_360	Residential	23.1	26.9	36.9	65	65	85
Rec_361	Residential	20.6	24.3	33.4	65	65	85
Rec_362	Residential	23.8	27.6	38.1	65	65	85
Rec_363	Residential	24.7	28.6	39.9	65	65	85
Rec_364	Residential	25.9	29.8	42.3	65	65	85
Rec_365	Residential	25.5	29.3	39.3	65	65	85
Rec_366	Residential	27.4	31.2	43.4	65	65	85
Rec_367	Residential	27.6	31.5	45.8	65	65	85
Rec_368	Residential	28.9	32.7	45.7	65	65	85
Rec_369	Residential	22.7	26.4	36.7	65	65	85
Rec_370	Residential	17.6	21.3	32	65	65	85
Rec_371	Residential	26.2	30.1	43.5	65	65	85
Rec_372	Residential	23.5	27.2	38	65	65	85
Rec_373	Residential	23.7	27.5	37.1	65	65	85
Rec_374	Residential	18.9	22.5	29.6	65	65	85
Rec_375	Residential	21.9	25.7	36.7	65	65	85
Rec_376	Residential	23.6	27.3	37.6	65	65	85
Rec_377	Residential	24.7	28.6	42.3	65	65	85
Rec_378	Residential	26.6	30.5	43.6	65	65	85
Rec_379	Residential	23.6	27.4	37.8	65	65	85
Rec_380	Residential	28.1	32	45.9	65	65	85
Rec_381	Residential	31.5	35.5	48.6	65	65	85
Rec_382	Residential	31	34.9	47.5	65	65	85

Table B-1. Scenario 1 Evening Minor League Baseball Game

Receptor ID	Land Use	CNEL (dBA)	Leq,1hr (dBA)	Lmax (dBA)	State of CA Exterior Noise Standards (dBA)	Ontario Municipal Code Exterior Noise Standards (dBA)	Lmax Limit
Rec_383	Residential	30.8	34.6	47.6	65	65	85
Rec_384	Residential	14.6	18.2	26.9	65	65	85
Rec_385	Residential	30.5	34.4	47	65	65	85
Rec_386	Residential	30.8	34.8	47.3	65	65	85
Rec_387	Residential	30.8	34.7	47.2	65	65	85
Rec_388	Residential	28.7	32.6	44.8	65	65	85
Rec_389	Residential	21.5	25.4	35.8	65	65	85
Rec_390	Residential	25.5	29.3	39.9	65	65	85
Rec_391	Residential	21.4	25.3	38	65	65	85
Rec_392	Residential	22.8	26.6	37.4	65	65	85
Rec_393	Residential	22.7	26.5	38.2	65	65	85
Rec_394	Residential	25.9	29.7	39.9	65	65	85
Rec_395	Residential	25	28.8	36.5	65	65	85
Rec_396	Residential	24.8	28.7	39.2	65	65	85
Rec_397	Residential	21.5	25.3	36.3	65	65	85
Rec_398	Residential	18	21.7	31.4	65	65	85
Rec_399	Residential	22.9	26.7	35.4	65	65	85
Rec_400	Residential	26	29.9	43.5	65	65	85
Rec_401	Residential	17.3	21	30.5	65	65	85
Rec_402	Residential	42.4	46.4	53.3	65	65	85
Rec_403	Residential	42.3	46.3	53.2	65	65	85
Rec_404	Residential	42.4	46.3	53.3	65	65	85
Rec_405	Residential	42.1	46.1	53.1	65	65	85
Rec_406	Residential	42.7	46.6	53.5	65	65	85
Rec_407	Residential	42.5	46.5	53.8	65	65	85
Rec_408	Residential	42.9	46.9	55.4	65	65	85
Rec_409	Residential	41.1	45	52.4	65	65	85
Rec_410	Residential	42	46	53	65	65	85
Rec_411	Residential	41.9	45.9	52.8	65	65	85
Rec_412	Residential	39.4	43.4	50.3	65	65	85
Rec_413	Residential	39.4	43.3	51.9	65	65	85
Rec_414	Residential	14.7	18.5	25.8	65	65	85

Table B-1. Scenario 1 Evening Minor League Baseball Game

Receptor ID	Land Use	CNEL (dBA)	Leq,1hr (dBA)	Lmax (dBA)	State of CA Exterior Noise Standards (dBA)	Ontario Municipal Code Exterior Noise Standards (dBA)	Lmax Limit
Rec_415	Residential	15.6	19.3	25.9	65	65	85
Rec_416	Residential	13.3	17	25.1	65	65	85
Rec_417a	Residential	12.8	16.4	23.1	65	65	85
Rec_417b	Recreational	9.6	13.3	20.7	65	65	85
Rec_418	Residential	14.8	18.4	25.5	65	65	85
Rec_419	Residential	13.8	17.4	24.2	65	65	85
Rec_420	Daycare	35.9	39.8	52	65	70	90
Rec_421	Daycare	38	41.9	54.2	65	70	90
Rec_422	Recreational	38.7	42.6	51.1	65	65	85
Rec_423	Residential	15.2	18.8	26.8	65	65	85
Rec_424	Residential	24.8	28.6	39.3	65	65	85
Rec_425	Residential	27.6	31.5	43.8	65	65	85
Rec_426b	Recreational	21.7	25.5	36.9	65	65	85
Rec_426a	Recreational	28.5	32.4	45.7	65	65	85
Rec_427	Multi-Family Residential	27.3	31.3	47.7	65	65	85
Rec_428	Multi-Family Residential	37.7	41.6	53.8	65	65	85
Rec_429	Multi-Family Residential	38.3	42.3	54.4	65	65	85
Rec_430	Multi-Family Residential	38	41.9	53.7	65	65	85
Rec_431	Multi-Family Residential	38.6	42.5	54.4	65	65	85
Rec_432	Multi-Family Residential	37.8	41.7	53.5	65	65	85
Rec_433	Multi-Family Residential	38.4	42.3	54.1	65	65	85
Rec_434	Multi-Family Residential	37.5	41.4	53.3	65	65	85
Rec_435	Multi-Family Residential	38.1	42	54	65	65	85
Rec_436	Multi-Family Residential	36.7	40.6	53	65	65	85
Rec_437	Multi-Family Residential	37.3	41.2	53.6	65	65	85

Table B-1. Scenario 1 Evening Minor League Baseball Game

Receptor ID	Land Use	CNEL (dBA)	Leq,1hr (dBA)	Lmax (dBA)	State of CA Exterior Noise Standards (dBA)	Ontario Municipal Code Exterior Noise Standards (dBA)	Lmax Limit
Rec_438	Multi-Family Residential	36.8	40.7	52.9	65	65	85
Rec_439	Multi-Family Residential	37.4	41.3	53.5	65	65	85
Rec_440	Multi-Family Residential	19.9	23.6	32.7	65	65	85
Rec_441	Multi-Family Residential	17.1	20.9	31.3	65	65	85
Rec_442	Multi-Family Residential	18.1	21.8	31.7	65	65	85
Rec_443	Multi-Family Residential	18.8	22.5	32.2	65	65	85
Rec_444	Multi-Family Residential	18.3	22	31.9	65	65	85
Rec_445	Multi-Family Residential	28.6	32.4	40.7	65	65	85
Rec_446	Multi-Family Residential	29.3	33.1	42.9	65	65	85
Rec_447	Multi-Family Residential	28.9	32.8	43.7	65	65	85
Rec_448	Multi-Family Residential	29	32.9	42.2	65	65	85

Table B-2. Scenario 2 Concerts

Receptor ID	Land Use	CNEL (dBA)	Leq,1hr (dBA)	Lmax (dBA)[1]	State of CA Exterior Noise Standards (dBA)	Ontario Municipal Code Exterior Noise Standards (dBA)	Lmax Limit
Rec_1	Residential	25.7	28.9	N/A	65	65	85
Rec_2	Residential	20.6	23.8	N/A	65	65	85
Rec_3	Residential	20.9	24.1	N/A	65	65	85
Rec_4	Residential	19.8	23	N/A	65	65	85
Rec_5	Residential	21.2	24.4	N/A	65	65	85
Rec_6	Residential	15.2	18.4	N/A	65	65	85
Rec_7	Residential	17.4	20.6	N/A	65	65	85
Rec_8	Residential	19.9	23.1	N/A	65	65	85
Rec_9	Residential	19.4	22.6	N/A	65	65	85
Rec_10	Residential	17.6	20.8	N/A	65	65	85
Rec_11	Residential	18.8	22	N/A	65	65	85
Rec_12	Residential	25.8	29	N/A	65	65	85
Rec_13	Residential	26.9	30.1	N/A	65	65	85
Rec_14	Residential	26.8	30	N/A	65	65	85
Rec_15	Residential	21.2	24.4	N/A	65	65	85
Rec_16	Residential	21.9	25.1	N/A	65	65	85
Rec_17	Residential	22.1	25.3	N/A	65	65	85
Rec_18	Residential	14.9	18.1	N/A	65	65	85
Rec_19	Residential	21.1	24.3	N/A	65	65	85
Rec_20	Residential	20	23.2	N/A	65	65	85
Rec_21	Residential	20.2	23.4	N/A	65	65	85
Rec_22	Residential	20	23.2	N/A	65	65	85
Rec_23	Residential	20.8	24	N/A	65	65	85
Rec_24	Residential	19.3	22.5	N/A	65	65	85
Rec_25	Residential	16.5	19.7	N/A	65	65	85
Rec_26	Residential	26.8	30	N/A	65	65	85
Rec_27	Residential	26.3	29.5	N/A	65	65	85
Rec_28	Residential	25.7	28.9	N/A	65	65	85
Rec_29	Residential	24.9	28.1	N/A	65	65	85
Rec_30	Residential	25	28.2	N/A	65	65	85
Rec_31	Residential	26.2	29.4	N/A	65	65	85
Rec_32	Residential	26.9	30.1	N/A	65	65	85

Table B-2. Scenario 2 Concerts

Receptor ID	Land Use	CNEL (dBA)	Leq,1hr (dBA)	Lmax (dBA)[1]	State of CA Exterior Noise Standards (dBA)	Ontario Municipal Code Exterior Noise Standards (dBA)	Lmax Limit
Rec_33	Residential	22.8	26	N/A	65	65	85
Rec_34	Residential	22.7	25.9	N/A	65	65	85
Rec_35	Residential	22.4	25.6	N/A	65	65	85
Rec_36	Residential	21.8	25	N/A	65	65	85
Rec_37	Residential	21.3	24.5	N/A	65	65	85
Rec_38	Residential	20.4	23.6	N/A	65	65	85
Rec_39	Residential	18.1	21.3	N/A	65	65	85
Rec_40	Residential	18.5	21.7	N/A	65	65	85
Rec_41	Residential	17.8	21	N/A	65	65	85
Rec_42	Residential	18	21.2	N/A	65	65	85
Rec_43	Residential	19.1	22.3	N/A	65	65	85
Rec_44	Residential	19.5	22.7	N/A	65	65	85
Rec_45	Residential	19	22.2	N/A	65	65	85
Rec_46	Residential	18.2	21.4	N/A	65	65	85
Rec_47	Residential	20.7	23.9	N/A	65	65	85
Rec_48	Residential	20	23.2	N/A	65	65	85
Rec_49	Residential	17.3	20.5	N/A	65	65	85
Rec_50	Residential	17.7	20.9	N/A	65	65	85
Rec_51	Residential	18.3	21.5	N/A	65	65	85
Rec_52	Residential	18	21.2	N/A	65	65	85
Rec_53	Residential	20.3	23.5	N/A	65	65	85
Rec_54	Residential	20.4	23.6	N/A	65	65	85
Rec_55	Residential	20	23.2	N/A	65	65	85
Rec_56	Residential	20.1	23.3	N/A	65	65	85
Rec_57	Residential	22.4	25.6	N/A	65	65	85
Rec_58	Residential	21.6	24.8	N/A	65	65	85
Rec_59	Residential	21.5	24.7	N/A	65	65	85
Rec_60	Residential	21.5	24.7	N/A	65	65	85
Rec_61	Residential	20.6	23.8	N/A	65	65	85
Rec_62	Residential	21.5	24.7	N/A	65	65	85
Rec_63	Residential	18.8	22	N/A	65	65	85
Rec_64	Residential	16.6	19.8	N/A	65	65	85

Table B-2. Scenario 2 Concerts

Receptor ID	Land Use	CNEL (dBA)	Leq,1hr (dBA)	Lmax (dBA)[1]	State of CA Exterior Noise Standards (dBA)	Ontario Municipal Code Exterior Noise Standards (dBA)	Lmax Limit
Rec_65	Residential	20.5	23.7	N/A	65	65	85
Rec_66	Residential	14.3	17.5	N/A	65	65	85
Rec_67	Residential	19.4	22.6	N/A	65	65	85
Rec_68	Residential	18.9	22.1	N/A	65	65	85
Rec_69	Residential	19.8	23	N/A	65	65	85
Rec_70	Residential	19.1	22.3	N/A	65	65	85
Rec_71	Residential	18.5	21.7	N/A	65	65	85
Rec_72	Residential	18	21.2	N/A	65	65	85
Rec_73	Residential	16.6	19.8	N/A	65	65	85
Rec_74	Residential	18.4	21.6	N/A	65	65	85
Rec_75	Residential	14.7	17.9	N/A	65	65	85
Rec_76	Residential	20.8	24	N/A	65	65	85
Rec_77	Residential	21.2	24.4	N/A	65	65	85
Rec_78	Residential	17.5	20.7	N/A	65	65	85
Rec_79	Residential	23.3	26.5	N/A	65	65	85
Rec_80	Residential	22.2	25.4	N/A	65	65	85
Rec_81	Residential	22.4	25.6	N/A	65	65	85
Rec_82	Residential	23.4	26.6	N/A	65	65	85
Rec_83	Residential	23.1	26.3	N/A	65	65	85
Rec_84	Residential	21.4	24.6	N/A	65	65	85
Rec_85	Residential	19.1	22.3	N/A	65	65	85
Rec_86	Residential	19.6	22.8	N/A	65	65	85
Rec_87	Residential	19.4	22.6	N/A	65	65	85
Rec_88	Residential	19.1	22.3	N/A	65	65	85
Rec_89	Residential	18.7	21.9	N/A	65	65	85
Rec_90	Residential	17.8	21	N/A	65	65	85
Rec_91	Residential	19.3	22.5	N/A	65	65	85
Rec_92	Residential	18.9	22.1	N/A	65	65	85
Rec_93	Residential	18.3	21.5	N/A	65	65	85
Rec_94	Residential	19.3	22.5	N/A	65	65	85
Rec_95	Residential	19.8	23	N/A	65	65	85
Rec_96	Residential	19.9	23.1	N/A	65	65	85

Table B-2. Scenario 2 Concerts

Receptor ID	Land Use	CNEL (dBA)	Leq,1hr (dBA)	Lmax (dBA)[1]	State of CA Exterior Noise Standards (dBA)	Ontario Municipal Code Exterior Noise Standards (dBA)	Lmax Limit
Rec_97	Residential	19.7	22.9	N/A	65	65	85
Rec_98	Residential	16.2	19.4	N/A	65	65	85
Rec_99	Residential	19.8	23	N/A	65	65	85
Rec_100	Residential	19.9	23.1	N/A	65	65	85
Rec_101	Residential	18.8	22	N/A	65	65	85
Rec_102	Residential	20.1	23.3	N/A	65	65	85
Rec_103	Residential	18.7	21.9	N/A	65	65	85
Rec_104	Residential	19.1	22.3	N/A	65	65	85
Rec_105	Residential	19.6	22.8	N/A	65	65	85
Rec_106	Residential	18.8	22	N/A	65	65	85
Rec_107	Residential	19.7	22.9	N/A	65	65	85
Rec_108	Residential	17	20.2	N/A	65	65	85
Rec_109	Residential	19.9	23.1	N/A	65	65	85
Rec_110	Residential	17.7	20.9	N/A	65	65	85
Rec_111	Residential	15.2	18.4	N/A	65	65	85
Rec_112	Residential	15.9	19.1	N/A	65	65	85
Rec_113	Residential	16.2	19.4	N/A	65	65	85
Rec_114	Residential	16.6	19.8	N/A	65	65	85
Rec_115	Residential	17.5	20.7	N/A	65	65	85
Rec_116	Residential	15.4	18.6	N/A	65	65	85
Rec_117	Residential	17	20.2	N/A	65	65	85
Rec_118	Residential	20.3	23.5	N/A	65	65	85
Rec_119	Residential	18.4	21.6	N/A	65	65	85
Rec_120	Residential	19	22.2	N/A	65	65	85
Rec_121	Residential	16.5	19.7	N/A	65	65	85
Rec_122	Residential	18	21.2	N/A	65	65	85
Rec_123	Residential	15.8	19	N/A	65	65	85
Rec_124	Residential	18.6	21.8	N/A	65	65	85
Rec_125	Residential	16.6	19.8	N/A	65	65	85
Rec_126	Residential	17.6	20.8	N/A	65	65	85
Rec_127	Residential	18.6	21.8	N/A	65	65	85
Rec_128	Residential	15.7	18.9	N/A	65	65	85

Table B-2. Scenario 2 Concerts

Receptor ID	Land Use	CNEL (dBA)	Leq,1hr (dBA)	Lmax (dBA)[1]	State of CA Exterior Noise Standards (dBA)	Ontario Municipal Code Exterior Noise Standards (dBA)	Lmax Limit
Rec_129	Residential	14.4	17.6	N/A	65	65	85
Rec_130	Residential	17.8	21	N/A	65	65	85
Rec_131	Residential	16.2	19.4	N/A	65	65	85
Rec_132	Residential	16.8	20	N/A	65	65	85
Rec_133	Residential	16	19.2	N/A	65	65	85
Rec_134	Residential	15.1	18.3	N/A	65	65	85
Rec_135	Residential	15.9	19.1	N/A	65	65	85
Rec_136	Residential	15.3	18.5	N/A	65	65	85
Rec_137	Residential	16.5	19.7	N/A	65	65	85
Rec_138	Residential	13.6	16.8	N/A	65	65	85
Rec_139	Residential	18.3	21.5	N/A	65	65	85
Rec_140	Residential	16.1	19.3	N/A	65	65	85
Rec_141	Residential	15.5	18.7	N/A	65	65	85
Rec_142	Residential	16.4	19.6	N/A	65	65	85
Rec_143	Residential	16	19.2	N/A	65	65	85
Rec_144	Residential	15.4	18.6	N/A	65	65	85
Rec_145	Residential	14.9	18.1	N/A	65	65	85
Rec_146	Residential	15.4	18.6	N/A	65	65	85
Rec_147	Residential	16.9	20.1	N/A	65	65	85
Rec_148	Residential	16.6	19.8	N/A	65	65	85
Rec_149	Residential	16.5	19.7	N/A	65	65	85
Rec_150	Residential	13.6	16.8	N/A	65	65	85
Rec_151	Residential	15.2	18.4	N/A	65	65	85
Rec_152	Residential	15.1	18.3	N/A	65	65	85
Rec_153	Residential	15	18.2	N/A	65	65	85
Rec_154	Residential	16.2	19.4	N/A	65	65	85
Rec_155	Residential	14.2	17.4	N/A	65	65	85
Rec_156	Residential	10.6	13.8	N/A	65	65	85
Rec_157	Residential	10	13.2	N/A	65	65	85
Rec_158	Residential	10.2	13.4	N/A	65	65	85
Rec_159	Residential	15.2	18.4	N/A	65	65	85
Rec_160	Residential	13.9	17.1	N/A	65	65	85

Table B-2. Scenario 2 Concerts

Receptor ID	Land Use	CNEL (dBA)	Leq,1hr (dBA)	Lmax (dBA)[1]	State of CA Exterior Noise Standards (dBA)	Ontario Municipal Code Exterior Noise Standards (dBA)	Lmax Limit
Rec_161	Residential	15.3	18.5	N/A	65	65	85
Rec_162	Residential	15.8	19	N/A	65	65	85
Rec_163	Residential	14.9	18.1	N/A	65	65	85
Rec_164	Residential	15.4	18.6	N/A	65	65	85
Rec_165	Residential	13.3	16.5	N/A	65	65	85
Rec_166	Residential	16	19.2	N/A	65	65	85
Rec_167	Residential	14.6	17.8	N/A	65	65	85
Rec_168	Residential	16.5	19.7	N/A	65	65	85
Rec_169	Residential	14.8	18	N/A	65	65	85
Rec_170	Residential	15.3	18.5	N/A	65	65	85
Rec_171	Residential	12.8	16	N/A	65	65	85
Rec_172	Residential	15.5	18.7	N/A	65	65	85
Rec_173	Residential	11	14.2	N/A	65	65	85
Rec_174	Residential	9.9	13.1	N/A	65	65	85
Rec_175	Residential	9.6	12.8	N/A	65	65	85
Rec_176	Residential	11.1	14.3	N/A	65	65	85
Rec_177	Residential	11.8	15	N/A	65	65	85
Rec_178	Residential	14.1	17.3	N/A	65	65	85
Rec_179	Residential	14.6	17.8	N/A	65	65	85
Rec_180	Residential	16.3	19.5	N/A	65	65	85
Rec_181	Residential	13.5	16.7	N/A	65	65	85
Rec_182	Residential	14.5	17.7	N/A	65	65	85
Rec_183	Residential	15.4	18.6	N/A	65	65	85
Rec_184	Residential	17.4	20.6	N/A	65	65	85
Rec_185	Residential	16.7	19.9	N/A	65	65	85
Rec_186	Residential	17.2	20.4	N/A	65	65	85
Rec_187	Residential	16.1	19.3	N/A	65	65	85
Rec_188	Residential	13.7	16.9	N/A	65	65	85
Rec_189	Residential	6.2	9.4	N/A	65	65	85
Rec_190	Residential	6.8	10	N/A	65	65	85
Rec_191	Residential	7.9	11.1	N/A	65	65	85
Rec_192	Residential	7	10.2	N/A	65	65	85

Table B-2. Scenario 2 Concerts

Receptor ID	Land Use	CNEL (dBA)	Leq,1hr (dBA)	Lmax (dBA)[1]	State of CA Exterior Noise Standards (dBA)	Ontario Municipal Code Exterior Noise Standards (dBA)	Lmax Limit
Rec_193	Residential	6.7	9.9	N/A	65	65	85
Rec_194	Residential	20.2	23.4	N/A	65	65	85
Rec_195	Residential	19.3	22.5	N/A	65	65	85
Rec_196	Residential	20.6	23.8	N/A	65	65	85
Rec_197	Residential	20.8	24	N/A	65	65	85
Rec_198	Residential	21.4	24.6	N/A	65	65	85
Rec_199	Residential	21.1	24.3	N/A	65	65	85
Rec_200	Residential	21.3	24.5	N/A	65	65	85
Rec_201	Residential	20.8	24	N/A	65	65	85
Rec_202	Residential	21.7	24.9	N/A	65	65	85
Rec_203	Residential	22	25.2	N/A	65	65	85
Rec_204	Residential	22.2	25.4	N/A	65	65	85
Rec_205	Residential	22.3	25.5	N/A	65	65	85
Rec_206	Residential	22.3	25.5	N/A	65	65	85
Rec_207	Residential	22.2	25.4	N/A	65	65	85
Rec_208	Residential	22.5	25.7	N/A	65	65	85
Rec_209	Residential	22.7	25.9	N/A	65	65	85
Rec_210	Residential	20.7	23.9	N/A	65	65	85
Rec_211	Residential	23	26.2	N/A	65	65	85
Rec_212	Residential	23.5	26.7	N/A	65	65	85
Rec_213	Residential	26.2	29.4	N/A	65	65	85
Rec_214	Residential	26.1	29.3	N/A	65	65	85
Rec_215	Residential	26	29.2	N/A	65	65	85
Rec_216	Residential	25.6	28.8	N/A	65	65	85
Rec_217	Residential	25.3	28.5	N/A	65	65	85
Rec_218	Residential	25	28.2	N/A	65	65	85
Rec_219	Residential	24.4	27.6	N/A	65	65	85
Rec_220	Residential	24	27.2	N/A	65	65	85
Rec_221	Residential	26.9	30.1	N/A	65	65	85
Rec_222	Residential	27.5	30.7	N/A	65	65	85
Rec_223	Residential	29.9	33.1	N/A	65	65	85
Rec_224	Residential	29.8	33	N/A	65	65	85

Table B-2. Scenario 2 Concerts

Receptor ID	Land Use	CNEL (dBA)	Leq,1hr (dBA)	Lmax (dBA)[1]	State of CA Exterior Noise Standards (dBA)	Ontario Municipal Code Exterior Noise Standards (dBA)	Lmax Limit
Rec_225	Residential	28.1	31.3	N/A	65	65	85
Rec_226	Residential	4.6	7.8	N/A	65	65	85
Rec_227	Residential	14.7	17.9	N/A	65	65	85
Rec_228	Residential	18.4	21.6	N/A	65	65	85
Rec_229	Residential	14.8	18	N/A	65	65	85
Rec_230	Residential	20	23.2	N/A	65	65	85
Rec_231	Residential	15.4	18.6	N/A	65	65	85
Rec_232	Residential	17.2	20.4	N/A	65	65	85
Rec_233	Residential	18.5	21.7	N/A	65	65	85
Rec_234	Residential	16.2	19.4	N/A	65	65	85
Rec_235	Residential	14.6	17.8	N/A	65	65	85
Rec_236	Residential	19.7	22.9	N/A	65	65	85
Rec_237	Residential	18.2	21.4	N/A	65	65	85
Rec_238	Residential	15.2	18.4	N/A	65	65	85
Rec_239	Residential	20.1	23.3	N/A	65	65	85
Rec_240	Residential	23.9	27.1	N/A	65	65	85
Rec_241	Residential	19.8	23	N/A	65	65	85
Rec_242	Residential	23.1	26.3	N/A	65	65	85
Rec_243	Residential	25.7	28.9	N/A	65	65	85
Rec_244	Residential	23	26.2	N/A	65	65	85
Rec_245	Residential	17.6	20.8	N/A	65	65	85
Rec_246	Residential	16.9	20.1	N/A	65	65	85
Rec_247	Residential	21.5	24.7	N/A	65	65	85
Rec_248	Residential	23.7	26.9	N/A	65	65	85
Rec_249	Residential	26.1	29.3	N/A	65	65	85
Rec_250	Residential	22.8	26	N/A	65	65	85
Rec_251	Residential	14.4	17.6	N/A	65	65	85
Rec_252	Residential	10.5	13.7	N/A	65	65	85
Rec_253	Residential	20.1	23.3	N/A	65	65	85
Rec_254	Residential	19.6	22.8	N/A	65	65	85
Rec_255	Residential	18.9	22.1	N/A	65	65	85
Rec_256	Residential	20.8	24	N/A	65	65	85

Table B-2. Scenario 2 Concerts

Receptor ID	Land Use	CNEL (dBA)	Leq,1hr (dBA)	Lmax (dBA)[1]	State of CA Exterior Noise Standards (dBA)	Ontario Municipal Code Exterior Noise Standards (dBA)	Lmax Limit
Rec_257	Residential	22.1	25.3	N/A	65	65	85
Rec_258	Residential	14.4	17.6	N/A	65	65	85
Rec_259	Residential	19.6	22.8	N/A	65	65	85
Rec_260	Residential	19.1	22.3	N/A	65	65	85
Rec_261	Residential	20.3	23.5	N/A	65	65	85
Rec_262	Residential	16.4	19.6	N/A	65	65	85
Rec_263	Residential	22.7	25.9	N/A	65	65	85
Rec_264	Residential	20.3	23.5	N/A	65	65	85
Rec_265	Residential	19.6	22.8	N/A	65	65	85
Rec_266	Residential	18.3	21.5	N/A	65	65	85
Rec_267	Residential	21.3	24.5	N/A	65	65	85
Rec_268	Residential	20.4	23.6	N/A	65	65	85
Rec_269	Residential	23.5	26.7	N/A	65	65	85
Rec_270	Residential	17.4	20.6	N/A	65	65	85
Rec_271	Residential	17.3	20.5	N/A	65	65	85
Rec_272	Residential	19.2	22.4	N/A	65	65	85
Rec_273	Residential	17.3	20.5	N/A	65	65	85
Rec_274	Residential	17.9	21.1	N/A	65	65	85
Rec_275	Residential	19.1	22.3	N/A	65	65	85
Rec_276	Residential	16.4	19.6	N/A	65	65	85
Rec_277	Residential	18.5	21.7	N/A	65	65	85
Rec_278	Residential	15.8	19	N/A	65	65	85
Rec_279	Residential	16.7	19.9	N/A	65	65	85
Rec_280	Residential	18.5	21.7	N/A	65	65	85
Rec_281	Residential	11.6	14.8	N/A	65	65	85
Rec_282	Residential	12.3	15.5	N/A	65	65	85
Rec_283	Residential	15.3	18.5	N/A	65	65	85
Rec_284	Residential	17.3	20.5	N/A	65	65	85
Rec_285	Residential	14.3	17.5	N/A	65	65	85
Rec_286	Residential	15.5	18.7	N/A	65	65	85
Rec_287	Residential	15.7	18.9	N/A	65	65	85
Rec_288	Residential	11.5	14.7	N/A	65	65	85

Table B-2. Scenario 2 Concerts

Receptor ID	Land Use	CNEL (dBA)	Leq,1hr (dBA)	Lmax (dBA)[1]	State of CA Exterior Noise Standards (dBA)	Ontario Municipal Code Exterior Noise Standards (dBA)	Lmax Limit
Rec_289	Residential	14.2	17.4	N/A	65	65	85
Rec_290	Residential	15.5	18.7	N/A	65	65	85
Rec_291	Residential	14.5	17.7	N/A	65	65	85
Rec_292	Residential	15	18.2	N/A	65	65	85
Rec_293	Residential	14.4	17.6	N/A	65	65	85
Rec_294	Residential	13.4	16.6	N/A	65	65	85
Rec_295	Residential	15	18.2	N/A	65	65	85
Rec_296	Residential	13.7	16.9	N/A	65	65	85
Rec_297	Residential	13.6	16.8	N/A	65	65	85
Rec_298	Residential	12.4	15.6	N/A	65	65	85
Rec_299	Residential	14.1	17.3	N/A	65	65	85
Rec_300	Residential	13	16.2	N/A	65	65	85
Rec_301	Residential	14	17.2	N/A	65	65	85
Rec_302	Residential	11.6	14.8	N/A	65	65	85
Rec_303	Residential	12.3	15.5	N/A	65	65	85
Rec_304	Residential	9	12.2	N/A	65	65	85
Rec_305	Residential	10.2	13.4	N/A	65	65	85
Rec_306	Residential	11.8	15	N/A	65	65	85
Rec_307	Residential	8.8	12	N/A	65	65	85
Rec_308	Residential	10.7	13.9	N/A	65	65	85
Rec_309	Residential	15.1	18.3	N/A	65	65	85
Rec_310	Residential	15	18.2	N/A	65	65	85
Rec_311	Residential	13	16.2	N/A	65	65	85
Rec_312	Residential	12	15.2	N/A	65	65	85
Rec_313	Residential	11.4	14.6	N/A	65	65	85
Rec_314	Residential	9.6	12.8	N/A	65	65	85
Rec_315	Residential	7.6	10.8	N/A	65	65	85
Rec_316	Residential	9.3	12.5	N/A	65	65	85
Rec_317	Residential	13.5	16.7	N/A	65	65	85
Rec_318	Residential	10.5	13.7	N/A	65	65	85
Rec_319	Residential	8.2	11.4	N/A	65	65	85
Rec_320	Residential	8.8	12	N/A	65	65	85

Table B-2. Scenario 2 Concerts

Receptor ID	Land Use	CNEL (dBA)	Leq,1hr (dBA)	Lmax (dBA)[1]	State of CA Exterior Noise Standards (dBA)	Ontario Municipal Code Exterior Noise Standards (dBA)	Lmax Limit
Rec_321	Residential	9.2	12.4	N/A	65	65	85
Rec_322	Residential	13.9	17.1	N/A	65	65	85
Rec_323	Residential	9.7	12.9	N/A	65	65	85
Rec_324	Residential	8.3	11.5	N/A	65	65	85
Rec_325	Residential	13.5	16.7	N/A	65	65	85
Rec_326	Residential	15.4	18.6	N/A	65	65	85
Rec_327	Residential	14.9	18.1	N/A	65	65	85
Rec_328	Residential	16.3	19.5	N/A	65	65	85
Rec_329	Residential	17	20.2	N/A	65	65	85
Rec_330	Residential	18.3	21.5	N/A	65	65	85
Rec_331	Residential	17.1	20.3	N/A	65	65	85
Rec_332	Residential	18.1	21.3	N/A	65	65	85
Rec_333	Residential	11.3	14.5	N/A	65	65	85
Rec_334	Residential	14.5	17.7	N/A	65	65	85
Rec_335	Residential	14.3	17.5	N/A	65	65	85
Rec_336	Residential	16.7	19.9	N/A	65	65	85
Rec_337	Residential	12.5	15.7	N/A	65	65	85
Rec_338	Residential	17.1	20.3	N/A	65	65	85
Rec_339	Residential	16.2	19.4	N/A	65	65	85
Rec_340	Residential	15.6	18.8	N/A	65	65	85
Rec_341	Residential	17.1	20.3	N/A	65	65	85
Rec_342	Residential	17.6	20.8	N/A	65	65	85
Rec_343	Residential	12.5	15.7	N/A	65	65	85
Rec_344	Residential	13	16.2	N/A	65	65	85
Rec_345	Residential	11.7	14.9	N/A	65	65	85
Rec_346	Residential	9.8	13	N/A	65	65	85
Rec_347	Residential	10.6	13.8	N/A	65	65	85
Rec_348	Residential	8.4	11.6	N/A	65	65	85
Rec_349	Residential	11.7	14.9	N/A	65	65	85
Rec_350	Residential	11.6	14.8	N/A	65	65	85
Rec_351	Residential	15.4	18.6	N/A	65	65	85
Rec_352	Residential	9	12.2	N/A	65	65	85

Table B-2. Scenario 2 Concerts

Receptor ID	Land Use	CNEL (dBA)	Leq,1hr (dBA)	Lmax (dBA)[1]	State of CA Exterior Noise Standards (dBA)	Ontario Municipal Code Exterior Noise Standards (dBA)	Lmax Limit
Rec_353	Residential	11.3	14.5	N/A	65	65	85
Rec_354	Residential	10.3	13.5	N/A	65	65	85
Rec_355	Residential	14.6	17.8	N/A	65	65	85
Rec_356	Residential	15.1	18.3	N/A	65	65	85
Rec_357	Residential	19.1	22.3	N/A	65	65	85
Rec_358	Residential	18	21.2	N/A	65	65	85
Rec_359	Residential	17.4	20.6	N/A	65	65	85
Rec_360	Residential	15.3	18.5	N/A	65	65	85
Rec_361	Residential	12.8	16	N/A	65	65	85
Rec_362	Residential	15.5	18.7	N/A	65	65	85
Rec_363	Residential	17.2	20.4	N/A	65	65	85
Rec_364	Residential	18.5	21.7	N/A	65	65	85
Rec_365	Residential	17.9	21.1	N/A	65	65	85
Rec_366	Residential	17.4	20.6	N/A	65	65	85
Rec_367	Residential	14.4	17.6	N/A	65	65	85
Rec_368	Residential	16.2	19.4	N/A	65	65	85
Rec_369	Residential	16.1	19.3	N/A	65	65	85
Rec_370	Residential	9.9	13.1	N/A	65	65	85
Rec_371	Residential	15.3	18.5	N/A	65	65	85
Rec_372	Residential	15.3	18.5	N/A	65	65	85
Rec_373	Residential	16.6	19.8	N/A	65	65	85
Rec_374	Residential	11.6	14.8	N/A	65	65	85
Rec_375	Residential	13.2	16.4	N/A	65	65	85
Rec_376	Residential	15.4	18.6	N/A	65	65	85
Rec_377	Residential	14.1	17.3	N/A	65	65	85
Rec_378	Residential	16.3	19.5	N/A	65	65	85
Rec_379	Residential	15	18.2	N/A	65	65	85
Rec_380	Residential	15.4	18.6	N/A	65	65	85
Rec_381	Residential	17.7	20.9	N/A	65	65	85
Rec_382	Residential	18.9	22.1	N/A	65	65	85
Rec_383	Residential	18.6	21.8	N/A	65	65	85
Rec_384	Residential	6.6	9.8	N/A	65	65	85

Table B-2. Scenario 2 Concerts

Receptor ID	Land Use	CNEL (dBA)	Leq,1hr (dBA)	Lmax (dBA)[1]	State of CA Exterior Noise Standards (dBA)	Ontario Municipal Code Exterior Noise Standards (dBA)	Lmax Limit
Rec_385	Residential	18.5	21.7	N/A	65	65	85
Rec_386	Residential	17.4	20.6	N/A	65	65	85
Rec_387	Residential	19.1	22.3	N/A	65	65	85
Rec_388	Residential	17	20.2	N/A	65	65	85
Rec_389	Residential	14	17.2	N/A	65	65	85
Rec_390	Residential	16.5	19.7	N/A	65	65	85
Rec_391	Residential	9.9	13.1	N/A	65	65	85
Rec_392	Residential	13.9	17.1	N/A	65	65	85
Rec_393	Residential	14	17.2	N/A	65	65	85
Rec_394	Residential	16.8	20	N/A	65	65	85
Rec_395	Residential	15.4	18.6	N/A	65	65	85
Rec_396	Residential	16.2	19.4	N/A	65	65	85
Rec_397	Residential	14.2	17.4	N/A	65	65	85
Rec_398	Residential	9.6	12.8	N/A	65	65	85
Rec_399	Residential	15.5	18.7	N/A	65	65	85
Rec_400	Residential	14.3	17.5	N/A	65	65	85
Rec_401	Residential	8.2	11.4	N/A	65	65	85
Rec_402	Residential	24.2	27.4	N/A	65	65	85
Rec_403	Residential	24.3	27.5	N/A	65	65	85
Rec_404	Residential	24.5	27.7	N/A	65	65	85
Rec_405	Residential	23.9	27.1	N/A	65	65	85
Rec_406	Residential	26.8	30	N/A	65	65	85
Rec_407	Residential	27	30.2	N/A	65	65	85
Rec_408	Residential	25.7	28.9	N/A	65	65	85
Rec_409	Residential	24.2	27.4	N/A	65	65	85
Rec_410	Residential	25.9	29.1	N/A	65	65	85
Rec_411	Residential	26	29.2	N/A	65	65	85
Rec_412	Residential	24	27.2	N/A	65	65	85
Rec_413	Residential	26.6	29.8	N/A	65	65	85
Rec_414	Residential	4.8	8	N/A	65	65	85
Rec_415	Residential	4.2	7.4	N/A	65	65	85
Rec_416	Residential	3.8	7	N/A	65	65	85

Table B-2. Scenario 2 Concerts

Receptor ID	Land Use	CNEL (dBA)	Leq,1hr (dBA)	Lmax (dBA)[1]	State of CA Exterior Noise Standards (dBA)	Ontario Municipal Code Exterior Noise Standards (dBA)	Lmax Limit
Rec_417a	Residential	2.2	5.4	N/A	65	65	85
Rec_417b	Recreational	1.9	5.1	N/A	65	65	85
Rec_418	Residential	3.1	6.3	N/A	65	65	85
Rec_419	Residential	3.1	6.3	N/A	65	65	85
Rec_420	Daycare	24.1	27.3	N/A	65	70	90
Rec_421	Daycare	26.2	29.4	N/A	65	70	90
Rec_422	Recreational	29.3	32.5	N/A	65	65	85
Rec_423	Residential	4.2	7.4	N/A	65	65	85
Rec_424	Residential	10.8	14	N/A	65	65	85
Rec_425	Residential	12.6	15.8	N/A	65	65	85
Rec_426b	Recreational	13.4	16.6	N/A	65	65	85
Rec_426a	Recreational	15.4	18.6	N/A	65	65	85
Rec_427	Multi-Family Residential	16.4	19.6	N/A	65	65	85
Rec_428	Multi-Family Residential	27.1	30.3	N/A	65	65	85
Rec_429	Multi-Family Residential	32.1	35.3	N/A	65	65	85
Rec_430	Multi-Family Residential	27.2	30.4	N/A	65	65	85
Rec_431	Multi-Family Residential	32.2	35.4	N/A	65	65	85
Rec_432	Multi-Family Residential	27	30.2	N/A	65	65	85
Rec_433	Multi-Family Residential	32	35.2	N/A	65	65	85
Rec_434	Multi-Family Residential	27	30.2	N/A	65	65	85
Rec_435	Multi-Family Residential	31.9	35.1	N/A	65	65	85
Rec_436	Multi-Family Residential	25.3	28.5	N/A	65	65	85
Rec_437	Multi-Family Residential	30.1	33.3	N/A	65	65	85
Rec_438	Multi-Family Residential	26.3	29.5	N/A	65	65	85

Table B-2. Scenario 2 Concerts

Receptor ID	Land Use	CNEL (dBA)	Leq,1hr (dBA)	Lmax (dBA)[1]	State of CA Exterior Noise Standards (dBA)	Ontario Municipal Code Exterior Noise Standards (dBA)	Lmax Limit
Rec_439	Multi-Family Residential	31.2	34.4	N/A	65	65	85
Rec_440	Multi-Family Residential	12.5	15.7	N/A	65	65	85
Rec_441	Multi-Family Residential	10.8	14	N/A	65	65	85
Rec_442	Multi-Family Residential	10.9	14.1	N/A	65	65	85
Rec_443	Multi-Family Residential	11.7	14.9	N/A	65	65	85
Rec_444	Multi-Family Residential	11.1	14.3	N/A	65	65	85
Rec_445	Multi-Family Residential	23.1	26.3	N/A	65	65	85
Rec_446	Multi-Family Residential	22.5	25.7	N/A	65	65	85
Rec_447	Multi-Family Residential	23.2	26.4	N/A	65	65	85
Rec_448	Multi-Family Residential	22.7	25.9	N/A	65	65	85

Notes:
[1] SoundPLAN source library does not include Lmax source levels; therefore, there is no Lmax prediction for the concert scenario.

Appendix J4 Athletic Field Noise

Appendices

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The Ontario Regional Sports Complex EIR

Athletic Fields Noise Analysis

Technical Report

HMMH Project Number 23-0251A
March 2024

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1. Summary

This technical appendix includes a noise analysis related to use of outdoor athletic fields and other outdoor public amenities at The Ontario Regional Sports Complex (ORSC). The noise analysis was prepared in support of the Environmental Impact Report (EIR), pursuant to the requirements of the California Environmental Quality Act (CEQA). The technical appendix is divided into sections that address anticipated noise from youth sports programming, including practices, games and tournaments, and public use of outdoor amenities including, pools, playgrounds, tennis/pickleball courts, and a skate park. Details include assumptions developed to define number of games and tournaments, number of concurrent fields in use, and number of anticipated spectators during each game at each field. Supportive calculations and files and detailed receiver results are included within **Attachments A, B, and C**.

A detailed geometric model of the noise study area was initially developed using Geographic Information System (GIS) software and the proposed ORSC site plan. SoundPLAN GmbH was subsequently used for computing the Community Noise Equivalent Level (CNEL) and $L_{eq(h)}$ from use of the outdoor athletic fields at neighboring residences and other noise-sensitive uses[1] throughout the surrounding adjacent community.

Three main scenarios were evaluated to address noise from on-site athletic fields and other outdoor amenities:

1. Practice – Youth soccer and baseball/softball weekday (Monday – Friday)
2. Games – Youth soccer and baseball/softball weekends (Saturday and Sunday)
3. Tournaments – Youth soccer and baseball/softball weekends (Saturday and Sunday)

Based on the three scenarios evaluated, the predicted $L_{eq(h)}$ noise levels would be well below the City of Ontario's exterior noise level limits. Therefore, use of athletic fields and other outdoor amenities is predicted to result in noise levels that are considered acceptable and compatible with existing surrounding land use, according to the City of Ontario Plan 2050. Intermittent noise increases may result during batting practice, players cheering for teammates, or referees blowing whistles. However, none of these noise increases would be significant or permanent. Therefore, in accordance with CEQA guidelines, use of athletic fields and other outdoor amenities associated with the Sports Complex would not have a significant effect on the environment.

1 Noise-sensitive uses are places that might contain noise-sensitive equipment; individuals who are particularly susceptible to noise stimuli, such as children or the elderly; or accommodations for people to sleep. Such uses include residences, hospitals, hotels, and schools.

2. Environmental Setting

2.1 Noise Descriptors

Noise levels are presented on a logarithmic scale to account for the large pressure response range of the human ear. This logarithmic scale is expressed in units of decibels (dB). A dB is defined as the ratio between a measured value and a reference value usually corresponding to the lower threshold of human hearing. The lower threshold of human hearing is defined as 20 micropascals. Typically, a noise analysis examines 11 octave (or 33 1/3 octave) bands ranging from 16 hertz (low) to 16,000 hertz (high). This octave band encompasses the human audible frequency range. The human ear does not perceive every frequency with equal loudness; therefore, spectrally varying sounds are often adjusted with a weighting filter. The A weighted filter is applied to compensate for the frequency response of the human auditory system, known as a dBA. The A-weighted sound level is commonly used when measuring environmental noise and is widely accepted by acousticians as a proper unit for describing environmental noise.

An inherent property of the logarithmic dB scale is that the sound pressure levels of two separate sources are not directly additive. For example, if a sound of 50 dBA is added to another sound of 50 dBA in the proximity, the result is a 3 dB increase, which is a total of 53 dBA and not an arithmetic doubling to 100 dBA. The human ear perceives changes in sound pressure level relative to changes in "loudness." Scientific research demonstrates the following general relationships between sound level and human perception for two sound levels with the same or very similar frequency characteristics:

- One dBA is the practical limit of accuracy for sound measurement systems and corresponds to an approximate 10 percent variation in the sound pressure level. A 1-dBA increase or decrease is a non-perceptible change in sound.
- A 3-dBA increase or decrease is a doubling (or halving) of acoustic pressure level, and it corresponds to the threshold of change in loudness perceptible in a laboratory environment. In practice, the average person is not able to distinguish a 3-dBA difference in environmental sound outdoors.
- A 5-dBA increase or decrease is described as a perceptible change in sound level and is a discernible change in an outdoor environment.
- A 10-dBA increase or decrease is a tenfold increase or decrease in acoustic pressure level but is perceived as a doubling or halving in loudness (e.g., the average person would judge a 10-dBA change in sound level to be twice or half as loud).

Some common sounds on the dBA scale are listed in **Table 1**. As shown, the relative perceived loudness of a sound doubles for each increase of 10 dBA, and a 10 dBA change in the sound level corresponds to a factor of 10 increase or decrease in relative sound energy. Error! Reference source not found. depicts the estimations of common noise sources and outdoor acoustic environments and provides a comparison of relative loudness for each of these sources.

Table 1. Common Sounds on the A-Weighted Decibel Scale

Sound	Sound Level (dBA)	Relative Loudness (approximate)	Relative Sound Energy
Rock music, with amplifier	120	64	1,000,000
Thunder, snowmobile (operator)	110	32	100,000
Boiler shop, power mower	100	16	10,000
Orchestral crescendo at 25 feet, noisy kitchen	90	8	1,000
Busy street	80	4	100
Interior of department store	70	2	10
Ordinary conversation, 3 feet away	60	1	1
Quiet automobiles at low speed	50	½	.1
Average office	40	¼	.01
City residence	30	1/8	.001
Quiet country residence	20	1/16	.0001
Rustle of leaves	10	1/32	.00001
Threshold of hearing	0	1/64	.000001

Source: U.S. Department of Housing and Urban Development. Aircraft Noise Impact--Planning Guidelines for Local Agencies, Figure 2-2. 1972.

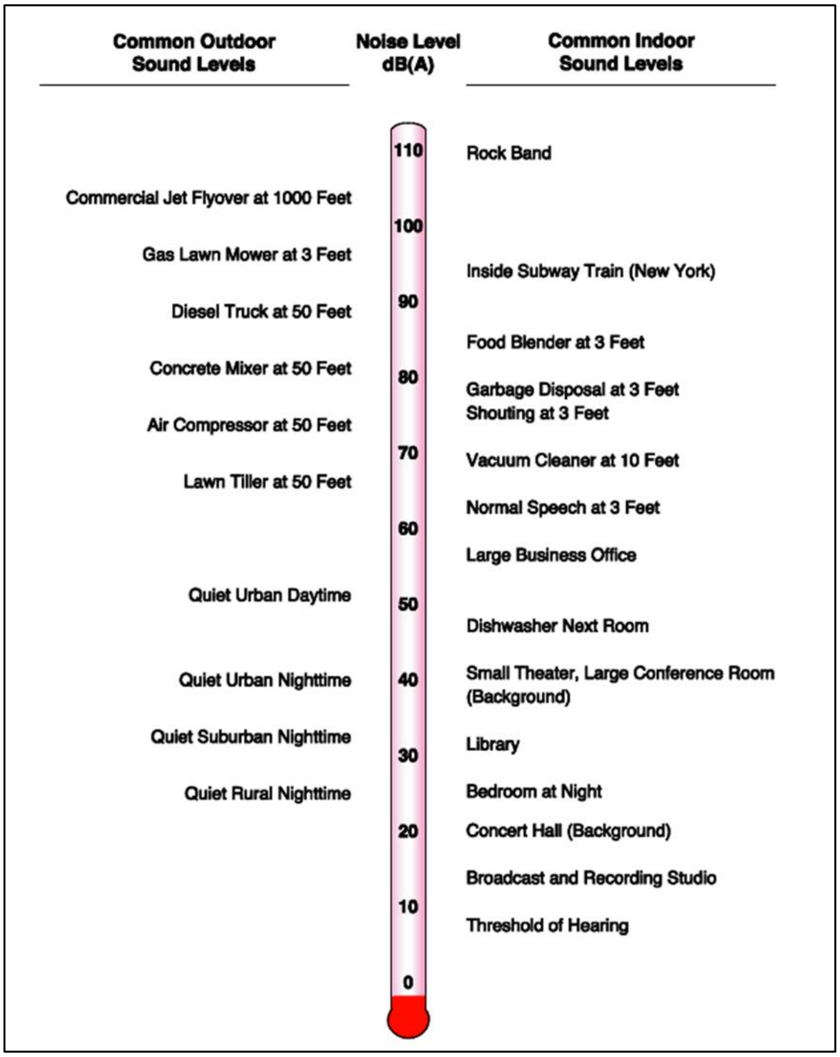

Figure 1. Sound Levels
Source: HMMH 2019

Noise levels can be measured, modeled, and presented in various formats. The noise metrics that were employed in this analysis have the following definitions:

- L_{eq}: Most environmental noise fluctuates from moment to moment, and it is common practice to characterize the fluctuating level by a single number, L_{eq}. Conventionally expressed in dBA, the L_{eq} is the energy-averaged, A-weighted sound level. It is defined as the steady, continuous sound level over a specified time, which has the same acoustic energy as the actual varying sound levels over the specified period. The daytime L_{eq} is the energy-averaged sound level for the daytime period (7:00 a.m. to 10:00 p.m.), and the nighttime L_{eq} is the energy averaged sound level for the nighttime period (10:00 p.m. to 7:00 a.m.). For traffic noise assessment, L_{eq} is typically evaluated over a one-hour period and may be denoted as $L_{eq(h)}$.
- L_{dn}: The L_{dn} is the average, hourly A-weighted L_{eq} for a 24-hour period, with a 10-dB penalty added to sound levels occurring during the nighttime hours (10:00 p.m. to 7:00 a.m.) to account for individuals' increased sensitivity to noise levels during nighttime hours.

- Community noise equivalent level: The energy-average of the A-weighted sound levels occurring during a 24-hour period, with 5 dB added to the sound levels occurring during evening hours (7:00 p.m. to 10:00 p.m.) and 10 dB added to noise levels occurring during nighttime hours (10:00 p.m. to 7:00 a.m.).

2.2 Effects of Noise on Humans

The effects of noise on humans can be grouped into three general categories (U.S. EPA 1979):

- Subjective effects of annoyance, nuisance, dissatisfaction;
- Physiological effects such as starting hearing loss; and,
- Interference with activities such as speech, sleep, and learning.

With respect to annoyance, human response to sound is highly individualized. Many factors influence the response to noise including the character of the noise, the variability of the sound level, the presence of tones or impulses, and the time of day of the occurrence. Additionally, non-acoustical factors, such as individual opinion of the noise source, the ability to adapt to the noise, the attitude towards the source and those associated with it, and the predictability of the noise, all influence the response to noise. These factors result in the reaction to noise being highly subjective, with the perceived effect of a particular noise varying widely among individuals in a community.

Noise-induced hearing loss usually takes years to develop. Hearing loss is one of the most obvious and easily quantifiable effects of excessive exposure to noise. While the loss may be temporary at first, it can become permanent after continued exposure. When combined with hearing loss associated with aging, the amount of hearing loss directly due to the environment is difficult to quantify. Although the major cause of noise-induced hearing loss is occupational, nonoccupational sources may also be a factor.

Noise can mask important sounds and disrupt communication between individuals in a variety of settings. This process can cause anything from a slight irritation to a serious safety hazard, depending on the circumstance. Noise can disrupt face-to-face communication and telephone communication, and the enjoyment of music and television in the home. Interference with communication has proved to be one of the most important components of noise-related annoyance.

3. Methodology

To evaluate the compatibility of the Sports Complex with the surrounding existing land use and determine the potential for significant effect on the environment, the CNEL and L_{eq} were calculated using the commercially available SoundPLAN GmbH three-dimensional (3-D) acoustical prediction software package. An industry standard, SoundPLAN GmbH was developed by Braunstein + Berndt GmbH to provide estimates of sound levels at distances from specific noise sources accounting for the effects of terrain features including relative elevations of noise sources, receivers, and intervening objects (buildings, hills, trees), and ground effects due to areas of hard ground (pavement, water) and soft ground (grass, field, forest). In addition to computing sound levels at specific receiver positions, SoundPLAN GmbH computes color noise contour maps showing areas of equal and similar sound level. SoundPLAN GmbH also accounts for shielding and reflections from intervening buildings, walls, earthen berms, and other structures.

A detailed geometric model of the noise study area was first developed using GIS software. Data included detailed digital terrain with elevation obtained from the U.S. Geological Survey (USGS) 3D elevation program[2] as well as building footprints, which were obtained from Microsoft Building Footprints, accessed through ArcGIS Online.[3] Existing building heights were estimated based on Microsoft Streetside imagery™, accessed via Bing maps. Aerial photography was obtained from ESRI as well as the U.S. Department of Agriculture's (USDA's) National Agriculture Imagery Program (NAIP).[4] A CAD file of the proposed site layout, including proposed building and athletic field locations, was imported into GIS to develop source locations within the noise modeling software. The planned number of stories for each building was used to estimate on-site building heights, assuming approximately ten feet per floor.

All data digitized in GIS was imported into SoundPLAN GmbH, and a digital ground model was generated to assign base elevations to all modeled features and account for attenuation effects due to changes in terrain. Ground type on- and off-site was assumed to be "compacted field and gravel" (compacted lawns, park areas).

As detailed within Section 3 of the EIR, the project site would include eight 500- foot baseball/softball fields and 13 multipurpose fields on the western half of the site. On the southeast side of the project site, eight outdoor tennis/pickleball courts are planned, along with one additional little league field, a playground, skate park, and two outdoor pools. The proposed hotel on the northeast end of the site would also include an outdoor pool.

Three main scenarios were evaluated to address noise from on-site athletic fields and other outdoor amenities:

1. Practice – Youth soccer and baseball/softball weekday (Monday – Friday)
2. Games – Youth soccer and baseball/softball weekends (Saturday and Sunday)
3. Tournaments – Youth soccer and baseball/softball weekends (Saturday and Sunday)

Field usage for each scenario was determined based on referencing schedules and rules from nearby youth soccer and baseball/softball leagues. Schedules available from the Empire Soccer Club,[5] which uses the nearby Eastvale Community Park for practices and games, were used to identify approximate practice and game durations, practice hours, and "changeover" time between practices and games (i.e., duration of time when practices/games end, teams are leaving, fields are being "cleaned" up, and new teams are arriving). Practices were determined to occur for 60 minutes on weekday evenings (Monday through Friday) from 5:00 p.m. to 10:00 p.m. Soccer games were determined to occur on weekends for two 45-minute halves (i.e., 90 minutes of play), with a 10-minute halftime, from 8:00 a.m. to 6:00 p.m. during regular season and from 8:00 a.m. to 10:00 p.m. during tournament weekends. "Changeover" periods were determined to be 10 minutes between practices and 20 minutes between regular season games and tournament games. All 13 multipurpose fields in the northwest corner of the site were assumed to be in use concurrently during practices and games, with one team using each field during practices.

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[2] https://apps.nationalmap.gov/downloader

[3] The development to the east of the project site (Countryside) was manually digitized using aerial photography, since building footprints were not available.

[4] https://datagateway.nrcs.usda.gov/GDGHome_DirectDownLoad.aspx

[5] https://www.empiresoccerclub.org/programs/recreational-program/practice-schedule/

Similarly, game play rules from three nearby little leagues (Eastvale, Corona American, and Norco) were reviewed, and maximum allowable game durations were averaged across age groups to develop an average length of play of approximately 90 minutes. Like soccer, baseball/softball practices were assumed to last no longer than 60 minutes. "Changeover" periods were determined to be 10 minutes between practices and 20 minutes between regular season games and tournament games. Practices and games were assumed to be scheduled during the same timeframes as for soccer, as described above. All eight larger baseball/softball fields in the southwest corner of the site, in addition to the single baseball/softball field near the recreation center in the southeast corner of the site, were assumed to be used concurrently during practices and games.

Game durations and "changeover" time for soccer and baseball/softball were used to define the time active for each noise source during the sports complex operating hours. During regular season game weekends, all games were assumed to start at 8:00 a.m. and end by 6:00 p.m. On tournament weekends, all games were assumed to start at 8:00 a.m. and end by 10:00 p.m. when park lights would be turned off. All field usage information for soccer and baseball/softball was subsequently vetted with the City of Ontario Recreation and Community Services Department.

Traffic counts conducted by Fehr & Peers at similar nearby sports complexes[6] facilitated development of the average number of players per team, which was determined to be 15 players for soccer and 20 players for baseball/softball. The number of players per team was subsequently used to estimate the average number of spectators per game, which were assumed to be present in designated seating areas during regular season game weekends and tournament weekends. Based on the Ontario Regional Sports Complex Market Analysis (Ontario 2023), an average of 2.5 spectators per player was assumed for regular season games and tournaments. **Attachment A** includes assumptions used to develop source activity within the noise model.

In addition to athletic field usage, public access to other on-site outdoor facilities (e.g., tennis/pickleball courts, pools, skate park, and the playground) was assumed to occur during each scenario at a conservative rate of 100 percent in each hour. Hours of use for publicly accessible outdoor amenities, except for the public pools, were determined based on operating hours of the overall complex (generally from 8:00 a.m. to 9:00 p.m. with lights out by 10:00 p.m.). Operating hours of the complex were determined from park guidelines established by the City of Ontario Recreation and Community Services Department. The public pool hours would coincide with recreation center operating hours, which are 8:00 a.m. to 10:00 p.m. on weekdays and 8:00 a.m. to 3:00 p.m. on weekends.

Reference noise levels available in the SoundPLAN GmbH global emissions library were used to define source noise levels for all outdoor athletic fields, spectator areas, and public amenities, except for the pickleball courts. Reference sound levels for pickleball were developed based on a noise study conducted in Arizona (Woo, 2012) since the SoundPLAN GmbH global emissions library does not include pickleball source data. **Attachment B** includes reference sound levels and calculations used to define noise levels for each outdoor amenity.

Athletic field and outdoor public amenities usage was defined in time histograms for each modeled source in SoundPLAN. Specifically, the hours of day each amenity is active and the percentage of time

[6] Fehr & Peers conducted traffic counts at Silverlakes during soccer tournaments and obtained vehicular trips from Streetlight dada at Big League Dreams Sports Park, Jurupa Valley, MAP Sports Facility, Garden Grove and open Gym Premier, Ladera Ranch, Momentus Sports Center, Irvine, and Fontana Park Aquatic Center.

active was defined. The model therefore evaluates the cumulative use of athletic fields and other outdoor amenities based on the definitions input into the time histograms.

Additional sources of noise associated with athletic fields may include, but are not limited to, intermittent and impulsive sounds from baseball bats hitting balls during batting practice and games, referees blowing whistles during soccer games, and players cheering on teammates. However, these sources are difficult to model given the uncertainty surrounding the frequency of these events. Therefore, the noise analysis does not account for these short duration, intermittent sources of noise that are likely to occur during outdoor recreational events.

4. Regulatory Framework

Several federal, state, and local regulations, ordinances, and guidelines have been established to control noise and minimize effects on humans. The Noise Control Act of 1972 (42 United States Code Section 4901) was the first comprehensive statement of national noise policy. It declared that "it is the policy of the United States to promote an environment for all Americans free from noise that jeopardizes their health or welfare" (GSA 1972).

The State of California and the City of Ontario have adopted a number of policies that are based in part on federal and state regulations and are directed at controlling or mitigating environmental noise effects. The government agency policies that are relevant to the athletic fields noise analysis for the Sports Complex are discussed below.

4.1 State

CEQA Thresholds of Significance

According to Appendix G of the CEQA Guidelines, a project would normally have a significant effect on the environment if the project would result in:

- **Threshold A**: Would the project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?
- **Threshold B**: Would the project result in generation of excessive groundborne vibration or groundborne noise levels?
- **Threshold C**: For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

Applicable thresholds of significance are considered in the noise impact assessment. For commercial and miscellaneous noise sources, Threshold A is applicable and used to evaluate the potential for the project to have a significant effect on the environment. Threshold B does not apply to athletic field and outdoor amenities noise sources, as none of those sources would generate groundbourne vibration or noise. Threshold B is applicable to construction noise and therefore discussed within the *ORSC EIR Construction Noise and Vibration Technical Report.* It should be noted that Threshold C does not apply to the project because no noise-sensitive land uses would be located within an airport land use plan or in the vicinity of a private airstrip.

General Plan Guidelines

The Governor's Office of Planning and Research (OPR) is required to adopt and periodically revise the State of California's General Plan Guidelines (GPG), which establishes the framework for the development of general plans for cities and counties. With respect to noise, the GPG provides a basis for the control and abatement of environmental noise and limiting excessive noise exposure for California residents. The GPG focuses on land use compatibility with the existing ambient environment and establishes CNEL and L_{dn} thresholds for community noise exposure by land use category that define normally acceptable, conditionally acceptable, normally unacceptable, and clearly unacceptable conditions. The recommended thresholds within the GPG may be adopted by cities or modified based on site-specific conditions.

4.2 Local

The Ontario Plan

The Ontario Plan (TOP) 2050 includes a "Safety Element" designed to limit excessive community noise exposure through effective and guided land use compatible planning. **Table 2** summarizes the City of Ontario's land use compatibility standards to facilitate land use compatibility, relative to existing and future noise levels.

Table 2. Ontario Noise Level Exposure and Land Use Compatibility Guidelines

Categories	Uses	CNEL (dBA)			
		Clearly Acceptable[1]	Normally Acceptable[2]	Normally Unacceptable[3]	Clearly Unacceptable[4]
Residential/Lodging	Single Family/Duplex	<60	60-65	65-70	70-85
	Multifamily	<60	60-65	65-75	75-85
	Mobile Homes	<60	60-65	-	65-85
	Hotel/Motel	<65	65-70	70-80	80-85
Public/Institutional	Schools/Hospitals	<60	60-65	65-70	70-85
	Churches/Libraries	<60	60-65	65-70	70-85
	Auditoriums/Concert Halls	<55	55-60	60-70	70-85
Commercial	Offices	<65	65-75	75-80	80-85
	Retail	<70	70-75	75-80	80-85
Industrial	Manufacturing	<70	70-75	75-85	-
	Warehousing	<70	70-80	80-85	-
Recreational/Open Space	Parks/Playgrounds	<65	65-70	70-75	75-85
	Golf Course/Riding Stables	<65	65-70	70-75	75-85
	Outdoor Spectator Sports	<60	60-65	65-70	
	Outdoor Music Shells/Amphitheaters	-	<60	60-65	65-85
	Livestock/Wildlife Preserves	<70	-	70-75	75-85
	Crop Agriculture	<55-85	-	-	-

Notes:
1. No special noise insulation required, assuming buildings of normal conventional construction.
2. Acoustical reports will be required for major new residential construction. Conventional construction with closed windows and fresh air supply systems of air conditioning will normally suffice.
3. New construction should be discouraged. Noise/aviation easements required for all new construction. If new construction does proceed, a detailed analysis of noise reduction requirements must be made, and necessary noise insulation features included.
4. No new construction should be permitted.
Source: City of Ontario 2022.

City of Ontario Municipal Code

The City of Ontario Municipal Code, Chapter 29: Noise (hereafter referred to as “the City’s noise code”), establishes both exterior and interior noise standards for various land use types grouped into “noise zones.” Maximum permissible noise level limits are established for each noise zone from 7:00 a.m. to 10:00 p.m. and 10:00 p.m. to 7:00 a.m., based on the L_{eq} metric and a duration of 15 minutes. Pursuant to §5-29.04 Exterior noise standards, the ambient noise level shall be the standard if ambient exceeds the established permissible limit at any time in any zone. The code also establishes a maximum instantaneous (L_{max}) permissible noise level limit of the established noise standard for the applicable zone plus 20 dBA during any period, measured in A-weighting on slow response. The limits established for Noise Zone I shall also apply to the exterior of schools, daycare centers, hospitals or other similar healthcare institutions, churches, libraries, or museums during hours of use, pursuant to §5-29.11. **Table 3** summarizes the allowable exterior noise level limits pursuant to §5-29.04(a).

Table 3. Exterior Noise Standards

Noise Zone	Land Use	Allowable Equivalent Noise Level, L_{eq} (dBA)	
		7:00 a.m. – 10:00 p.m.	10:00 p.m. – 7:00 a.m.
I	Single-Family Residential	65	45
II	Multi-Family Residential, Mobile Home Parks	65	50
III	Commercial Property	65	60
IV	Residential Portion of Mixed Use	70	70
V	Manufacturing and Industrial, Other Uses	70	70

Notes:
1. If the ambient level exceeds the standard, the ambient noise level shall be the standard.
2. Compliance is determined on the affected property.
3. Noise standards are based on a 15-min L_{eq}.
4. Maximum instantaneous noise levels (L_{max}) equal to the noise standard limit plus 20 dBA shall not be exceeded at any time, measured using A-weighted with the meter set to slow response. However, if ambient exceeds the standard, the standard shall be increased to reflect the maximum ambient noise level.
5. Noise Zone I noise standards also apply to the exterior of schools, daycare centers, hospitals or other similar healthcare institutions, churches, libraries, or museums during hours of use.
6. Noise Zone IV applies to the portion of the residential property within 100 feet of a commercial property or use, if the noise originates from the commercial property or use.
7. If the compliance location is on the boundary of two different noise zones, the lower noise level standard shall apply.

Source: City of Ontario 2023.

The City’s noise code exempts various sources of noise, pursuant to §5-29.06 Exemptions. Exemptions applicable to use of athletic fields and outdoor amenities include:

- Activities on public or private property conducted by any public entity or its authorized representatives including sporting and recreational activities that are sponsored, co-sponsored, permitted, or allowed by the City. This also includes sporting and entertainment events conducted pursuant to an approval, authorization, contract, lease, permit, or sublease by the appropriate public entity, specifically the planning commission or City Council.
- Activities regulated by state or federal law.

5. Impact Analysis Results

Modeling receivers were placed in areas of outdoor use within approximately 1,000 feet of the proposed ORSC site boundary. Receivers were combined into six groups, as illustrated in **Figure 2 through Figure 4** and described in **Table 4**.

Table 4. Summary of Analysis Locations

Receiver Group	Location Relative to Project Site	Land Use Description
1	Northwest of Project Site	Residential use on the north and south side of East Riverside Drive, between Willow Drive and South Vineyard Avenue
2	North of Project Site	Residential and institutional use (Sunrise Childcare Center) on the north side of East Riverside Drive, between Vineyard Avenue and South Whispering Lakes Lane
3	North of Project Site	Recreational use associated with the Whispering Lake Golf Course on the north side of East Riverside Drive, between South Whispering Lakes Lane and Cucamonga Channel
4	Northeast of Project Site	Residential and recreational use (Westwind Community Center) on the north side of East Riverside Drive, between Cucamonga Channel and South Colonial Avenue
5	East of Project Site	Residential and recreational use (Cucamonga Channel Walking Trail) bounded by the Cucamonga Channell to the west, East Riverside Drive to the north, South Colonial Avenue to the east, and Chino Avenue to the south
6	South of Project Site	Residential use on the south side of Chino Avenue, between Vineyard Avenue and Ontario Avenue

Source: HMMH, 2023

The hourly L_{eq} from on-site outdoor amenities was calculated at each noise-sensitive receptor based on time histograms populated for each noise source. As described in Section 3, the time histograms define the hours of day and percentage of time during each hour of the day when each source is active. The hourly usage is subsequently used to calculate an hourly average noise level, or $L_{eq(h)}$.

The following sections present the predicted noise level ranges ($L_{eq(h)}$) within each receiver group related to noise from use of athletic fields and outdoor public amenities. Although sporting events on public facilities approved by the City are exempt from the City's noise code, the predicted peak 1-hour L_{eq} was compared to exterior noise level limits established within the City's noise code, presented in **Table 3**. Since most activities are active for a full hour, the 1-hour L_{eq} was used as a surrogate to assess compliance with the City's 15-minute L_{eq} noise level limits. **Attachment C** includes a table of predicted sound levels for each modeled receiver.

5.1 Scenario 1 – Weekday Practice

The weekday practice scenario includes the least amount of activity at the multipurpose and baseball/softball fields with the least intensity. However, as described in Section 3, weekday youth soccer and baseball/softball practices were assumed to commence at 5:00 p.m. and end by 10:00 p.m.

All other outdoor public amenities were assumed to be in use during park operating hours, generally from 8:00 a.m. to 9:00 p.m., with lights out by 10:00 p.m.

Table 5 summarizes the range in predicted hourly $L_{eq(h)}$ for each "noise zone" that exists within each receiver group based on definitions in the City's noise code (see **Table 3**). As shown in **Table 5,** the maximum $L_{eq(h)}$ predicted at any residential land use type within the six receiver groups is 56 dBA. This noise levels is predicted within Receiver Group 2 to the north of the proposed ORSC and across from the youth multipurpose fields. The second highest $L_{eq(h)}$ predicted at residential receivers is 53 dBA within Receiver Group 5. This group is east of the proposed site. The maximum predicted $L_{eq(h)}$ for recreational land uses, which is included in noise zone V, is 55 dBA on the green at the Whispering Lakes Golf Course within Receiver Group 3.

Since the maximum predicted $L_{eq(h)}$ noise levels in all receiver groups for all land use types are below the City's noise level limits, use of athletic fields on weekdays for youth soccer and baseball/softball practices, combined with use of other outdoor amenities, would result in a noise environment that is considered compatible with the existing adjacent community. There would be no potential for significant effects on the existing environment when the facility is being used for weekday practices.

Table 5. Summary of Predicted $L_{eq(h)}$ – Scenario 1: Weekday Practice

Noise Zone[1]	Land Use	Daytime[2] Exterior L_{eq} Criteria (dBA)	Predicted $L_{eq(h)}$ (dBA) Range					
			RCV Group 1	RCV Group 2	RCV Group 3	RCV Group 4	RCV Group 5	RCV Group 6
I	Single-Family Residential	65	37 - 51	36 - 56	NA	41 - 45	31 - 53	29 - 39
II	Multi-Family Residential, Mobile Home Parks	65	36 - 52	32 - 45	NA	NA	NA	NA
V	Manufacturing and industrial, other uses	70	NA	NA	44 - 55	42 - 47	46 - 54	NA

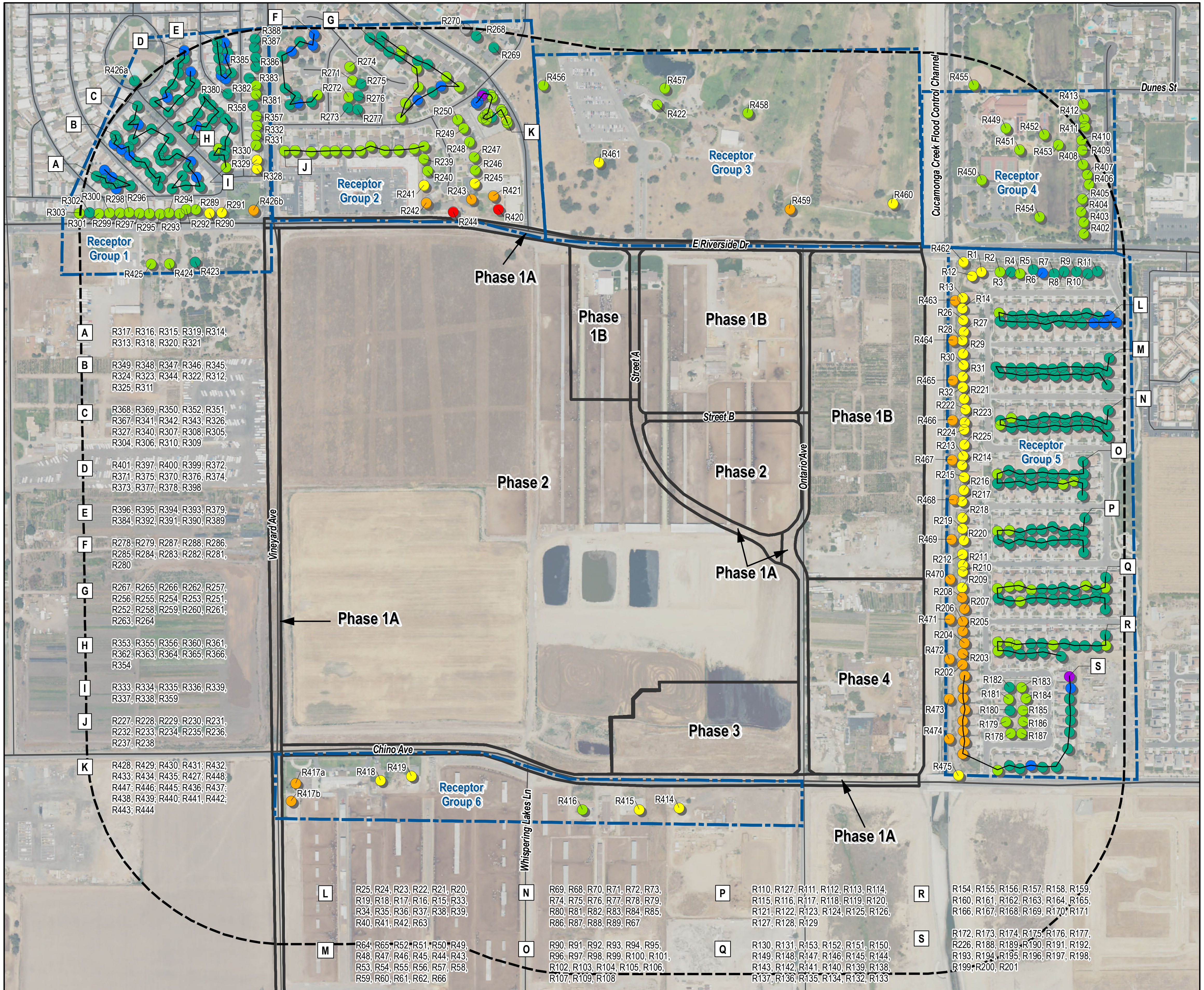
Notes:
1. Pursuant to §5-29.11, the maximum permissible noise level limit established for Noise Zone I also applies to the exterior of schools, daycare centers, hospitals or other similar healthcare institutions, churches, libraries, or museums during hours of use.
2. The City of Ontario's noise code includes both "daytime" (7:00 a.m. – 10:00 p.m.) and "nighttime" (10:00 p.m. - 7:00 a.m.) limits. Since the proposed ORSC is only open between 8:00 a.m. and 10:00 p.m., the "nighttime" limits do not apply.

Source: HMMH, 2023.

Figure 2 illustrates predicted $L_{eq(h)}$ noise level contours, representing weekday youth soccer and baseball/softball practice with other outdoor amenities in use.

Figure 2
Maximum Predicted Daytime Construction Noise Levels On Site Construction (Leq,8-hour)

Ontario Regional Sports Complex EIR
Ontario, California



Receptor Location and Number

- 76 - 80 dBA
- 71 - 75 dBA
- 66 - 70 dBA
- 61 - 65 dBA
- 56 - 60 dBA
- 51 - 55 dBA
- 46 - 50 dBA

Top Floor Noise Prediction Result
Bottom Floor Noise Prediction Result

Note: Grouped Receptor Labels are in order of Leader Occurrence.

- Project Construction Phases and Work Area
- Receptor Group
- Study Area

0 500 1,000 Feet

hmmh

5.2 Scenario 2 – Weekend Regular Season Games

Regular season games are anticipated to occur on weekends (Saturdays and Sundays) for both youth soccer and baseball/softball. Both sports would include fall and spring seasons, lasting 12 weeks per season for soccer, 11 weeks for fall baseball/softball, and 14 weeks for spring baseball/softball. As described in Section 3, weekend games were assumed to commence at 8:00 a.m. and end by 6:00 p.m. However, all other outdoor public amenities were assumed to be in use during park operating hours, generally from 8:00 a.m. to 9:00 p.m., except the pool, which would close by 3:00 p.m. on weekends, following the recreation center hours.

Table 6 summarizes the range in predicted hourly $L_{eq(h)}$ for each "noise zone" that exists within each receiver group based on definitions in the municipal noise code (see **Table 3**). As shown in **Table 6,** the maximum $L_{eq(h)}$ predicted at any residential land use type within the six receiver groups is 55 dBA. This noise level is predicted within Receiver Group 2 to the north of the proposed ORSC and across from the youth multipurpose fields. The second highest $L_{eq(h)}$ predicted at residential receivers is 53 dBA within Receiver Group 5 to the east of the site. The maximum predicted $L_{eq(h)}$ for recreational land uses, which is included in noise zone V, is 55 dBA on the green at the Whispering Lakes Golf Course within Receiver Group 3.

In general, maximum predicted $L_{eq(h)}$ noise levels during regular season weekend games are approximately one decibel less than during weekday practices in Receiver Groups 1 and 2. These receiver groups are closest to the multipurpose youth fields. During weekday practices, field usage is at least 100% in a single hour for the multipurpose fields as well as the baseball/softball fields; however, during regular season games, only the baseball/softball fields have 100% usage in a single hour, whereas the multipurpose fields closest to Receiver Groups 1 and 2 have a maximum usage of 83%. Therefore, the slight decrease in noise levels is attributed to this lower source contribution from the multipurpose youth fields in any single hour during regular season game weekends. Further, noise levels are only slightly lower in Receiver Group 6 during regular season game weekends due to the slightly reduced contribution from the multipurpose youth fields with the lower usage factor.

Since the maximum predicted $L_{eq(h)}$ noise levels in all receiver groups for all land use types are below the City's noise level limits, use of athletic fields on weekdays for youth soccer and baseball/softball practices, combined with use of other outdoor amenities, would result in a noise environment that is considered compatible with the existing adjacent community. There would be no potential for significant effects on the existing environment during regular season game weekends.

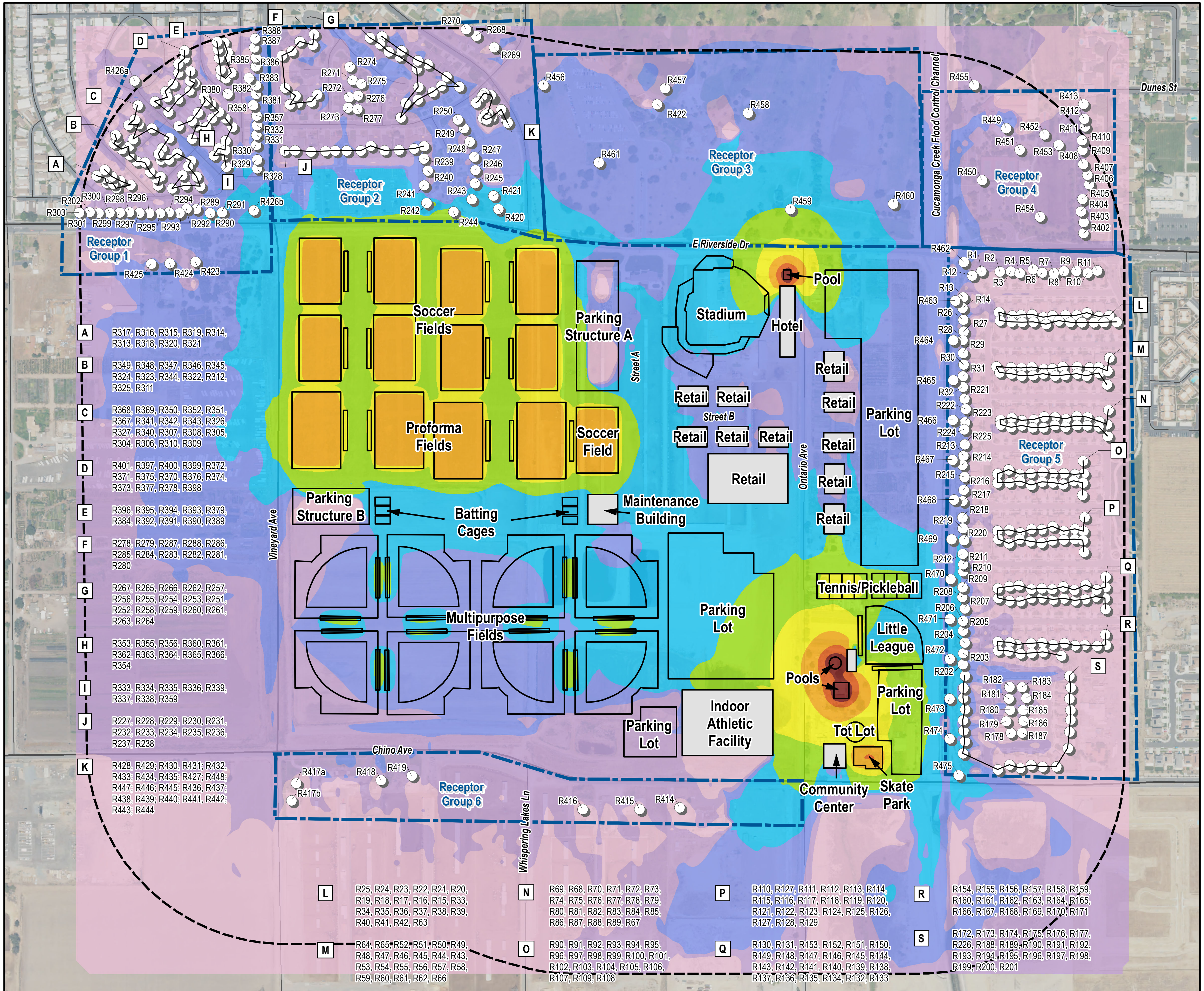
Table 6. Summary of Predicted $L_{eq(h)}$ – Scenario 2: Weekend Regular Season Games

Noise Zone[1]	Land Use	Daytime[2] Exterior L_{eq} Criteria (dBA)	Predicted $L_{eq(h)}$ (dBA) Range					
			RCV Group 1	RCV Group 2	RCV Group 3	RCV Group 4	RCV Group 5	RCV Group 6
I	Single-Family Residential	65	36 - 50	35 - 55	NA	41 - 45	31 - 53	28 - 39
II	Multi-Family Residential, Mobile Home Parks	65	35 - 51	32 - 45	NA	NA	NA	NA

Noise Zone[1]	Land Use	Daytime[2] Exterior L_{eq} Criteria (dBA)	Predicted $L_{eq(h)}$ (dBA) Range					
			RCV Group 1	RCV Group 2	RCV Group 3	RCV Group 4	RCV Group 5	RCV Group 6
V	Manufacturing and industrial, other uses	70	NA	NA	44 - 55	42 - 47	46 - 54	NA

Notes:
1. Pursuant to §5-29.11, the maximum permissible noise level limit established for Noise Zone I also applies to the exterior of schools, daycare centers, hospitals or other similar healthcare institutions, churches, libraries, or museums during hours of use.
2. The City of Ontario's noise code includes both "daytime" (7:00 a.m. – 10:00 p.m.) and "nighttime" (10:00 p.m. - 7:00 a.m.) limits. Since the proposed ORSC is only open between 8:00 a.m. and 10:00 p.m., the "nighttime" limits do not apply.
Source: HMMH, 2023.

Figure 3 shows predicted $L_{eq(h)}$ noise level contours, representing regular season youth soccer and baseball/softball games with other outdoor amenities in use.



J4-20

Figure 3
Predicted $L_{eq(1h)}$ (dBA)
Scenario 2:
Weekend Regular Season Games

Ontario Regional Sports Complex EIR
Ontario, California

$L_{eq(1h)}$ Level

- Greater than 75 dBA
- 70 - 75 dBA
- 65 - 70 dBA
- 60 - 65 dBA
- 55 - 60 dBA
- 50 - 55 dBA
- 45 - 50 dBA
- 40 - 45 dBA
- Less then 40 dBA

Receptor Location and Number

Top Floor Receptor

Bottom Floor Receptor

Note: Grouped Receptor Labels are in order of Leader Occurrence.

- Sports Complex Feature
- Sports Complex Building
- Receptor Group
- Study Area

0 500 1,000 Feet

5.3 Scenario 3 – Tournament Weekends

Youth soccer and baseball/softball tournaments are anticipated to occur on weekends (Saturdays and Sundays). Soccer tournaments would occur for 26 weeks of the year, while baseball/softball tournaments would occur for 25 weeks. As described in Section 3, tournaments were assumed to commence at 8:00 a.m. and end by 10:00 p.m. before lights out at the facility. All other outdoor public amenities were assumed to be in use during park operating hours, generally from 8:00 a.m. to 9:00 p.m., except the pool, which would close by 3:00 p.m. on weekends, following the recreation center hours.

Table 7 summarizes the range in predicted hourly $L_{eq(h)}$ for each "noise zone" that exists within each receiver group based on definitions in the municipal noise code (see **Table 3**). As shown in **Table 7,** the maximum $L_{eq(h)}$ predicted at any residential land use type within the six receiver groups is 55 dBA. This noise level is predicted within Receiver Group 2 to the north of the proposed ORSC and across from the youth multipurpose fields. The second highest $L_{eq(h)}$ predicted at residential receivers is 53 dBA within Receiver Group 5 to the east of the site. The maximum predicted $L_{eq(h)}$ for recreational land uses, which is included in noise zone V, is 55 dBA on the green at the Whispering Lake Golf Course within Receiver Group 3.

In general, maximum predicted $L_{eq(h)}$ noise levels during tournament weekends are approximately one decibel less than during weekday practices in Receiver Groups 1 and 2 and identical to predicted noise levels during regular season game weekends. These receiver groups are closest to the multipurpose youth fields. During weekday practices, field usage is at least 100% in a single hour for the multipurpose fields as well as the baseball/softball fields; however, during tournament weekends, only the baseball/softball fields have 100% usage in a single hour, whereas the multipurpose fields closest to Receiver Groups 1 and 2 have a maximum usage of 83%. Therefore, the slight decrease in noise levels is attributed to this lower source contribution from the multipurpose youth fields in any single hour during tournament weekends. Further, noise levels are only slightly lower in Receiver Group 6 during tournament weekends due to the slightly reduced contribution from the multipurpose youth fields with the lower usage factor.

Since the maximum predicted $L_{eq(h)}$ noise levels in all receiver groups for all land use types are below the City's noise level limits, use of athletic fields on weekdays for youth soccer and baseball/softball practices, combined with use of other outdoor amenities, would result in a noise environment that is considered compatible with the existing adjacent community. There would be no potential for significant effects on the existing environment during tournament weekends.

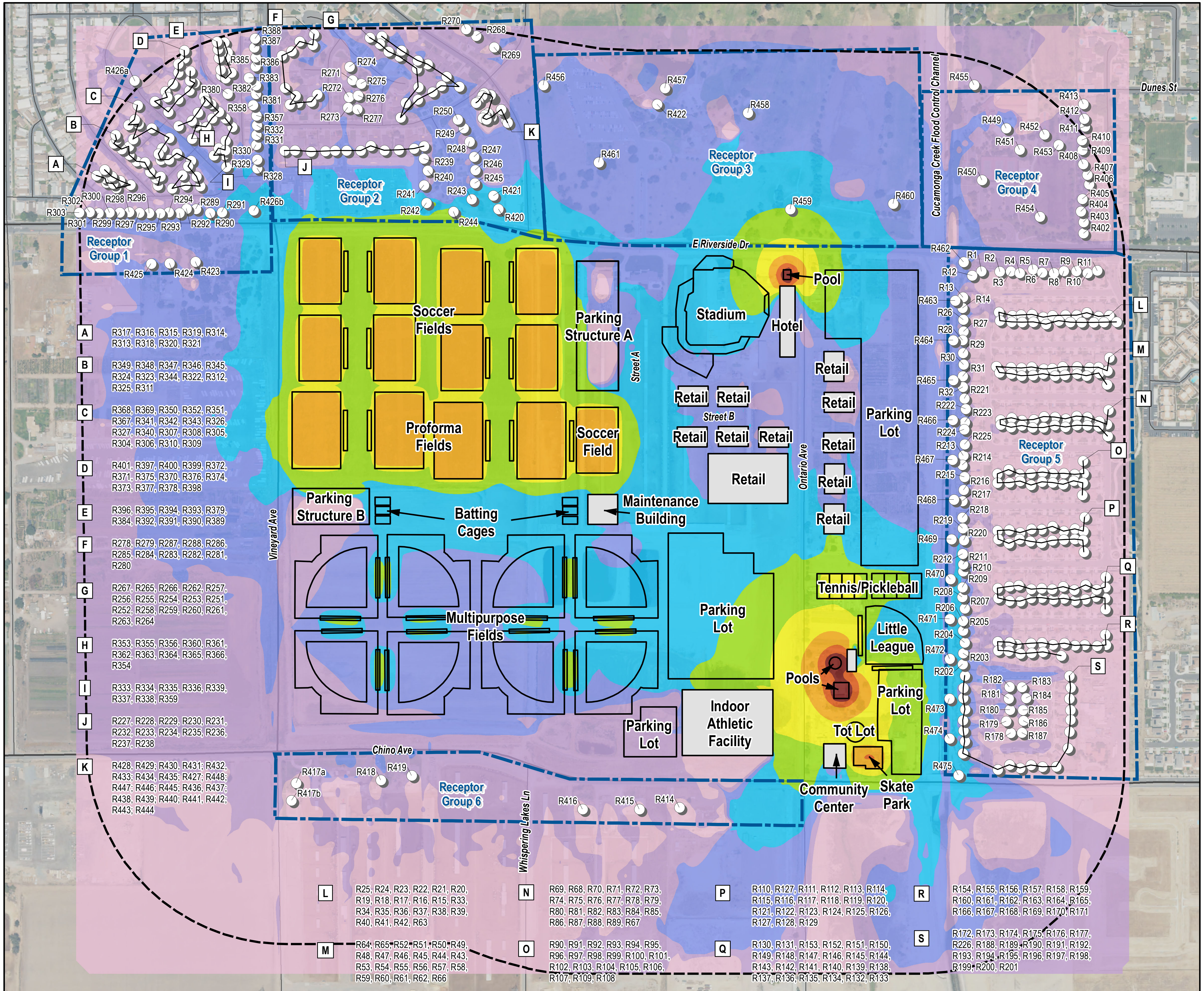
Table 7. Summary of Predicted $L_{eq(h)}$ – Scenario 3: Tournament Weekends

Noise Zone[1]	Land Use	Daytime[2] Exterior L_{eq} Criteria (dBA)	Predicted $L_{eq(h)}$ (dBA) Range					
			RCV Group 1	RCV Group 2	RCV Group 3	RCV Group 4	RCV Group 5	RCV Group 6
I	Single-Family Residential	65	36 - 50	35 - 55	NA	41 - 45	31 - 53	28 - 39
II	Multi-Family Residential, Mobile Home Parks	65	35 - 51	32 - 45	NA	NA	NA	NA

Noise Zone[1]	Land Use	Daytime[2] Exterior L_{eq} Criteria (dBA)	Predicted $L_{eq(h)}$ (dBA) Range					
			RCV Group 1	RCV Group 2	RCV Group 3	RCV Group 4	RCV Group 5	RCV Group 6
V	Manufacturing and industrial, other uses	70	NA	NA	44 - 55	42 - 47	46 - 54	NA

Notes:
1. Pursuant to §5-29.11, the maximum permissible noise level limit established for Noise Zone I also applies to the exterior of schools, daycare centers, hospitals or other similar healthcare institutions, churches, libraries, or museums during hours of use.
2. The City of Ontario's noise code includes both "daytime" (7:00 a.m. – 10:00 p.m.) and "nighttime" (10:00 p.m. - 7:00 a.m.) limits. Since the proposed ORSC is only open between 8:00 a.m. and 10:00 p.m., the "nighttime" limits do not apply.
Source: HMMH, 2023.

Figure 4 shows predicted $L_{eq(h)}$ noise level contours, representing tournament weekends for youth soccer and baseball/softball with other outdoor amenities in use.



J4-23

Figure 4
Predicted $L_{eq(1h)}$ (dBA)
Scenario 3: Tournament Weekends

Ontario Regional Sports Complex EIR
Ontario, California

$L_{eq(1h)}$ Level

- Greater than 75 dBA
- 70 - 75 dBA
- 65 - 70 dBA
- 60 - 65 dBA
- 55 - 60 dBA
- 50 - 55 dBA
- 45 - 50 dBA
- 40 - 45 dBA
- Less then 40 dBA

Receptor Location and Number

Top Floor Receptor

Bottom Floor Receptor

Note: Grouped Receptor Labels are in order of Leader Occurrence.

- Sports Complex Feature
- Sports Complex Building
- Receptor Group
- Study Area

0 500 1,000 Feet

hmmh

6. Mitigation

Based on the three scenarios evaluated, predicted $L_{eq(h)}$ noise levels would be below the City of Ontario's exterior noise level limits. Therefore, use of athletic fields and other outdoor amenities is predicted to result in noise levels that are considered acceptable and compatible with existing surrounding land use, according to the City of Ontario Plan 2050. Intermittent noise increases may result during batting practice, players cheering for teammates, or referees blowing whistles. However, none of these noise increases would be significant or permanent. Therefore, in accordance with CEQA guidelines, use of athletic fields and other outdoor amenities associated with the Sports Complex would not have a significant effect on the existing environment. No mitigation of athletic fields and other outdoor amenities is warranted.

7. References

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ATTACHMENT A. ANALYSIS ASSUMPTIONS

Soccer Practice Assumptions

i) Assume weekdays only (M-F) per nearby Empire Soccer Club
ii) 5pm - 9:30pm per nearby Empire Soccer Club - assumes lights out by 10pm
iii) Conservatively assume all fields in use concurrently - 13 total available per site plan
iv) Assume daily vehicular trips generated by F&P only account for players (i.e., each vehicle has at least 1 player inside, 'spectators' are mainly parents who would be driving the child to the practice, unlike games, where trips would include vehicles with players + vehicles with spectators only)
v) Avg practice length = 60 min (per Empire Soccer Club practice schedule)
vi) 10-min changeover - based on Empire Soccer Club schedule

Soccer Practice Calculations

(153 vehicle trips/day/field)*(1 vehicle/2 trips) = 76 vehicles/day/field = 76 players/day/field
(because each vehicle is assumed to include 1 player)
Avg 'large' team size = 15 players (from F&P traffic counts)
76 (players/day/field)*(1 team/15 players) = 5 teams/day/field (not possible w/ changeover, assumed 4)
(4 teams/day/field) * (13 fields) = 52 teams/day practicing
270 available minutes (5pm-9:30pm), 240 practice minutes per field (60 min * 4 teams/field)

Hour	Practice Time	Duration(min)	%
5pm-6pm	5pm-6pm	60	100%
6pm-7pm	6:10-7:10pm	50	83%
7pm-8pm	7:20-8:20pm	50	83%
8pm-9pm	8:30-9:30pm	50	83%
9pm-10pm		30	50%

**duration represents the number of minutes during the hour that noise source is active*

Baseball/Softball Practice Assumptions

i) Assume weekdays only (M-F), weekends reserved for games/tournaments
ii) 5pm - 9:30pm assume same availabiliity as soccer fields - lights out by 10pm
iii) Conservatively assume all fields in use concurrently - 8 larger baseball/softball fields
iv) Assume daily vehicular trips generated by F&P only account for players (i.e., each vehicle has at least 1 player inside, 'spectators' are mainly parents who would be driving the child to the practice, unlike games, where trips would include vehicles with players + vehicles with spectators only)
v) Avg practice length = 60 min (max length limited to 2 hours per Eastvalue LL)
vi) 10-min changeover

Baseball/Softball Practice Calculations

(168 vehicle trips/day/field)*(1 vehicle/2 trips) = 84 vehicles/day/field = 84 players/day/field
(because each vehicle is assumed to include 1 player)
Avg 'large' team size = 20 players (from F&P traffic counts)
84 (players/day/field)*(1 team/20 players) = 4 teams/day/field
270 operational minutes (5pm-9:30pm)
270 available minutes (5pm-9:30pm), 240 practice minutes per field (60 min * 4 teams/field)

Hour	Practice Time	Duration(min)	%
5pm-6pm	5pm-6pm	60	100%
6pm-7pm	6:10-7:10pm	50	83%
7pm-8pm	7:20-8:20pm	50	83%
8pm-9pm	8:30-9:30pm	50	83%
9pm-10pm		30	50%

**duration represents the number of minutes during the hour that noise source is active*

Soccer Game Assumptions
Assume weekends Sat/Sun per Sports Park Programming provided by City of Ontario
Conservatively assume all fields in use concurrently - 13 total available per site plan
Field Operational Hours: 8am-10pm (840 min)
Field Usage Hours: 8am - 6pm (600 min)
Avg. Game Duration: 100 (w/ 10min half time)
Approx. Changeover Duration - 20min
Playing Duration: (600 min./day/field available) - (80 min of changeover) = 520 min of play/day/field
Avg 'large' team size = 15 players (from F&P traffic counts)
2.5 spectators per player - Market Study, Appendix A, Slide 100

Soccer Game Calculations
(520 min/day/field)*(1 game/90 min) = 6 games/day/field (given field usage hours, only 5 full games)
Spectators: (30 players/game)*(2.5 spectators/player) = 75 spectators/game
Coaches/Refs: 2 coaches/game + 1 ref/game per Market Study, Appendix A, Slide 99

Hour	Game Play Time	*Duration (min)	%	Changeover (min)
8am-9am	8:00am-9:40am	50	83%	0
9am-10am	10:00am-11:40am	40	67%	20
10am-11am	12:00pm-1:40pm	50	83%	0
11am-12pm	2:00pm-3:40pm	40	67%	20
12pm-1pm	4:00pm-5:40pm	50	83%	0
1pm-2pm		40	67%	20
2pm-3pm		50	83%	0
3pm-4pm		40	67%	20
4pm-5pm		50	83%	0
5pm-6pm		40	67%	0
				80

**duration represents the number of minutes during the hour that noise source is active*

Baseball/Softball Game Assumptions
Assume weekends Sat/Sun per Sports Park Programming provided by City of Ontario
Conservatively assume all fields in use concurrently - 9 (8 regular fields and 1 little league, per site plan)
Field Operational Hours: 8am-10pm (840 min)
Field Usage Hours: 8am - 6pm (600 min) - assume same hours as soccer
Avg. Game Duration: 90 min - Deduced from Little League Rules for nearby leagues dictating max game durations by age group - Eastvale LL, Corona American LL, and Norco LL - max game durations were averaged across age groups
Approx. Changeover Duration - 20 min - assume same as soccer
Playing Duration: (600 min./day/field available) - (80 min of changeover) = 520 min of play/day/field
Avg 'large' team size = 20 players (from F&P traffic counts)
2.5 spectators per player - Market Study, Appendix A, Slide 100

Baseball/Softball Game Calculations
(520 min/day/field)*(1 game/90 min) = 6 games/day/field (given field usage hours, only 5 full games)
Spectators: (40 players/game)*(2.5 spectators/player) = 100 spectators/game
Coaches/Refs: 2 coaches/game + 1 ref/game per Market Study, Appendix A, Slide 99

Hour	Game Play Time	*Duration (min)	%	Changeover (min)
8am-9am	8am-9:30am	60	100%	0
9am-10am	9:50am-11:20am	40	67%	20
10am-11am	11:40am-1:10pm	60	100%	0
11am-12pm	1:30pm-3:00pm	40	67%	20
12pm-1pm	3:20pm-4:50pm	60	100%	0
1pm-2pm		40	67%	20
2pm-3pm		60	100%	0
3pm-4pm		40	67%	20
4pm-5pm		50	83%	0
5pm-6pm		0	0%	0
				80

**duration represents the number of minutes during the hour that noise source is active*

Soccer Tournament Assumptions

Assume weekends Sat/Sun per Sports Park Programming provided by City of Ontario
Conservatively assume all fields in use concurrently - 13 total available per site plan
Field Operational Hours: 8am-10pm (840 min)
Field Usage Hours: 8am - 10pm (840 min) - based on worst case
Avg. Game Duration: 100min(w/ 10min half time)
Approx. Changeover Duration - 20 min - assuming tournament weekends aim to fit in as many games as possible
Playing Duration: (840 min./day/field available) - (120 min of changeover) =720 min of play/day/field
Avg 'large' team size = 15 players (from F&P traffic counts)
2.5 spectators per player - Market Study, Appendix A, Slide 100

Soccer Tournament Calculations

(720 min/day/field)*(1 game/100 min) = 7 games/day/field
Spectators: (30 players/game)*(2.5 spectators/player) = 75 spectators/game
Coaches/Refs: 2 coaches/game + 1 ref/game per Market Study, Appendix A, Slide 99

Hour	Game Play Time	*Duration (min)	%	Changeover (min)
8am-9am	8:00am-9:40am	50	83.33%	0
9am-10am	10:00am-11:40am	40	67%	20
10am-11am	12:00pm-1:40pm	50	83%	0
11am-12pm	2:00pm-3:40pm	40	67%	20
12pm-1pm	4:00pm-5:40pm	50	83%	0
1pm-2pm	6:00pm-7:40pm	40	67%	20
2pm-3pm	8:00pm-9:40pm	50	83%	0
3pm-4pm		40	67%	20
4pm-5pm		50	83%	0
5pm-6pm		40	67%	20
6pm-7pm		50	83%	0
7pm-8pm		40	67%	20
8pm-9pm		50	83%	0
9pm-10pm		40	67%	0
				120

**duration represents the number of minutes during the hour that noise source is active*

Baseball/Softball Tournament Assumptions

Assume weekends Sat/Sun per Sports Park Programming provided by City of Ontario
Conservatively assume all fields in use concurrently - 9 total regular size fields available per site plan
Field Operational Hours: 8am-10pm (840 min)
Field Usage Hours: 8am - 10pm (840 min) - assume same hours as soccer
Avg. Game Duration: 90 min - Deduced from Little League Rules for nearby leagues dictating max game durations by age group - Eastvale LL, Corona American LL, and Norco LL - max game durations were averaged across age groups
Approx. Changeover Duration - 20 min - *updated from Recreation & Commuinty services Director recommendation*
Playing Duration: (840 min./day/field available) - (120 min of changeover) = 720 min of play/day/field
Avg 'large' team size = 20 players (from F&P traffic counts)
2.5 spectators per player - Market Study, Appendix A, Slide 100

Baseball/Softball Tournament Calculations

(720 min/day/field)*(1 game/90 min) = 8 games/day/field (given field usage hours, only 5 full games)
Spectators: (40 players/game)*(2.5 spectators/player) = 100 spectators/game
Coaches/Refs: 2 coaches/game + 1 ref/game per Market Study, Appendix A, Slide 99

Hour	Game Play Time	*Duration (min)	%	Changeover (min)
8am-9am	8am-9:30am	60	100%	0
9am-10am	9:50am-11:20am	40	67%	20
10am-11am	11:40am-1:10pm	60	100%	0
11am-12pm	1:30pm-3:00pm	40	67%	20
12pm-1pm	3:20pm-4:50pm	60	100%	0
1pm-2pm	5:10pm-6:40pm	40	67%	20
2pm-3pm	7:00pm-8:30pm	60	100%	0
3pm-4pm		40	67%	20
4pm-5pm		50	83%	10
5pm-6pm		50	83%	10
6pm-7pm		40	67%	20
7pm-8pm		60	100%	0
8pm-9pm		30	50%	0
9pm-10pm		0	0%	0
				120

**duration represents the number of minutes during the hour that noise source is active*

ATTACHMENT B. REFERENCE SOUND LEVELS

SoundPLAN Source Equations

Spectator Areas (seats)

Source Level	83.0103	LwA = Level of single person
LwA" = LwA + 10log(n) + 10log(k)		n = persons per area
		k = % of persons speaking at same time
Assumed spectators - Soccer	75.0	
Assumed spectators - Baseball	100	2.5spectators/player*30players=75 Soccer
Spectator areas m^2	377.1	2.5spectator/player*40players=100 Baseball
persons /m^2 - Soccer	0.198872	
persons /m^2 - Baseball	0.265162	
LwA - Soccer	72.98573	
LwA - Baseball	74.23512	

Public Soccer Grounds

Source Level	87	LwA = Level of single person
LwA" = LwA + 10log(n) + 10log(k)		n = persons per area
		k = % of persons speaking at same time
Field area m^2	6438.2	
Total players	30	
Players per m^2	0.00466	
LwA	63.68356	

Pickleball

Reference level	66.9	Lp = Level for 32 players
Lp" = Lp - (10*log(n/z))		n = 32 players
Lp (logarithmically halved)	63.8897	z = 16 players (4 players per court assumed)

SoundPLAN Source Levels

Soccer
Public soccer gorunds: Lw = 63.7 dB(A) as Lw/m, m^2
Spectator area (seats): Lw = 73 dB(A) as Lw/m, m^2

Baseball/Softball
Play and sports area with low noise: Lw = 60 dB(A) as Lw/unit
Spectator area (seats): Lw = 74.2 dB(A) as Lw/m, m^2

Playground
Play and sports area with low noise: Lw = 60 dB(A) as Lw/unit

Pool
Open-air swimming pool: 108 dB(A) as Lw/unit

Tennis
Tennis court: 83 dB(A) as Lw/unit

PickleBall
Pickleball: 81.6 dB(A) as Lw/unit

Skatepark
Skatepark, bowl: 100 dB(A) as Lw/unit

ATTACHMENT C. TABLE OF PREDICTED CNEL AND $L_{EQ(H)}$ AT INDIVIDUAL RECEIVERS

Table C-1. Scenario 1: Weekday Practice

Receptor ID	Land Use	CNEL (dBA)	Leq,1hr (dBA)	State of CA Exterior Noise Standards (dBA)	Ontario Municipal Code Exterior Noise Standards (dBA)
Rec_1	Residential	43.8	44.8	65	65
Rec_2	Residential	36.5	37.8	65	65
Rec_3	Residential	36.8	38.2	65	65
Rec_4	Residential	32.7	34.7	65	65
Rec_5	Residential	39.9	41	65	65
Rec_6	Residential	29.6	31.3	65	65
Rec_7	Residential	31.6	33.4	65	65
Rec_8	Residential	33.8	35.6	65	65
Rec_9	Residential	33.7	35.4	65	65
Rec_10	Residential	29.9	32.2	65	65
Rec_11	Residential	34.5	36	65	65
Rec_12	Residential	42.5	43.8	65	65
Rec_13	Residential	45.5	46.5	65	65
Rec_14	Residential	46.3	47.3	65	65
Rec_15	Residential	36.5	38.5	65	65
Rec_16	Residential	40.7	42.2	65	65
Rec_17	Residential	35.7	38.3	65	65
Rec_18	Residential	31	33.4	65	65
Rec_19	Residential	33.7	36.4	65	65
Rec_20	Residential	31.8	34.9	65	65
Rec_21	Residential	32.6	35.7	65	65
Rec_22	Residential	33.2	35.8	65	65
Rec_23	Residential	33.1	36.2	65	65
Rec_24	Residential	32.2	35.4	65	65
Rec_25	Residential	29.9	33.1	65	65
Rec_26	Residential	46.1	47.2	65	65
Rec_27	Residential	44.9	46	65	65
Rec_28	Residential	44.3	45.5	65	65

Table C-1. Scenario 1: Weekday Practice

Receptor ID	Land Use	CNEL (dBA)	Leq,1hr (dBA)	State of CA Exterior Noise Standards (dBA)	Ontario Municipal Code Exterior Noise Standards (dBA)
Rec_29	Residential	43.4	44.8	65	65
Rec_30	Residential	44.6	45.9	65	65
Rec_31	Residential	44.8	46.1	65	65
Rec_32	Residential	45.2	46.6	65	65
Rec_33	Residential	38.3	39.9	65	65
Rec_34	Residential	38.9	40.1	65	65
Rec_35	Residential	36.9	38.6	65	65
Rec_36	Residential	36.1	38.1	65	65
Rec_37	Residential	37.5	38.9	65	65
Rec_38	Residential	32.8	35.8	65	65
Rec_39	Residential	31.8	34.6	65	65
Rec_40	Residential	31.5	34.3	65	65
Rec_41	Residential	31	33.9	65	65
Rec_42	Residential	30.7	33.9	65	65
Rec_43	Residential	34.5	37.5	65	65
Rec_44	Residential	34.6	37.4	65	65
Rec_45	Residential	34.7	37.4	65	65
Rec_46	Residential	34.2	36.9	65	65
Rec_47	Residential	34.1	37.2	65	65
Rec_48	Residential	34.1	37.2	65	65
Rec_49	Residential	34.2	37.1	65	65
Rec_50	Residential	33.3	36.6	65	65
Rec_51	Residential	33.6	37	65	65
Rec_52	Residential	33.8	36.9	65	65
Rec_53	Residential	34.2	37.2	65	65
Rec_54	Residential	33.3	36.2	65	65
Rec_55	Residential	33.4	36	65	65
Rec_56	Residential	33.1	35.8	65	65
Rec_57	Residential	33.6	36.8	65	65
Rec_58	Residential	32.8	35.9	65	65
Rec_59	Residential	33.3	36.3	65	65
Rec_60	Residential	33.5	36.6	65	65
Rec_61	Residential	32.8	35.9	65	65

Table C-1. Scenario 1: Weekday Practice

Receptor ID	Land Use	CNEL (dBA)	Leq,1hr (dBA)	State of CA Exterior Noise Standards (dBA)	Ontario Municipal Code Exterior Noise Standards (dBA)
Rec_62	Residential	33.7	36.9	65	65
Rec_63	Residential	31	34.1	65	65
Rec_64	Residential	32.3	34.1	65	65
Rec_65	Residential	33.7	37	65	65
Rec_66	Residential	32.1	33.9	65	65
Rec_67	Residential	33.4	34.8	65	65
Rec_68	Residential	34.3	37.6	65	65
Rec_69	Residential	32.7	34.8	65	65
Rec_70	Residential	34.5	37.9	65	65
Rec_71	Residential	34.2	37.2	65	65
Rec_72	Residential	33.2	35.9	65	65
Rec_73	Residential	33.7	37	65	65
Rec_74	Residential	34.2	36.5	65	65
Rec_75	Residential	33.2	35.2	65	65
Rec_76	Residential	33.9	36.5	65	65
Rec_77	Residential	33.6	36.7	65	65
Rec_78	Residential	34	36.4	65	65
Rec_79	Residential	35.4	37.8	65	65
Rec_80	Residential	35.5	38.2	65	65
Rec_81	Residential	33.7	36.3	65	65
Rec_82	Residential	34.5	37.5	65	65
Rec_83	Residential	33.6	36.9	65	65
Rec_84	Residential	34.5	37.5	65	65
Rec_85	Residential	34.5	37.7	65	65
Rec_86	Residential	33.1	36.2	65	65
Rec_87	Residential	34.5	37.5	65	65
Rec_88	Residential	33.8	37.1	65	65
Rec_89	Residential	34.4	37.4	65	65
Rec_90	Residential	32.2	33.6	65	65
Rec_91	Residential	33.6	36.5	65	65
Rec_92	Residential	34.1	37	65	65
Rec_93	Residential	34.3	37.2	65	65
Rec_94	Residential	34.4	37.3	65	65

Table C-1. Scenario 1: Weekday Practice

Receptor ID	Land Use	CNEL (dBA)	Leq,1hr (dBA)	State of CA Exterior Noise Standards (dBA)	Ontario Municipal Code Exterior Noise Standards (dBA)
Rec_95	Residential	34.5	37.1	65	65
Rec_96	Residential	35.1	38.1	65	65
Rec_97	Residential	36.1	38.8	65	65
Rec_98	Residential	34.1	36.2	65	65
Rec_99	Residential	38	39.8	65	65
Rec_100	Residential	35.2	38	65	65
Rec_101	Residential	35.7	38.1	65	65
Rec_102	Residential	35.2	38.3	65	65
Rec_103	Residential	35.7	38.4	65	65
Rec_104	Residential	35.3	38.4	65	65
Rec_105	Residential	35.3	38.5	65	65
Rec_106	Residential	35.1	38	65	65
Rec_107	Residential	34.5	37.6	65	65
Rec_108	Residential	32.8	34.2	65	65
Rec_109	Residential	33.8	36.6	65	65
Rec_110	Residential	32.8	34.6	65	65
Rec_111	Residential	33.2	35.2	65	65
Rec_112	Residential	34.6	36.5	65	65
Rec_113	Residential	34.2	36	65	65
Rec_114	Residential	35.2	37.1	65	65
Rec_115	Residential	35.5	37.4	65	65
Rec_116	Residential	36.9	39.6	65	65
Rec_117	Residential	40.3	41.9	65	65
Rec_118	Residential	36.8	39.2	65	65
Rec_119	Residential	42.3	43.6	65	65
Rec_120	Residential	36.8	38.5	65	65
Rec_121	Residential	36.7	39	65	65
Rec_122	Residential	35.9	38.4	65	65
Rec_123	Residential	35.4	38.1	65	65
Rec_124	Residential	34.8	37.6	65	65
Rec_125	Residential	35	37.7	65	65
Rec_126	Residential	34.5	37.2	65	65
Rec_127	Residential	34.2	36.4	65	65

Table C-1. Scenario 1: Weekday Practice

Receptor ID	Land Use	CNEL (dBA)	Leq,1hr (dBA)	State of CA Exterior Noise Standards (dBA)	Ontario Municipal Code Exterior Noise Standards (dBA)
Rec_128	Residential	33.8	36.9	65	65
Rec_129	Residential	33	34.8	65	65
Rec_130	Residential	33	35.3	65	65
Rec_131	Residential	35.9	37.5	65	65
Rec_132	Residential	34.2	36.6	65	65
Rec_133	Residential	35.2	37.1	65	65
Rec_134	Residential	34.8	36.8	65	65
Rec_135	Residential	35.6	37.6	65	65
Rec_136	Residential	35.4	37.4	65	65
Rec_137	Residential	36.2	38.1	65	65
Rec_138	Residential	36.3	38.1	65	65
Rec_139	Residential	36.4	38.2	65	65
Rec_140	Residential	37.1	39.2	65	65
Rec_141	Residential	37.7	39.6	65	65
Rec_142	Residential	37.4	39.3	65	65
Rec_143	Residential	37.9	39.9	65	65
Rec_144	Residential	39.1	40.6	65	65
Rec_145	Residential	38.4	39.7	65	65
Rec_146	Residential	36.5	37.8	65	65
Rec_147	Residential	37.6	39.2	65	65
Rec_148	Residential	36.5	38.3	65	65
Rec_149	Residential	36.6	38.6	65	65
Rec_150	Residential	36	37.8	65	65
Rec_151	Residential	35.9	37.8	65	65
Rec_152	Residential	34.5	36.5	65	65
Rec_153	Residential	33.7	35.7	65	65
Rec_154	Residential	33.5	35.8	65	65
Rec_155	Residential	35.6	36.8	65	65
Rec_156	Residential	35.4	36.4	65	65
Rec_157	Residential	35.1	36.2	65	65
Rec_158	Residential	34.3	35.5	65	65
Rec_159	Residential	36.8	38.4	65	65
Rec_160	Residential	37.5	38.9	65	65

Table C-1. Scenario 1: Weekday Practice

Receptor ID	Land Use	CNEL (dBA)	Leq,1hr (dBA)	State of CA Exterior Noise Standards (dBA)	Ontario Municipal Code Exterior Noise Standards (dBA)
Rec_161	Residential	36.6	38.2	65	65
Rec_162	Residential	36.7	37.8	65	65
Rec_163	Residential	41.1	42.2	65	65
Rec_164	Residential	41.4	42.4	65	65
Rec_165	Residential	42.3	43.3	65	65
Rec_166	Residential	39.9	41.1	65	65
Rec_167	Residential	42.9	43.8	65	65
Rec_168	Residential	41.6	42.7	65	65
Rec_169	Residential	38.5	40	65	65
Rec_170	Residential	35.8	37.6	65	65
Rec_171	Residential	33.7	36	65	65
Rec_172	Residential	29.6	30.7	65	65
Rec_173	Residential	29.8	31.3	65	65
Rec_174	Residential	31.8	33	65	65
Rec_175	Residential	32.7	34.1	65	65
Rec_176	Residential	33.2	34.7	65	65
Rec_177	Residential	33.4	34.9	65	65
Rec_178	Residential	35.5	37.1	65	65
Rec_179	Residential	35.9	37.8	65	65
Rec_180	Residential	38.9	39.9	65	65
Rec_181	Residential	40.5	41.5	65	65
Rec_182	Residential	36.2	37.2	65	65
Rec_183	Residential	37.8	39.7	65	65
Rec_184	Residential	38	39.2	65	65
Rec_185	Residential	38.8	40.4	65	65
Rec_186	Residential	38.9	40.1	65	65
Rec_187	Residential	36.3	38.2	65	65
Rec_188	Residential	32.8	34.7	65	65
Rec_189	Residential	30.1	31.6	65	65
Rec_190	Residential	32.1	33.3	65	65
Rec_191	Residential	31.7	33	65	65
Rec_192	Residential	34.4	35.5	65	65
Rec_193	Residential	35.8	37.1	65	65

Table C-1. Scenario 1: Weekday Practice

Receptor ID	Land Use	CNEL (dBA)	Leq,1hr (dBA)	State of CA Exterior Noise Standards (dBA)	Ontario Municipal Code Exterior Noise Standards (dBA)
Rec_194	Residential	52.1	52.8	65	65
Rec_195	Residential	51	51.9	65	65
Rec_196	Residential	50.3	51.2	65	65
Rec_197	Residential	49.9	50.8	65	65
Rec_198	Residential	50.1	50.9	65	65
Rec_199	Residential	51	51.8	65	65
Rec_200	Residential	50.7	51.6	65	65
Rec_201	Residential	49.4	50.3	65	65
Rec_202	Residential	50.2	51.1	65	65
Rec_203	Residential	49.7	50.6	65	65
Rec_204	Residential	45.1	46.2	65	65
Rec_205	Residential	47.7	48.6	65	65
Rec_206	Residential	48.2	49.2	65	65
Rec_207	Residential	48.4	49.4	65	65
Rec_208	Residential	47.6	48.7	65	65
Rec_209	Residential	48.2	49.2	65	65
Rec_210	Residential	46.2	47.2	65	65
Rec_211	Residential	46.3	47.5	65	65
Rec_212	Residential	45.7	47	65	65
Rec_213	Residential	43.8	45.4	65	65
Rec_214	Residential	46.7	47.9	65	65
Rec_215	Residential	46.7	47.8	65	65
Rec_216	Residential	43.4	45.2	65	65
Rec_217	Residential	44.4	45.9	65	65
Rec_218	Residential	46.4	47.7	65	65
Rec_219	Residential	47.2	48.3	65	65
Rec_220	Residential	45.1	46.5	65	65
Rec_221	Residential	46.7	47.9	65	65
Rec_222	Residential	45.8	47.1	65	65
Rec_223	Residential	45.4	46.9	65	65
Rec_224	Residential	45.7	47.1	65	65
Rec_225	Residential	44.7	46.2	65	65
Rec_226	Residential	35.3	36.6	65	65

Table C-1. Scenario 1: Weekday Practice

Receptor ID	Land Use	CNEL (dBA)	Leq,1hr (dBA)	State of CA Exterior Noise Standards (dBA)	Ontario Municipal Code Exterior Noise Standards (dBA)
Rec_227	Residential	41.1	44.6	65	65
Rec_228	Residential	41.1	44.9	65	65
Rec_229	Residential	40.5	44.5	65	65
Rec_230	Residential	41.5	45.3	65	65
Rec_231	Residential	42.9	47.1	65	65
Rec_232	Residential	44.3	48.3	65	65
Rec_233	Residential	42.1	45.8	65	65
Rec_234	Residential	40.7	44.5	65	65
Rec_235	Residential	39.9	43.9	65	65
Rec_236	Residential	40.9	44.8	65	65
Rec_237	Residential	42.1	46.3	65	65
Rec_238	Residential	42.4	46.5	65	65
Rec_239	Residential	44.4	48.5	65	65
Rec_240	Residential	42.3	46.4	65	65
Rec_241	Residential	46.4	50.4	65	65
Rec_242	Residential	51.1	55.4	65	65
Rec_243	Residential	50.2	54	65	65
Rec_244	Residential	51.2	55.5	65	65
Rec_245	Residential	46.6	50.5	65	65
Rec_246	Residential	43.9	47.8	65	65
Rec_247	Residential	43.4	46.7	65	65
Rec_248	Residential	42.7	44.9	65	65
Rec_249	Residential	43.7	46.5	65	65
Rec_250	Residential	42.1	45.6	65	65
Rec_251	Residential	40.1	44.2	65	65
Rec_252	Residential	36.6	40.9	65	65
Rec_253	Residential	37.1	41.3	65	65
Rec_254	Residential	41.8	45.6	65	65
Rec_255	Residential	42.4	46.2	65	65
Rec_256	Residential	41.6	45.5	65	65
Rec_257	Residential	42.4	46.3	65	65
Rec_258	Residential	45	49.4	65	65
Rec_259	Residential	42.6	46.6	65	65

Table C-1. Scenario 1: Weekday Practice

Receptor ID	Land Use	CNEL (dBA)	Leq,1hr (dBA)	State of CA Exterior Noise Standards (dBA)	Ontario Municipal Code Exterior Noise Standards (dBA)
Rec_260	Residential	40.7	44.6	65	65
Rec_261	Residential	39.4	43.5	65	65
Rec_262	Residential	40.7	45	65	65
Rec_263	Residential	42.8	46.8	65	65
Rec_264	Residential	41.2	45.2	65	65
Rec_265	Residential	39.3	42.3	65	65
Rec_266	Residential	39.8	43.3	65	65
Rec_267	Residential	37	40.2	65	65
Rec_268	Residential	35.6	37.2	65	65
Rec_269	Residential	40.2	43.6	65	65
Rec_270	Residential	33.8	35.6	65	65
Rec_271	Residential	41	45.1	65	65
Rec_272	Residential	41.3	45.4	65	65
Rec_273	Residential	39	42.3	65	65
Rec_274	Residential	41.1	44.5	65	65
Rec_275	Residential	41.5	44.9	65	65
Rec_276	Residential	39.9	44.1	65	65
Rec_277	Residential	39.3	43.3	65	65
Rec_278	Residential	38.1	41.7	65	65
Rec_279	Residential	36.2	39.8	65	65
Rec_280	Residential	44.6	48.4	65	65
Rec_281	Residential	37.9	42.2	65	65
Rec_282	Residential	38.4	42.2	65	65
Rec_283	Residential	40.1	43.4	65	65
Rec_284	Residential	40	43.8	65	65
Rec_285	Residential	37.8	42.1	65	65
Rec_286	Residential	34.9	38.6	65	65
Rec_287	Residential	39.4	43	65	65
Rec_288	Residential	35.7	39.9	65	65
Rec_289	Residential	44.2	48.3	65	65
Rec_290	Residential	47.2	51.4	65	65
Rec_291	Residential	47.6	51.7	65	65
Rec_292	Residential	45.2	49.4	65	65

Table C-1. Scenario 1: Weekday Practice

Receptor ID	Land Use	CNEL (dBA)	Leq,1hr (dBA)	State of CA Exterior Noise Standards (dBA)	Ontario Municipal Code Exterior Noise Standards (dBA)
Rec_293	Residential	46.4	50.5	65	65
Rec_294	Residential	45.7	49.8	65	65
Rec_295	Residential	45.3	49.4	65	65
Rec_296	Residential	44.9	48.9	65	65
Rec_297	Residential	44.7	48.8	65	65
Rec_298	Residential	43.8	47.8	65	65
Rec_299	Residential	44	48	65	65
Rec_300	Residential	43.7	47.7	65	65
Rec_301	Residential	43.8	47.7	65	65
Rec_302	Residential	42.4	46.3	65	65
Rec_303	Residential	42.9	46.8	65	65
Rec_304	Residential	38.8	43	65	65
Rec_305	Residential	36.3	40.5	65	65
Rec_306	Residential	38.2	42.4	65	65
Rec_307	Residential	39.9	43.6	65	65
Rec_308	Residential	38.6	42.7	65	65
Rec_309	Residential	39.2	43.3	65	65
Rec_310	Residential	39.7	43.8	65	65
Rec_311	Residential	36.7	40.7	65	65
Rec_312	Residential	37.5	41.6	65	65
Rec_313	Residential	36.2	40.4	65	65
Rec_314	Residential	33.6	37.7	65	65
Rec_315	Residential	33.1	37.3	65	65
Rec_316	Residential	38.1	42	65	65
Rec_317	Residential	36.6	40.6	65	65
Rec_318	Residential	35	39.2	65	65
Rec_319	Residential	38.2	41.8	65	65
Rec_320	Residential	32.9	37	65	65
Rec_321	Residential	35.5	39.6	65	65
Rec_322	Residential	39	42.8	65	65
Rec_323	Residential	34.8	39	65	65
Rec_324	Residential	32	36.2	65	65
Rec_325	Residential	39.2	43.3	65	65

Table C-1. Scenario 1: Weekday Practice

Receptor ID	Land Use	CNEL (dBA)	Leq,1hr (dBA)	State of CA Exterior Noise Standards (dBA)	Ontario Municipal Code Exterior Noise Standards (dBA)
Rec_326	Residential	38.1	42.2	65	65
Rec_327	Residential	39.2	43.2	65	65
Rec_328	Residential	45.2	49.4	65	65
Rec_329	Residential	46.6	50.7	65	65
Rec_330	Residential	45.1	49.1	65	65
Rec_331	Residential	44.9	48.9	65	65
Rec_332	Residential	44.8	48.7	65	65
Rec_333	Residential	43.5	47.9	65	65
Rec_334	Residential	38.8	42.5	65	65
Rec_335	Residential	37.4	41.6	65	65
Rec_336	Residential	38.5	42.7	65	65
Rec_337	Residential	37.5	41.6	65	65
Rec_338	Residential	39.5	43.6	65	65
Rec_339	Residential	37.9	42.2	65	65
Rec_340	Residential	39.3	43.2	65	65
Rec_341	Residential	40.8	44.6	65	65
Rec_342	Residential	39.1	43.2	65	65
Rec_343	Residential	38.5	42.6	65	65
Rec_344	Residential	38.2	42.5	65	65
Rec_345	Residential	37.7	41.8	65	65
Rec_346	Residential	31.9	36	65	65
Rec_347	Residential	31.7	35.9	65	65
Rec_348	Residential	36.8	40.9	65	65
Rec_349	Residential	36.5	40.8	65	65
Rec_350	Residential	35.5	39.7	65	65
Rec_351	Residential	38	42	65	65
Rec_352	Residential	35.3	39.5	65	65
Rec_353	Residential	41.2	45.3	65	65
Rec_354	Residential	40.7	44.8	65	65
Rec_355	Residential	37.8	42.1	65	65
Rec_356	Residential	38.3	42.4	65	65
Rec_357	Residential	44.3	48.1	65	65
Rec_358	Residential	43	46.9	65	65

Table C-1. Scenario 1: Weekday Practice

Receptor ID	Land Use	CNEL (dBA)	Leq,1hr (dBA)	State of CA Exterior Noise Standards (dBA)	Ontario Municipal Code Exterior Noise Standards (dBA)
Rec_359	Residential	38.8	42.8	65	65
Rec_360	Residential	39.1	43.2	65	65
Rec_361	Residential	40.3	44	65	65
Rec_362	Residential	40.5	44.6	65	65
Rec_363	Residential	39.9	44	65	65
Rec_364	Residential	41.1	45	65	65
Rec_365	Residential	39	43	65	65
Rec_366	Residential	38.4	42.5	65	65
Rec_367	Residential	38.6	42.4	65	65
Rec_368	Residential	40.5	44.2	65	65
Rec_369	Residential	35.7	39.8	65	65
Rec_370	Residential	40.6	44.6	65	65
Rec_371	Residential	37.7	41.5	65	65
Rec_372	Residential	39.2	42.8	65	65
Rec_373	Residential	37.8	41.9	65	65
Rec_374	Residential	38.5	42.7	65	65
Rec_375	Residential	34.9	38.6	65	65
Rec_376	Residential	40.4	44.6	65	65
Rec_377	Residential	36.7	40.5	65	65
Rec_378	Residential	37.4	41.6	65	65
Rec_379	Residential	37.3	41.4	65	65
Rec_380	Residential	39.5	43.7	65	65
Rec_381	Residential	43.9	47.8	65	65
Rec_382	Residential	43.7	47.5	65	65
Rec_383	Residential	39.4	43.1	65	65
Rec_384	Residential	33.7	38	65	65
Rec_385	Residential	42.3	46.1	65	65
Rec_386	Residential	42.3	46.2	65	65
Rec_387	Residential	41.9	45.7	65	65
Rec_388	Residential	42.1	46.1	65	65
Rec_389	Residential	33.2	37.3	65	65
Rec_390	Residential	35.9	39.9	65	65
Rec_391	Residential	36.2	40.2	65	65

Table C-1. Scenario 1: Weekday Practice

Receptor ID	Land Use	CNEL (dBA)	Leq,1hr (dBA)	State of CA Exterior Noise Standards (dBA)	Ontario Municipal Code Exterior Noise Standards (dBA)
Rec_392	Residential	33.9	37.8	65	65
Rec_393	Residential	37.5	41.4	65	65
Rec_394	Residential	37.4	41.5	65	65
Rec_395	Residential	37.7	41.7	65	65
Rec_396	Residential	35.7	39.8	65	65
Rec_397	Residential	34.5	38.7	65	65
Rec_398	Residential	36.7	40.7	65	65
Rec_399	Residential	40.3	44	65	65
Rec_400	Residential	38.6	42.6	65	65
Rec_401	Residential	34.2	38.5	65	65
Rec_402	Residential	41.4	43	65	65
Rec_403	Residential	41.1	42.7	65	65
Rec_404	Residential	41.3	43	65	65
Rec_405	Residential	40.6	42.3	65	65
Rec_406	Residential	42.3	43.8	65	65
Rec_407	Residential	43.3	44.6	65	65
Rec_408	Residential	42.1	43.6	65	65
Rec_409	Residential	40.7	42.1	65	65
Rec_410	Residential	41.5	43	65	65
Rec_411	Residential	41.8	43.3	65	65
Rec_412	Residential	40.3	41.5	65	65
Rec_413	Residential	40	41.1	65	65
Rec_414	Residential	29.4	31.4	65	65
Rec_415	Residential	32.6	34.1	65	65
Rec_416	Residential	25.9	28.5	65	65
Rec_417a	Residential	36.8	39.1	65	65
Rec_417b	Residential	27	31.1	65	65
Rec_418	Residential	33.7	35.1	65	65
Rec_419	Residential	35.4	37	65	65
Rec_420	Daycare	50.7	54.8	65	65
Rec_421	Daycare	50.2	54.2	65	65
Rec_422	Recreational	43.5	44.3	65	65
Rec_423	Residential	32.6	36.9	65	65

Table C-1. Scenario 1: Weekday Practice

Receptor ID	Land Use	CNEL (dBA)	Leq,1hr (dBA)	State of CA Exterior Noise Standards (dBA)	Ontario Municipal Code Exterior Noise Standards (dBA)
Rec_424	Residential	43.7	47.5	65	65
Rec_425	Residential	43.2	47.1	65	65
Rec_426b	Residential	47	51.2	65	65
Rec_426a	Residential	37.5	41.8	65	65
Rec_427	Multi-Family Residential	32.1	36.2	65	65
Rec_428	Multi-Family Residential	42.6	44.7	65	65
Rec_429	Multi-Family Residential	42.9	45.4	65	65
Rec_430	Multi-Family Residential	41.7	43.3	65	65
Rec_431	Multi-Family Residential	41.8	43.6	65	65
Rec_432	Multi-Family Residential	41	42.1	65	65
Rec_433	Multi-Family Residential	40.9	41.8	65	65
Rec_434	Multi-Family Residential	40.6	41.7	65	65
Rec_435	Multi-Family Residential	40.9	41.9	65	65
Rec_436	Multi-Family Residential	39	40	65	65
Rec_437	Multi-Family Residential	39.2	40.3	65	65
Rec_438	Multi-Family Residential	39	39.9	65	65
Rec_439	Multi-Family Residential	39.2	40.2	65	65
Rec_440	Multi-Family Residential	32.1	36.4	65	65
Rec_441	Multi-Family Residential	33.2	37.5	65	65
Rec_442	Multi-Family Residential	28.2	32.3	65	65
Rec_443	Multi-Family Residential	29.2	33.4	65	65
Rec_444	Multi-Family Residential	28.6	32.7	65	65
Rec_445	Multi-Family Residential	36.3	40.5	65	65
Rec_446	Multi-Family Residential	34.9	38.9	65	65
Rec_447	Multi-Family Residential	35.4	38	65	65
Rec_448	Multi-Family Residential	33.5	37.2	65	65

Table C-2. Scenario 2: Weekend Regular Season Games

Receptor ID	Land Use	CNEL (dBA)	Leq,1hr (dBA)	State of CA Exterior Noise Standards (dBA)	Ontario Municipal Code Exterior Noise Standards (dBA)
Rec_1	Residential	43.8	44.8	65	65
Rec_2	Residential	36.1	37.7	65	65
Rec_3	Residential	36.6	38	65	65
Rec_4	Residential	32.3	34.3	65	65
Rec_5	Residential	39.8	40.9	65	65
Rec_6	Residential	29.1	31.1	65	65
Rec_7	Residential	30.7	33.1	65	65
Rec_8	Residential	33.6	35.3	65	65
Rec_9	Residential	33.4	35.1	65	65
Rec_10	Residential	29.5	31.8	65	65
Rec_11	Residential	34.3	35.8	65	65
Rec_12	Residential	42.4	43.6	65	65
Rec_13	Residential	44.4	46.4	65	65
Rec_14	Residential	45	47.2	65	65
Rec_15	Residential	35	38.2	65	65
Rec_16	Residential	40.3	42	65	65
Rec_17	Residential	34.5	37.8	65	65
Rec_18	Residential	29.5	33	65	65
Rec_19	Residential	32.5	35.9	65	65
Rec_20	Residential	30.5	34.3	65	65
Rec_21	Residential	31.7	35.1	65	65
Rec_22	Residential	31.7	35.3	65	65
Rec_23	Residential	31.8	35.6	65	65
Rec_24	Residential	31.3	34.8	65	65
Rec_25	Residential	28.7	32.5	65	65
Rec_26	Residential	44.6	47.1	65	65
Rec_27	Residential	44	45.9	65	65
Rec_28	Residential	42.6	45.4	65	65
Rec_29	Residential	41.1	44.6	65	65
Rec_30	Residential	43.4	45.7	65	65
Rec_31	Residential	43.2	46	65	65
Rec_32	Residential	43.2	46.4	65	65
Rec_33	Residential	37.8	39.7	65	65

Table C-2. Scenario 2: Weekend Regular Season Games

Receptor ID	Land Use	CNEL (dBA)	Leq,1hr (dBA)	State of CA Exterior Noise Standards (dBA)	Ontario Municipal Code Exterior Noise Standards (dBA)
Rec_34	Residential	38.5	40	65	65
Rec_35	Residential	36.6	38.3	65	65
Rec_36	Residential	35.8	37.8	65	65
Rec_37	Residential	37.1	38.7	65	65
Rec_38	Residential	31.9	35.3	65	65
Rec_39	Residential	30.7	34.1	65	65
Rec_40	Residential	30.2	33.8	65	65
Rec_41	Residential	29.8	33.4	65	65
Rec_42	Residential	29.6	33.3	65	65
Rec_43	Residential	33	37	65	65
Rec_44	Residential	33.3	36.9	65	65
Rec_45	Residential	33	36.9	65	65
Rec_46	Residential	33.1	36.4	65	65
Rec_47	Residential	32.8	36.6	65	65
Rec_48	Residential	32.9	36.6	65	65
Rec_49	Residential	32.5	36.6	65	65
Rec_50	Residential	32	36	65	65
Rec_51	Residential	32.6	36.4	65	65
Rec_52	Residential	32.7	36.4	65	65
Rec_53	Residential	33.2	36.6	65	65
Rec_54	Residential	32.3	35.7	65	65
Rec_55	Residential	31.6	35.5	65	65
Rec_56	Residential	32	35.3	65	65
Rec_57	Residential	32.4	36.2	65	65
Rec_58	Residential	31.7	35.3	65	65
Rec_59	Residential	32	35.7	65	65
Rec_60	Residential	32.3	36.1	65	65
Rec_61	Residential	31.6	35.4	65	65
Rec_62	Residential	32.5	36.3	65	65
Rec_63	Residential	30	33.6	65	65
Rec_64	Residential	30.4	33.8	65	65
Rec_65	Residential	32.5	36.4	65	65
Rec_66	Residential	30	33.6	65	65

Table C-2. Scenario 2: Weekend Regular Season Games

Receptor ID	Land Use	CNEL (dBA)	Leq,1hr (dBA)	State of CA Exterior Noise Standards (dBA)	Ontario Municipal Code Exterior Noise Standards (dBA)
Rec_67	Residential	30.9	34.6	65	65
Rec_68	Residential	33	37	65	65
Rec_69	Residential	30.8	34.5	65	65
Rec_70	Residential	33.2	37.2	65	65
Rec_71	Residential	32.7	36.6	65	65
Rec_72	Residential	31.6	35.4	65	65
Rec_73	Residential	32.4	36.4	65	65
Rec_74	Residential	32.4	36.1	65	65
Rec_75	Residential	31.2	34.9	65	65
Rec_76	Residential	32.2	36.1	65	65
Rec_77	Residential	32.1	36.1	65	65
Rec_78	Residential	32.3	36	65	65
Rec_79	Residential	33.6	37.4	65	65
Rec_80	Residential	33.8	37.7	65	65
Rec_81	Residential	32	35.8	65	65
Rec_82	Residential	33.1	37	65	65
Rec_83	Residential	32.2	36.3	65	65
Rec_84	Residential	33.1	36.9	65	65
Rec_85	Residential	33.1	37.1	65	65
Rec_86	Residential	31.7	35.6	65	65
Rec_87	Residential	33	37	65	65
Rec_88	Residential	32.5	36.5	65	65
Rec_89	Residential	32.8	36.8	65	65
Rec_90	Residential	29.6	33.4	65	65
Rec_91	Residential	31.9	36	65	65
Rec_92	Residential	32.3	36.5	65	65
Rec_93	Residential	32.9	36.7	65	65
Rec_94	Residential	32.7	36.8	65	65
Rec_95	Residential	32.4	36.6	65	65
Rec_96	Residential	33.6	37.6	65	65
Rec_97	Residential	34.1	38.3	65	65
Rec_98	Residential	32	35.9	65	65
Rec_99	Residential	35.1	39.5	65	65

Table C-2. Scenario 2: Weekend Regular Season Games

Receptor ID	Land Use	CNEL (dBA)	Leq,1hr (dBA)	State of CA Exterior Noise Standards (dBA)	Ontario Municipal Code Exterior Noise Standards (dBA)
Rec_100	Residential	33.5	37.5	65	65
Rec_101	Residential	33.4	37.7	65	65
Rec_102	Residential	33.8	37.7	65	65
Rec_103	Residential	34	37.9	65	65
Rec_104	Residential	33.8	37.8	65	65
Rec_105	Residential	33.8	37.9	65	65
Rec_106	Residential	33.4	37.5	65	65
Rec_107	Residential	33.2	37.1	65	65
Rec_108	Residential	30	34	65	65
Rec_109	Residential	32	36.1	65	65
Rec_110	Residential	30.5	34.4	65	65
Rec_111	Residential	31	34.9	65	65
Rec_112	Residential	32	36.2	65	65
Rec_113	Residential	31.7	35.8	65	65
Rec_114	Residential	32.9	36.8	65	65
Rec_115	Residential	33.1	37.2	65	65
Rec_116	Residential	35	39.1	65	65
Rec_117	Residential	37.6	41.7	65	65
Rec_118	Residential	34.7	38.8	65	65
Rec_119	Residential	39.3	43.4	65	65
Rec_120	Residential	34.3	38.3	65	65
Rec_121	Residential	34.4	38.6	65	65
Rec_122	Residential	33.9	38	65	65
Rec_123	Residential	33.5	37.6	65	65
Rec_124	Residential	32.9	37.1	65	65
Rec_125	Residential	33.3	37.3	65	65
Rec_126	Residential	32.7	36.7	65	65
Rec_127	Residential	32	36	65	65
Rec_128	Residential	32.4	36.3	65	65
Rec_129	Residential	30.4	34.5	65	65
Rec_130	Residential	30.9	34.9	65	65
Rec_131	Residential	33.1	37.3	65	65
Rec_132	Residential	32.3	36.2	65	65

Table C-2. Scenario 2: Weekend Regular Season Games

Receptor ID	Land Use	CNEL (dBA)	Leq,1hr (dBA)	State of CA Exterior Noise Standards (dBA)	Ontario Municipal Code Exterior Noise Standards (dBA)
Rec_133	Residential	32.5	36.8	65	65
Rec_134	Residential	32.4	36.5	65	65
Rec_135	Residential	33.1	37.3	65	65
Rec_136	Residential	33	37.1	65	65
Rec_137	Residential	33.7	37.8	65	65
Rec_138	Residential	33.7	37.8	65	65
Rec_139	Residential	33.9	38	65	65
Rec_140	Residential	34.7	38.8	65	65
Rec_141	Residential	34.8	39.3	65	65
Rec_142	Residential	34.8	39	65	65
Rec_143	Residential	35.6	39.6	65	65
Rec_144	Residential	36.2	40.4	65	65
Rec_145	Residential	35.2	39.6	65	65
Rec_146	Residential	33.5	37.7	65	65
Rec_147	Residential	35.1	39	65	65
Rec_148	Residential	33.9	38	65	65
Rec_149	Residential	34.1	38.3	65	65
Rec_150	Residential	33.4	37.6	65	65
Rec_151	Residential	33.4	37.5	65	65
Rec_152	Residential	32	36.2	65	65
Rec_153	Residential	31.7	35.4	65	65
Rec_154	Residential	31.6	35.4	65	65
Rec_155	Residential	32.2	36.7	65	65
Rec_156	Residential	31.6	36.4	65	65
Rec_157	Residential	31.4	36.1	65	65
Rec_158	Residential	30.9	35.4	65	65
Rec_159	Residential	33.8	38.2	65	65
Rec_160	Residential	33.9	38.7	65	65
Rec_161	Residential	33.7	38	65	65
Rec_162	Residential	33.2	37.7	65	65
Rec_163	Residential	37.2	42.1	65	65
Rec_164	Residential	37.5	42.4	65	65
Rec_165	Residential	38.3	43.3	65	65

Table C-2. Scenario 2: Weekend Regular Season Games

Receptor ID	Land Use	CNEL (dBA)	Leq,1hr (dBA)	State of CA Exterior Noise Standards (dBA)	Ontario Municipal Code Exterior Noise Standards (dBA)
Rec_166	Residential	36.4	41	65	65
Rec_167	Residential	38.7	43.7	65	65
Rec_168	Residential	37.7	42.6	65	65
Rec_169	Residential	35.1	39.8	65	65
Rec_170	Residential	32.9	37.3	65	65
Rec_171	Residential	31.4	35.6	65	65
Rec_172	Residential	28.2	30.6	65	65
Rec_173	Residential	28.5	31.1	65	65
Rec_174	Residential	28.6	32.9	65	65
Rec_175	Residential	29.7	33.9	65	65
Rec_176	Residential	30.5	34.5	65	65
Rec_177	Residential	30.4	34.7	65	65
Rec_178	Residential	33.2	36.9	65	65
Rec_179	Residential	33.4	37.6	65	65
Rec_180	Residential	35.2	39.8	65	65
Rec_181	Residential	36.7	41.4	65	65
Rec_182	Residential	33.1	37.2	65	65
Rec_183	Residential	35.3	39.4	65	65
Rec_184	Residential	35	39.1	65	65
Rec_185	Residential	36	40.2	65	65
Rec_186	Residential	36	40	65	65
Rec_187	Residential	34.4	38	65	65
Rec_188	Residential	30.7	34.4	65	65
Rec_189	Residential	28.3	31.5	65	65
Rec_190	Residential	28.6	33.2	65	65
Rec_191	Residential	29.3	32.9	65	65
Rec_192	Residential	31	35.4	65	65
Rec_193	Residential	34.6	37.1	65	65
Rec_194	Residential	47.8	52.8	65	65
Rec_195	Residential	46.8	51.8	65	65
Rec_196	Residential	46.2	51.2	65	65
Rec_197	Residential	45.8	50.8	65	65
Rec_198	Residential	45.9	50.9	65	65

Table C-2. Scenario 2: Weekend Regular Season Games

Receptor ID	Land Use	CNEL (dBA)	Leq,1hr (dBA)	State of CA Exterior Noise Standards (dBA)	Ontario Municipal Code Exterior Noise Standards (dBA)
Rec_199	Residential	46.7	51.8	65	65
Rec_200	Residential	46.5	51.5	65	65
Rec_201	Residential	45.4	50.3	65	65
Rec_202	Residential	46	51	65	65
Rec_203	Residential	45.7	50.6	65	65
Rec_204	Residential	41.7	46.1	65	65
Rec_205	Residential	43.9	48.6	65	65
Rec_206	Residential	44.4	49.1	65	65
Rec_207	Residential	44.4	49.3	65	65
Rec_208	Residential	44.1	48.6	65	65
Rec_209	Residential	44.3	49.1	65	65
Rec_210	Residential	42.5	47.1	65	65
Rec_211	Residential	43.1	47.4	65	65
Rec_212	Residential	42.7	46.9	65	65
Rec_213	Residential	42.6	45.2	65	65
Rec_214	Residential	44	47.8	65	65
Rec_215	Residential	43.9	47.7	65	65
Rec_216	Residential	41.6	44.9	65	65
Rec_217	Residential	42.3	45.7	65	65
Rec_218	Residential	43	47.5	65	65
Rec_219	Residential	43.9	48.2	65	65
Rec_220	Residential	42	46.4	65	65
Rec_221	Residential	44.9	47.8	65	65
Rec_222	Residential	44.5	47	65	65
Rec_223	Residential	44	46.7	65	65
Rec_224	Residential	43.8	46.9	65	65
Rec_225	Residential	43.3	46	65	65
Rec_226	Residential	33.2	36.5	65	65
Rec_227	Residential	40.1	44	65	65
Rec_228	Residential	40.1	44.3	65	65
Rec_229	Residential	39.8	43.7	65	65
Rec_230	Residential	40.7	44.6	65	65
Rec_231	Residential	42.2	46.4	65	65

Table C-2. Scenario 2: Weekend Regular Season Games

Receptor ID	Land Use	CNEL (dBA)	Leq,1hr (dBA)	State of CA Exterior Noise Standards (dBA)	Ontario Municipal Code Exterior Noise Standards (dBA)
Rec_232	Residential	43.5	47.6	65	65
Rec_233	Residential	41	45.1	65	65
Rec_234	Residential	40	43.8	65	65
Rec_235	Residential	39	43.2	65	65
Rec_236	Residential	39.9	44.1	65	65
Rec_237	Residential	41.4	45.6	65	65
Rec_238	Residential	41.6	45.8	65	65
Rec_239	Residential	43.5	47.8	65	65
Rec_240	Residential	41.5	45.7	65	65
Rec_241	Residential	45.5	49.7	65	65
Rec_242	Residential	50.4	54.6	65	65
Rec_243	Residential	49.5	53.3	65	65
Rec_244	Residential	50.5	54.7	65	65
Rec_245	Residential	45.8	49.8	65	65
Rec_246	Residential	43.3	47.1	65	65
Rec_247	Residential	43	46.1	65	65
Rec_248	Residential	41.5	44.6	65	65
Rec_249	Residential	42.3	46	65	65
Rec_250	Residential	40.6	45	65	65
Rec_251	Residential	39.2	43.5	65	65
Rec_252	Residential	35.9	40.1	65	65
Rec_253	Residential	36.3	40.5	65	65
Rec_254	Residential	41.2	44.9	65	65
Rec_255	Residential	41.2	45.5	65	65
Rec_256	Residential	40.7	44.8	65	65
Rec_257	Residential	41.3	45.6	65	65
Rec_258	Residential	44.4	48.6	65	65
Rec_259	Residential	41.6	45.9	65	65
Rec_260	Residential	39.6	43.9	65	65
Rec_261	Residential	38.5	42.7	65	65
Rec_262	Residential	40	44.2	65	65
Rec_263	Residential	41.8	46.1	65	65
Rec_264	Residential	40.2	44.5	65	65

Table C-2. Scenario 2: Weekend Regular Season Games

Receptor ID	Land Use	CNEL (dBA)	Leq,1hr (dBA)	State of CA Exterior Noise Standards (dBA)	Ontario Municipal Code Exterior Noise Standards (dBA)
Rec_265	Residential	38.3	41.7	65	65
Rec_266	Residential	38.4	42.7	65	65
Rec_267	Residential	36.4	39.6	65	65
Rec_268	Residential	35.4	37	65	65
Rec_269	Residential	39.7	43	65	65
Rec_270	Residential	33.6	35.3	65	65
Rec_271	Residential	40.3	44.3	65	65
Rec_272	Residential	40.6	44.7	65	65
Rec_273	Residential	37.9	41.7	65	65
Rec_274	Residential	40.6	43.8	65	65
Rec_275	Residential	39.8	44.3	65	65
Rec_276	Residential	39.3	43.3	65	65
Rec_277	Residential	38.7	42.5	65	65
Rec_278	Residential	36.7	41	65	65
Rec_279	Residential	35.7	39.1	65	65
Rec_280	Residential	43.6	47.7	65	65
Rec_281	Residential	37.3	41.5	65	65
Rec_282	Residential	37.7	41.5	65	65
Rec_283	Residential	38.7	42.8	65	65
Rec_284	Residential	39.3	43.1	65	65
Rec_285	Residential	37.1	41.3	65	65
Rec_286	Residential	34.4	37.9	65	65
Rec_287	Residential	38.5	42.3	65	65
Rec_288	Residential	34.9	39.1	65	65
Rec_289	Residential	43.3	47.6	65	65
Rec_290	Residential	46.4	50.7	65	65
Rec_291	Residential	46.7	51	65	65
Rec_292	Residential	44.4	48.7	65	65
Rec_293	Residential	45.6	49.8	65	65
Rec_294	Residential	44.9	49.1	65	65
Rec_295	Residential	44.4	48.7	65	65
Rec_296	Residential	44	48.2	65	65
Rec_297	Residential	43.8	48	65	65

Table C-2. Scenario 2: Weekend Regular Season Games

Receptor ID	Land Use	CNEL (dBA)	Leq,1hr (dBA)	State of CA Exterior Noise Standards (dBA)	Ontario Municipal Code Exterior Noise Standards (dBA)
Rec_298	Residential	42.9	47.1	65	65
Rec_299	Residential	43.1	47.3	65	65
Rec_300	Residential	42.8	47	65	65
Rec_301	Residential	42.8	47	65	65
Rec_302	Residential	41.4	45.6	65	65
Rec_303	Residential	41.9	46.1	65	65
Rec_304	Residential	38.1	42.3	65	65
Rec_305	Residential	35.5	39.8	65	65
Rec_306	Residential	37.4	41.7	65	65
Rec_307	Residential	38.6	42.9	65	65
Rec_308	Residential	37.8	42	65	65
Rec_309	Residential	38.3	42.5	65	65
Rec_310	Residential	38.9	43.1	65	65
Rec_311	Residential	36	40	65	65
Rec_312	Residential	36.7	40.9	65	65
Rec_313	Residential	35.4	39.7	65	65
Rec_314	Residential	32.8	37	65	65
Rec_315	Residential	32.4	36.6	65	65
Rec_316	Residential	37	41.3	65	65
Rec_317	Residential	35.7	39.9	65	65
Rec_318	Residential	34.2	38.4	65	65
Rec_319	Residential	36.8	41.1	65	65
Rec_320	Residential	32.1	36.3	65	65
Rec_321	Residential	34.8	38.9	65	65
Rec_322	Residential	37.8	42.1	65	65
Rec_323	Residential	34	38.2	65	65
Rec_324	Residential	31.2	35.4	65	65
Rec_325	Residential	38.3	42.6	65	65
Rec_326	Residential	37.2	41.4	65	65
Rec_327	Residential	38.2	42.5	65	65
Rec_328	Residential	44.4	48.6	65	65
Rec_329	Residential	45.7	50	65	65
Rec_330	Residential	44.2	48.4	65	65

Table C-2. Scenario 2: Weekend Regular Season Games

Receptor ID	Land Use	CNEL (dBA)	Leq,1hr (dBA)	State of CA Exterior Noise Standards (dBA)	Ontario Municipal Code Exterior Noise Standards (dBA)
Rec_331	Residential	43.9	48.2	65	65
Rec_332	Residential	44	48	65	65
Rec_333	Residential	42.8	47.1	65	65
Rec_334	Residential	38.2	41.8	65	65
Rec_335	Residential	36.7	40.9	65	65
Rec_336	Residential	37.7	41.9	65	65
Rec_337	Residential	36.8	40.9	65	65
Rec_338	Residential	38.8	42.9	65	65
Rec_339	Residential	37.2	41.5	65	65
Rec_340	Residential	38.4	42.5	65	65
Rec_341	Residential	40	44	65	65
Rec_342	Residential	38.5	42.5	65	65
Rec_343	Residential	37.7	41.9	65	65
Rec_344	Residential	37.5	41.7	65	65
Rec_345	Residential	36.8	41	65	65
Rec_346	Residential	31.1	35.3	65	65
Rec_347	Residential	31	35.2	65	65
Rec_348	Residential	35.9	40.2	65	65
Rec_349	Residential	35.8	40	65	65
Rec_350	Residential	34.8	39	65	65
Rec_351	Residential	37	41.3	65	65
Rec_352	Residential	34.5	38.8	65	65
Rec_353	Residential	40.5	44.6	65	65
Rec_354	Residential	39.9	44.1	65	65
Rec_355	Residential	37	41.3	65	65
Rec_356	Residential	37.5	41.6	65	65
Rec_357	Residential	43.4	47.4	65	65
Rec_358	Residential	42	46.2	65	65
Rec_359	Residential	37.8	42.1	65	65
Rec_360	Residential	38.4	42.5	65	65
Rec_361	Residential	39.1	43.4	65	65
Rec_362	Residential	39.6	43.9	65	65
Rec_363	Residential	39.1	43.3	65	65

Table C-2. Scenario 2: Weekend Regular Season Games

Receptor ID	Land Use	CNEL (dBA)	Leq,1hr (dBA)	State of CA Exterior Noise Standards (dBA)	Ontario Municipal Code Exterior Noise Standards (dBA)
Rec_364	Residential	40.1	44.3	65	65
Rec_365	Residential	38.2	42.3	65	65
Rec_366	Residential	37.7	41.8	65	65
Rec_367	Residential	38	41.7	65	65
Rec_368	Residential	39.4	43.5	65	65
Rec_369	Residential	34.9	39.1	65	65
Rec_370	Residential	39.6	43.9	65	65
Rec_371	Residential	36.6	40.8	65	65
Rec_372	Residential	37.8	42.2	65	65
Rec_373	Residential	37	41.2	65	65
Rec_374	Residential	37.6	41.9	65	65
Rec_375	Residential	33.8	38	65	65
Rec_376	Residential	39.6	43.8	65	65
Rec_377	Residential	36.1	39.8	65	65
Rec_378	Residential	36.7	40.9	65	65
Rec_379	Residential	36.5	40.7	65	65
Rec_380	Residential	38.8	42.9	65	65
Rec_381	Residential	42.9	47.1	65	65
Rec_382	Residential	42.8	46.8	65	65
Rec_383	Residential	38.8	42.4	65	65
Rec_384	Residential	33	37.2	65	65
Rec_385	Residential	41.5	45.4	65	65
Rec_386	Residential	41.5	45.5	65	65
Rec_387	Residential	41	45	65	65
Rec_388	Residential	41.2	45.3	65	65
Rec_389	Residential	32.4	36.6	65	65
Rec_390	Residential	35.1	39.2	65	65
Rec_391	Residential	35.5	39.5	65	65
Rec_392	Residential	33.2	37.1	65	65
Rec_393	Residential	36.8	40.7	65	65
Rec_394	Residential	36.6	40.7	65	65
Rec_395	Residential	36.8	41	65	65
Rec_396	Residential	34.9	39.1	65	65

Table C-2. Scenario 2: Weekend Regular Season Games

Receptor ID	Land Use	CNEL (dBA)	Leq,1hr (dBA)	State of CA Exterior Noise Standards (dBA)	Ontario Municipal Code Exterior Noise Standards (dBA)
Rec_397	Residential	33.8	37.9	65	65
Rec_398	Residential	35.7	40	65	65
Rec_399	Residential	39	43.3	65	65
Rec_400	Residential	37.7	41.9	65	65
Rec_401	Residential	33.5	37.7	65	65
Rec_402	Residential	41.2	42.8	65	65
Rec_403	Residential	40.9	42.4	65	65
Rec_404	Residential	41.1	42.7	65	65
Rec_405	Residential	40.3	42	65	65
Rec_406	Residential	41.7	43.6	65	65
Rec_407	Residential	42.3	44.5	65	65
Rec_408	Residential	41.1	43.4	65	65
Rec_409	Residential	39.9	41.9	65	65
Rec_410	Residential	40.6	42.8	65	65
Rec_411	Residential	40.6	43.1	65	65
Rec_412	Residential	38.6	41.4	65	65
Rec_413	Residential	39.4	41	65	65
Rec_414	Residential	27.8	31.1	65	65
Rec_415	Residential	29.4	33.9	65	65
Rec_416	Residential	23.9	28.1	65	65
Rec_417a	Residential	34	38.7	65	65
Rec_417b	Recreational	26.1	30.4	65	65
Rec_418	Residential	30	34.9	65	65
Rec_419	Residential	31.8	36.8	65	65
Rec_420	Daycare	49.9	54	65	70
Rec_421	Daycare	49.3	53.5	65	70
Rec_422	Recreational	42.9	44.3	65	65
Rec_423	Residential	31.9	36.2	65	65
Rec_424	Residential	42.5	46.8	65	65
Rec_425	Residential	42.1	46.4	65	65
Rec_426b	Recreational	46.2	50.4	65	65
Rec_426a	Recreational	36.8	41	65	65
Rec_427	Multi-Family Residential	31.5	35.5	65	65

Table C-2. Scenario 2: Weekend Regular Season Games

Receptor ID	Land Use	CNEL (dBA)	Leq,1hr (dBA)	State of CA Exterior Noise Standards (dBA)	Ontario Municipal Code Exterior Noise Standards (dBA)
Rec_428	Multi-Family Residential	41.9	44.4	65	65
Rec_429	Multi-Family Residential	42.2	44.9	65	65
Rec_430	Multi-Family Residential	41	43.1	65	65
Rec_431	Multi-Family Residential	41.1	43.3	65	65
Rec_432	Multi-Family Residential	40.3	42	65	65
Rec_433	Multi-Family Residential	40.1	41.8	65	65
Rec_434	Multi-Family Residential	39.9	41.6	65	65
Rec_435	Multi-Family Residential	40.1	41.8	65	65
Rec_436	Multi-Family Residential	38.9	39.9	65	65
Rec_437	Multi-Family Residential	39.1	40.2	65	65
Rec_438	Multi-Family Residential	38.8	39.9	65	65
Rec_439	Multi-Family Residential	39	40.1	65	65
Rec_440	Multi-Family Residential	31.5	35.6	65	65
Rec_441	Multi-Family Residential	32.6	36.7	65	65
Rec_442	Multi-Family Residential	27.5	31.6	65	65
Rec_443	Multi-Family Residential	28.5	32.6	65	65
Rec_444	Multi-Family Residential	27.9	32	65	65
Rec_445	Multi-Family Residential	35.7	39.7	65	65
Rec_446	Multi-Family Residential	34.2	38.2	65	65
Rec_447	Multi-Family Residential	34.9	37.5	65	65
Rec_448	Multi-Family Residential	32.8	36.5	65	65

Table C-3. Scenario 3: Tournament Weekends

Receptor ID	Land Use	CNEL (dBA)	Leq,1hr (dBA)	State of CA Exterior Noise Standards (dBA)	Ontario Municipal Code Exterior Noise Standards (dBA)
Rec_1	Residential	44	44.8	65	65
Rec_2	Residential	36.6	37.7	65	65
Rec_3	Residential	37	38	65	65

Table C-3. Scenario 3: Tournament Weekends

Receptor ID	Land Use	CNEL (dBA)	Leq,1hr (dBA)	State of CA Exterior Noise Standards (dBA)	Ontario Municipal Code Exterior Noise Standards (dBA)
Rec_4	Residential	33.3	34.3	65	65
Rec_5	Residential	40.1	40.9	65	65
Rec_6	Residential	29.9	31.1	65	65
Rec_7	Residential	31.6	33.1	65	65
Rec_8	Residential	34.4	35.3	65	65
Rec_9	Residential	34.1	35.1	65	65
Rec_10	Residential	30.7	31.8	65	65
Rec_11	Residential	34.9	35.8	65	65
Rec_12	Residential	42.8	43.6	65	65
Rec_13	Residential	44.6	46.4	65	65
Rec_14	Residential	45.3	47.2	65	65
Rec_15	Residential	36.2	38.2	65	65
Rec_16	Residential	40.9	42	65	65
Rec_17	Residential	36.2	37.8	65	65
Rec_18	Residential	31	33	65	65
Rec_19	Residential	34.3	35.9	65	65
Rec_20	Residential	32.7	34.3	65	65
Rec_21	Residential	33.7	35.1	65	65
Rec_22	Residential	33.5	35.3	65	65
Rec_23	Residential	33.9	35.6	65	65
Rec_24	Residential	33.4	34.8	65	65
Rec_25	Residential	30.9	32.5	65	65
Rec_26	Residential	44.9	47.1	65	65
Rec_27	Residential	44.4	45.9	65	65
Rec_28	Residential	43.1	45.4	65	65
Rec_29	Residential	41.9	44.6	65	65
Rec_30	Residential	43.9	45.7	65	65
Rec_31	Residential	43.9	46	65	65
Rec_32	Residential	43.9	46.4	65	65
Rec_33	Residential	38.6	39.7	65	65
Rec_34	Residential	38.9	40	65	65
Rec_35	Residential	37.2	38.3	65	65
Rec_36	Residential	36.8	37.8	65	65

Table C-3. Scenario 3: Tournament Weekends

Receptor ID	Land Use	CNEL (dBA)	Leq,1hr (dBA)	State of CA Exterior Noise Standards (dBA)	Ontario Municipal Code Exterior Noise Standards (dBA)
Rec_37	Residential	37.7	38.7	65	65
Rec_38	Residential	33.8	35.3	65	65
Rec_39	Residential	32.6	34.1	65	65
Rec_40	Residential	32.2	33.8	65	65
Rec_41	Residential	31.8	33.4	65	65
Rec_42	Residential	31.8	33.3	65	65
Rec_43	Residential	35.2	37	65	65
Rec_44	Residential	35.2	36.9	65	65
Rec_45	Residential	35	36.9	65	65
Rec_46	Residential	34.8	36.4	65	65
Rec_47	Residential	35	36.6	65	65
Rec_48	Residential	35	36.6	65	65
Rec_49	Residential	34.6	36.6	65	65
Rec_50	Residential	34.4	36	65	65
Rec_51	Residential	34.9	36.4	65	65
Rec_52	Residential	34.8	36.4	65	65
Rec_53	Residential	35.1	36.6	65	65
Rec_54	Residential	34.2	35.7	65	65
Rec_55	Residential	33.5	35.5	65	65
Rec_56	Residential	33.7	35.3	65	65
Rec_57	Residential	34.6	36.2	65	65
Rec_58	Residential	33.8	35.3	65	65
Rec_59	Residential	34.1	35.7	65	65
Rec_60	Residential	34.5	36.1	65	65
Rec_61	Residential	33.8	35.4	65	65
Rec_62	Residential	34.7	36.3	65	65
Rec_63	Residential	32.1	33.6	65	65
Rec_64	Residential	31.6	33.8	65	65
Rec_65	Residential	34.8	36.4	65	65
Rec_66	Residential	31.1	33.6	65	65
Rec_67	Residential	31.7	34.6	65	65
Rec_68	Residential	35.3	37	65	65
Rec_69	Residential	32.2	34.5	65	65

Table C-3. Scenario 3: Tournament Weekends

Receptor ID	Land Use	CNEL (dBA)	Leq,1hr (dBA)	State of CA Exterior Noise Standards (dBA)	Ontario Municipal Code Exterior Noise Standards (dBA)
Rec_70	Residential	35.6	37.2	65	65
Rec_71	Residential	34.8	36.6	65	65
Rec_72	Residential	33.4	35.4	65	65
Rec_73	Residential	34.7	36.4	65	65
Rec_74	Residential	34	36.1	65	65
Rec_75	Residential	32.5	34.9	65	65
Rec_76	Residential	34.1	36.1	65	65
Rec_77	Residential	34.4	36.1	65	65
Rec_78	Residential	33.9	36	65	65
Rec_79	Residential	35.3	37.4	65	65
Rec_80	Residential	35.8	37.7	65	65
Rec_81	Residential	33.8	35.8	65	65
Rec_82	Residential	35.3	37	65	65
Rec_83	Residential	34.6	36.3	65	65
Rec_84	Residential	35.2	36.9	65	65
Rec_85	Residential	35.4	37.1	65	65
Rec_86	Residential	33.9	35.6	65	65
Rec_87	Residential	35.1	37	65	65
Rec_88	Residential	34.9	36.5	65	65
Rec_89	Residential	35	36.8	65	65
Rec_90	Residential	30.4	33.4	65	65
Rec_91	Residential	34.1	36	65	65
Rec_92	Residential	34.5	36.5	65	65
Rec_93	Residential	34.9	36.7	65	65
Rec_94	Residential	34.8	36.8	65	65
Rec_95	Residential	34.3	36.6	65	65
Rec_96	Residential	35.7	37.6	65	65
Rec_97	Residential	36.1	38.3	65	65
Rec_98	Residential	33.5	35.9	65	65
Rec_99	Residential	36.5	39.5	65	65
Rec_100	Residential	35.5	37.5	65	65
Rec_101	Residential	35.3	37.7	65	65
Rec_102	Residential	36	37.7	65	65

Table C-3. Scenario 3: Tournament Weekends

Receptor ID	Land Use	CNEL (dBA)	Leq,1hr (dBA)	State of CA Exterior Noise Standards (dBA)	Ontario Municipal Code Exterior Noise Standards (dBA)
Rec_103	Residential	36	37.9	65	65
Rec_104	Residential	36	37.8	65	65
Rec_105	Residential	36.1	37.9	65	65
Rec_106	Residential	35.5	37.5	65	65
Rec_107	Residential	35.4	37.1	65	65
Rec_108	Residential	30.8	34	65	65
Rec_109	Residential	34.1	36.1	65	65
Rec_110	Residential	31.7	34.4	65	65
Rec_111	Residential	32.4	34.9	65	65
Rec_112	Residential	33.3	36.2	65	65
Rec_113	Residential	32.9	35.8	65	65
Rec_114	Residential	34.2	36.8	65	65
Rec_115	Residential	34.4	37.2	65	65
Rec_116	Residential	37	39.1	65	65
Rec_117	Residential	38.7	41.7	65	65
Rec_118	Residential	36.4	38.8	65	65
Rec_119	Residential	40	43.4	65	65
Rec_120	Residential	35.4	38.3	65	65
Rec_121	Residential	36.2	38.6	65	65
Rec_122	Residential	35.8	38	65	65
Rec_123	Residential	35.5	37.6	65	65
Rec_124	Residential	34.9	37.1	65	65
Rec_125	Residential	35.3	37.3	65	65
Rec_126	Residential	34.6	36.7	65	65
Rec_127	Residential	33.6	36	65	65
Rec_128	Residential	34.6	36.3	65	65
Rec_129	Residential	31.5	34.5	65	65
Rec_130	Residential	32.6	34.9	65	65
Rec_131	Residential	34.1	37.3	65	65
Rec_132	Residential	34	36.2	65	65
Rec_133	Residential	33.9	36.8	65	65
Rec_134	Residential	33.8	36.5	65	65
Rec_135	Residential	34.6	37.3	65	65

Table C-3. Scenario 3: Tournament Weekends

Receptor ID	Land Use	CNEL (dBA)	Leq,1hr (dBA)	State of CA Exterior Noise Standards (dBA)	Ontario Municipal Code Exterior Noise Standards (dBA)
Rec_136	Residential	34.4	37.1	65	65
Rec_137	Residential	35	37.8	65	65
Rec_138	Residential	35	37.8	65	65
Rec_139	Residential	35.1	38	65	65
Rec_140	Residential	36.1	38.8	65	65
Rec_141	Residential	36.2	39.3	65	65
Rec_142	Residential	36.1	39	65	65
Rec_143	Residential	37.1	39.6	65	65
Rec_144	Residential	37.1	40.4	65	65
Rec_145	Residential	35.9	39.6	65	65
Rec_146	Residential	34.3	37.7	65	65
Rec_147	Residential	36	39	65	65
Rec_148	Residential	35.1	38	65	65
Rec_149	Residential	35.5	38.3	65	65
Rec_150	Residential	34.6	37.6	65	65
Rec_151	Residential	34.8	37.5	65	65
Rec_152	Residential	33.4	36.2	65	65
Rec_153	Residential	32.9	35.4	65	65
Rec_154	Residential	33.1	35.4	65	65
Rec_155	Residential	32.8	36.7	65	65
Rec_156	Residential	32.1	36.4	65	65
Rec_157	Residential	32.1	36.1	65	65
Rec_158	Residential	31.7	35.4	65	65
Rec_159	Residential	34.8	38.2	65	65
Rec_160	Residential	34.9	38.7	65	65
Rec_161	Residential	34.8	38	65	65
Rec_162	Residential	33.8	37.7	65	65
Rec_163	Residential	37.7	42.1	65	65
Rec_164	Residential	37.9	42.4	65	65
Rec_165	Residential	38.7	43.3	65	65
Rec_166	Residential	37.2	41	65	65
Rec_167	Residential	39.2	43.7	65	65
Rec_168	Residential	38.3	42.6	65	65

Table C-3. Scenario 3: Tournament Weekends

Receptor ID	Land Use	CNEL (dBA)	Leq,1hr (dBA)	State of CA Exterior Noise Standards (dBA)	Ontario Municipal Code Exterior Noise Standards (dBA)
Rec_169	Residential	36.2	39.8	65	65
Rec_170	Residential	34.2	37.3	65	65
Rec_171	Residential	33.1	35.6	65	65
Rec_172	Residential	28.5	30.6	65	65
Rec_173	Residential	29.2	31.1	65	65
Rec_174	Residential	29.3	32.9	65	65
Rec_175	Residential	30.6	33.9	65	65
Rec_176	Residential	31.4	34.5	65	65
Rec_177	Residential	31.3	34.7	65	65
Rec_178	Residential	34	36.9	65	65
Rec_179	Residential	34.8	37.6	65	65
Rec_180	Residential	35.7	39.8	65	65
Rec_181	Residential	37.2	41.4	65	65
Rec_182	Residential	33.3	37.2	65	65
Rec_183	Residential	36.6	39.4	65	65
Rec_184	Residential	35.6	39.1	65	65
Rec_185	Residential	37	40.2	65	65
Rec_186	Residential	36.6	40	65	65
Rec_187	Residential	35.5	38	65	65
Rec_188	Residential	31.9	34.4	65	65
Rec_189	Residential	28.8	31.5	65	65
Rec_190	Residential	29.2	33.2	65	65
Rec_191	Residential	29.7	32.9	65	65
Rec_192	Residential	31.4	35.4	65	65
Rec_193	Residential	34.7	37.1	65	65
Rec_194	Residential	47.9	52.8	65	65
Rec_195	Residential	47	51.8	65	65
Rec_196	Residential	46.4	51.2	65	65
Rec_197	Residential	46	50.8	65	65
Rec_198	Residential	46.1	50.9	65	65
Rec_199	Residential	46.9	51.8	65	65
Rec_200	Residential	46.7	51.5	65	65
Rec_201	Residential	45.7	50.3	65	65

Table C-3. Scenario 3: Tournament Weekends

Receptor ID	Land Use	CNEL (dBA)	Leq,1hr (dBA)	State of CA Exterior Noise Standards (dBA)	Ontario Municipal Code Exterior Noise Standards (dBA)
Rec_202	Residential	46.3	51	65	65
Rec_203	Residential	45.9	50.6	65	65
Rec_204	Residential	42.2	46.1	65	65
Rec_205	Residential	44.2	48.6	65	65
Rec_206	Residential	44.8	49.1	65	65
Rec_207	Residential	44.8	49.3	65	65
Rec_208	Residential	44.5	48.6	65	65
Rec_209	Residential	44.8	49.1	65	65
Rec_210	Residential	43	47.1	65	65
Rec_211	Residential	43.8	47.4	65	65
Rec_212	Residential	43.5	46.9	65	65
Rec_213	Residential	43.4	45.2	65	65
Rec_214	Residential	44.7	47.8	65	65
Rec_215	Residential	44.3	47.7	65	65
Rec_216	Residential	42.7	44.9	65	65
Rec_217	Residential	43.1	45.7	65	65
Rec_218	Residential	43.8	47.5	65	65
Rec_219	Residential	44.4	48.2	65	65
Rec_220	Residential	43	46.4	65	65
Rec_221	Residential	45.4	47.8	65	65
Rec_222	Residential	45.1	47	65	65
Rec_223	Residential	44.7	46.7	65	65
Rec_224	Residential	44.5	46.9	65	65
Rec_225	Residential	44.1	46	65	65
Rec_226	Residential	33.6	36.5	65	65
Rec_227	Residential	42.5	44	65	65
Rec_228	Residential	42.8	44.3	65	65
Rec_229	Residential	42.5	43.7	65	65
Rec_230	Residential	43.3	44.6	65	65
Rec_231	Residential	45.2	46.4	65	65
Rec_232	Residential	46.3	47.6	65	65
Rec_233	Residential	43.7	45.1	65	65
Rec_234	Residential	42.6	43.8	65	65

Table C-3. Scenario 3: Tournament Weekends

Receptor ID	Land Use	CNEL (dBA)	Leq,1hr (dBA)	State of CA Exterior Noise Standards (dBA)	Ontario Municipal Code Exterior Noise Standards (dBA)
Rec_235	Residential	41.9	43.2	65	65
Rec_236	Residential	42.7	44.1	65	65
Rec_237	Residential	44.4	45.6	65	65
Rec_238	Residential	44.5	45.8	65	65
Rec_239	Residential	46.5	47.8	65	65
Rec_240	Residential	44.4	45.7	65	65
Rec_241	Residential	48.3	49.7	65	65
Rec_242	Residential	53.4	54.6	65	65
Rec_243	Residential	52.1	53.3	65	65
Rec_244	Residential	53.5	54.7	65	65
Rec_245	Residential	48.5	49.8	65	65
Rec_246	Residential	46	47.1	65	65
Rec_247	Residential	45	46.1	65	65
Rec_248	Residential	42.9	44.6	65	65
Rec_249	Residential	44.3	46	65	65
Rec_250	Residential	43.3	45	65	65
Rec_251	Residential	42.1	43.5	65	65
Rec_252	Residential	38.9	40.1	65	65
Rec_253	Residential	39.3	40.5	65	65
Rec_254	Residential	43.7	44.9	65	65
Rec_255	Residential	44	45.5	65	65
Rec_256	Residential	43.5	44.8	65	65
Rec_257	Residential	44.2	45.6	65	65
Rec_258	Residential	47.5	48.6	65	65
Rec_259	Residential	44.5	45.9	65	65
Rec_260	Residential	42.5	43.9	65	65
Rec_261	Residential	41.4	42.7	65	65
Rec_262	Residential	43	44.2	65	65
Rec_263	Residential	44.7	46.1	65	65
Rec_264	Residential	43.1	44.5	65	65
Rec_265	Residential	40.3	41.7	65	65
Rec_266	Residential	41	42.7	65	65
Rec_267	Residential	38.4	39.6	65	65

Table C-3. Scenario 3: Tournament Weekends

Receptor ID	Land Use	CNEL (dBA)	Leq,1hr (dBA)	State of CA Exterior Noise Standards (dBA)	Ontario Municipal Code Exterior Noise Standards (dBA)
Rec_268	Residential	36.1	37	65	65
Rec_269	Residential	41.9	43	65	65
Rec_270	Residential	34.3	35.3	65	65
Rec_271	Residential	43.1	44.3	65	65
Rec_272	Residential	43.5	44.7	65	65
Rec_273	Residential	40.2	41.7	65	65
Rec_274	Residential	42.7	43.8	65	65
Rec_275	Residential	42.5	44.3	65	65
Rec_276	Residential	42.1	43.3	65	65
Rec_277	Residential	41.4	42.5	65	65
Rec_278	Residential	39.4	41	65	65
Rec_279	Residential	38	39.1	65	65
Rec_280	Residential	46.3	47.7	65	65
Rec_281	Residential	40.3	41.5	65	65
Rec_282	Residential	40.3	41.5	65	65
Rec_283	Residential	41.2	42.8	65	65
Rec_284	Residential	41.9	43.1	65	65
Rec_285	Residential	40.1	41.3	65	65
Rec_286	Residential	36.8	37.9	65	65
Rec_287	Residential	41	42.3	65	65
Rec_288	Residential	37.9	39.1	65	65
Rec_289	Residential	46.2	47.6	65	65
Rec_290	Residential	49.4	50.7	65	65
Rec_291	Residential	49.7	51	65	65
Rec_292	Residential	47.4	48.7	65	65
Rec_293	Residential	48.5	49.8	65	65
Rec_294	Residential	47.8	49.1	65	65
Rec_295	Residential	47.3	48.7	65	65
Rec_296	Residential	46.9	48.2	65	65
Rec_297	Residential	46.7	48	65	65
Rec_298	Residential	45.7	47.1	65	65
Rec_299	Residential	45.9	47.3	65	65
Rec_300	Residential	45.6	47	65	65

Table C-3. Scenario 3: Tournament Weekends

Receptor ID	Land Use	CNEL (dBA)	Leq,1hr (dBA)	State of CA Exterior Noise Standards (dBA)	Ontario Municipal Code Exterior Noise Standards (dBA)
Rec_301	Residential	45.7	47	65	65
Rec_302	Residential	44.2	45.6	65	65
Rec_303	Residential	44.7	46.1	65	65
Rec_304	Residential	41.1	42.3	65	65
Rec_305	Residential	38.5	39.8	65	65
Rec_306	Residential	40.4	41.7	65	65
Rec_307	Residential	41.3	42.9	65	65
Rec_308	Residential	40.8	42	65	65
Rec_309	Residential	41.2	42.5	65	65
Rec_310	Residential	41.8	43.1	65	65
Rec_311	Residential	38.8	40	65	65
Rec_312	Residential	39.6	40.9	65	65
Rec_313	Residential	38.4	39.7	65	65
Rec_314	Residential	35.7	37	65	65
Rec_315	Residential	35.3	36.6	65	65
Rec_316	Residential	39.9	41.3	65	65
Rec_317	Residential	38.6	39.9	65	65
Rec_318	Residential	37.2	38.4	65	65
Rec_319	Residential	39.5	41.1	65	65
Rec_320	Residential	35	36.3	65	65
Rec_321	Residential	37.6	38.9	65	65
Rec_322	Residential	40.6	42.1	65	65
Rec_323	Residential	37	38.2	65	65
Rec_324	Residential	34.2	35.4	65	65
Rec_325	Residential	41.2	42.6	65	65
Rec_326	Residential	40.1	41.4	65	65
Rec_327	Residential	41.1	42.5	65	65
Rec_328	Residential	47.3	48.6	65	65
Rec_329	Residential	48.7	50	65	65
Rec_330	Residential	47	48.4	65	65
Rec_331	Residential	46.8	48.2	65	65
Rec_332	Residential	46.7	48	65	65
Rec_333	Residential	45.9	47.1	65	65

Table C-3. Scenario 3: Tournament Weekends

Receptor ID	Land Use	CNEL (dBA)	Leq,1hr (dBA)	State of CA Exterior Noise Standards (dBA)	Ontario Municipal Code Exterior Noise Standards (dBA)
Rec_334	Residential	40.6	41.8	65	65
Rec_335	Residential	39.6	40.9	65	65
Rec_336	Residential	40.7	41.9	65	65
Rec_337	Residential	39.6	40.9	65	65
Rec_338	Residential	41.7	42.9	65	65
Rec_339	Residential	40.2	41.5	65	65
Rec_340	Residential	41.1	42.5	65	65
Rec_341	Residential	42.6	44	65	65
Rec_342	Residential	41.3	42.5	65	65
Rec_343	Residential	40.6	41.9	65	65
Rec_344	Residential	40.5	41.7	65	65
Rec_345	Residential	39.7	41	65	65
Rec_346	Residential	34	35.3	65	65
Rec_347	Residential	33.9	35.2	65	65
Rec_348	Residential	38.9	40.2	65	65
Rec_349	Residential	38.8	40	65	65
Rec_350	Residential	37.7	39	65	65
Rec_351	Residential	39.9	41.3	65	65
Rec_352	Residential	37.5	38.8	65	65
Rec_353	Residential	43.4	44.6	65	65
Rec_354	Residential	42.8	44.1	65	65
Rec_355	Residential	40	41.3	65	65
Rec_356	Residential	40.4	41.6	65	65
Rec_357	Residential	46.1	47.4	65	65
Rec_358	Residential	44.8	46.2	65	65
Rec_359	Residential	40.7	42.1	65	65
Rec_360	Residential	41.2	42.5	65	65
Rec_361	Residential	41.8	43.4	65	65
Rec_362	Residential	42.5	43.9	65	65
Rec_363	Residential	42	43.3	65	65
Rec_364	Residential	42.9	44.3	65	65
Rec_365	Residential	41	42.3	65	65
Rec_366	Residential	40.6	41.8	65	65

Table C-3. Scenario 3: Tournament Weekends

Receptor ID	Land Use	CNEL (dBA)	Leq,1hr (dBA)	State of CA Exterior Noise Standards (dBA)	Ontario Municipal Code Exterior Noise Standards (dBA)
Rec_367	Residential	40.5	41.7	65	65
Rec_368	Residential	42	43.5	65	65
Rec_369	Residential	37.8	39.1	65	65
Rec_370	Residential	42.5	43.9	65	65
Rec_371	Residential	39.3	40.8	65	65
Rec_372	Residential	40.6	42.2	65	65
Rec_373	Residential	39.9	41.2	65	65
Rec_374	Residential	40.6	41.9	65	65
Rec_375	Residential	36.5	38	65	65
Rec_376	Residential	42.5	43.8	65	65
Rec_377	Residential	38.6	39.8	65	65
Rec_378	Residential	39.6	40.9	65	65
Rec_379	Residential	39.4	40.7	65	65
Rec_380	Residential	41.7	42.9	65	65
Rec_381	Residential	45.7	47.1	65	65
Rec_382	Residential	45.5	46.8	65	65
Rec_383	Residential	41.3	42.4	65	65
Rec_384	Residential	36	37.2	65	65
Rec_385	Residential	44.1	45.4	65	65
Rec_386	Residential	44.2	45.5	65	65
Rec_387	Residential	43.6	45	65	65
Rec_388	Residential	44	45.3	65	65
Rec_389	Residential	35.3	36.6	65	65
Rec_390	Residential	37.9	39.2	65	65
Rec_391	Residential	38.2	39.5	65	65
Rec_392	Residential	35.8	37.1	65	65
Rec_393	Residential	39.5	40.7	65	65
Rec_394	Residential	39.5	40.7	65	65
Rec_395	Residential	39.6	41	65	65
Rec_396	Residential	37.8	39.1	65	65
Rec_397	Residential	36.7	37.9	65	65
Rec_398	Residential	38.6	40	65	65
Rec_399	Residential	41.8	43.3	65	65

Table C-3. Scenario 3: Tournament Weekends

Receptor ID	Land Use	CNEL (dBA)	Leq,1hr (dBA)	State of CA Exterior Noise Standards (dBA)	Ontario Municipal Code Exterior Noise Standards (dBA)
Rec_400	Residential	40.5	41.9	65	65
Rec_401	Residential	36.5	37.7	65	65
Rec_402	Residential	41.9	42.8	65	65
Rec_403	Residential	41.5	42.4	65	65
Rec_404	Residential	41.7	42.7	65	65
Rec_405	Residential	41	42	65	65
Rec_406	Residential	42.3	43.6	65	65
Rec_407	Residential	42.9	44.5	65	65
Rec_408	Residential	41.8	43.4	65	65
Rec_409	Residential	40.5	41.9	65	65
Rec_410	Residential	41.3	42.8	65	65
Rec_411	Residential	41.3	43.1	65	65
Rec_412	Residential	39.1	41.4	65	65
Rec_413	Residential	39.7	41	65	65
Rec_414	Residential	28.9	31.1	65	65
Rec_415	Residential	30.3	33.9	65	65
Rec_416	Residential	25.9	28.1	65	65
Rec_417a	Residential	35.9	38.7	65	65
Rec_417b	Recreational	29	30.4	65	65
Rec_418	Residential	31	34.9	65	65
Rec_419	Residential	33.2	36.8	65	65
Rec_420	Daycare	52.8	54	65	65
Rec_421	Daycare	52.2	53.5	65	65
Rec_422	Recreational	43.1	44.3	65	65
Rec_423	Residential	34.9	36.2	65	65
Rec_424	Residential	45.4	46.8	65	65
Rec_425	Residential	44.9	46.4	65	65
Rec_426b	Recreational	49.2	50.4	65	65
Rec_426a	Recreational	39.8	41	65	65
Rec_427	Multi-Family Residential	34.3	35.5	65	65
Rec_428	Multi-Family Residential	43	44.4	65	65
Rec_429	Multi-Family Residential	43.6	44.9	65	65
Rec_430	Multi-Family Residential	41.7	43.1	65	65

Table C-3. Scenario 3: Tournament Weekends

Receptor ID	Land Use	CNEL (dBA)	Leq,1hr (dBA)	State of CA Exterior Noise Standards (dBA)	Ontario Municipal Code Exterior Noise Standards (dBA)
Rec_431	Multi-Family Residential	41.9	43.3	65	65
Rec_432	Multi-Family Residential	40.6	42	65	65
Rec_433	Multi-Family Residential	40.3	41.8	65	65
Rec_434	Multi-Family Residential	40.2	41.6	65	65
Rec_435	Multi-Family Residential	40.3	41.8	65	65
Rec_436	Multi-Family Residential	39.1	39.9	65	65
Rec_437	Multi-Family Residential	39.3	40.2	65	65
Rec_438	Multi-Family Residential	39	39.9	65	65
Rec_439	Multi-Family Residential	39.2	40.1	65	65
Rec_440	Multi-Family Residential	34.4	35.6	65	65
Rec_441	Multi-Family Residential	35.6	36.7	65	65
Rec_442	Multi-Family Residential	30.4	31.6	65	65
Rec_443	Multi-Family Residential	31.4	32.6	65	65
Rec_444	Multi-Family Residential	30.8	32	65	65
Rec_445	Multi-Family Residential	38.5	39.7	65	65
Rec_446	Multi-Family Residential	36.9	38.2	65	65
Rec_447	Multi-Family Residential	36.4	37.5	65	65
Rec_448	Multi-Family Residential	35.3	36.5	65	65

Appendix J5 Commercial Miscellaneous Noise

Appendices

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The Ontario Regional Sports Complex EIR

Commercial/Miscellaneous Noise

Technical Report

HMMH Project Number 23-0251A
March 2024

Prepared for:

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Contents

Figures

Tables

1. Summary

This technical appendix presents an inventory of potential miscellaneous noise sources and applicable regulations associated with The Ontario Regional Sports Complex (ORSC). The noise analysis was prepared in support of the Environmental Impact Report (EIR), pursuant to the requirements of the California Environmental Quality Act (CEQA).

The ORSC will include several on-site buildings and amenities that may produce miscellaneous sources of noise, including heating ventilation and air conditioning (HVAC) systems/cooling towers, emergency generators, small loading docks/delivery areas to accept deliveries at the proposed hotel, stadium, and retail spaces, and facility landscape maintenance activities.

In the current stage of design, the types, quantities, and locations of mechanical equipment for heating and cooling, loading docks, and emergency generators are unknown. Impulsive noise associated with loading docks, such as truck doors slamming, will be intermittent. Testing of emergency generators will be periodic, occurring for no more than one hour per week. However, noise studies will need to be performed for these sources before finalizing site plans and product selections to ensure compliance with the City's noise code limits.

Other sources of noise, such as landscape maintenance activities are exempt from the City of Ontario's noise code but are expected to be performed during weekday daytime hours, whenever feasible, particularly in areas closest to noise-sensitive land use where it would be difficult to comply with the City's noise level limits. The ORSC will not include public address systems or other sound amplification devices, other than at the proposed minor league baseball stadium and potential amplified music at the Chicken N Pickle entertainment complex. Amplified music would be limited to time of day and audibility restrictions established in the City's noise code, and the Chicken N Pickle would be required to demonstrate compliance with the City's noise limits by performing a comprehensive noise study.

Miscellaneous noise sources are not anticipated to generate noise levels in excess of noise level limits in the City's general plan or noise ordinance or cause permanent substantial noise increases, relative to ambient noise levels.

2. Environmental Setting

2.1 Noise

2.1.1 Noise Descriptors

Noise levels are presented on a logarithmic scale to account for the large pressure response range of the human ear. This logarithmic scale is expressed in units of decibels (dB). A decibel is defined as the ratio between a measured value and a reference value usually corresponding to the lower threshold of human hearing. The lower threshold of human hearing is defined as 20 micropascals. Typically, a noise analysis examines 11 octave (or 33 1/3 octave) bands ranging from 16 hertz (low) to 16,000 hertz (high). This octave band encompasses the human audible frequency range. The human ear does not perceive every frequency with equal loudness; therefore, spectrally varying sounds are often adjusted with a weighting filter. The A weighted filter is applied to compensate for the frequency response of the human auditory system, known as a dBA. The A-weighted sound level is commonly used when measuring environmental noise and is widely accepted by acousticians as a proper unit for describing environmental noise.

An inherent property of the logarithmic dB scale is that the sound pressure levels of two separate sources are not directly additive. For example, if a sound of 50 dBA is added to another sound of 50 dBA in the proximity, the result is a 3 dB increase, which is a total of 53 dBA and not an arithmetic doubling to 100 dBA. The human ear perceives changes in sound pressure level relative to changes in "loudness." Scientific research demonstrates the following general relationships between sound level and human perception for two sound levels with the same or very similar frequency characteristics:

- One dBA is the practical limit of accuracy for sound measurement systems and corresponds to an approximate 10 percent variation in the sound pressure level. A 1-dBA increase or decrease is a non-perceptible change in sound.
- A 3-dBA increase or decrease is a doubling (or halving) of acoustic pressure level, and it corresponds to the threshold of change in loudness perceptible in a laboratory environment. In practice, the average person is not able to distinguish a 3-dBA difference in environmental sound outdoors.
- A 5-dBA increase or decrease is described as a perceptible change in sound level and is a discernible change in an outdoor environment.
- A 10-dBA increase or decrease is a tenfold increase or decrease in acoustic pressure level but is perceived as a doubling or halving in loudness (e.g., the average person would judge a 10-dBA change in sound level to be twice or half as loud).

Some common sounds on the dBA scale are listed in Table 1Error! Reference source not found.. As shown, the relative perceived loudness of a sound doubles for each increase of 10 dBA, and a 10 dBA change in the sound level corresponds to a factor of 10 increase or decrease in relative sound energy. **Figure 1** depicts the estimations of common noise sources and outdoor acoustic environments and provides a comparison of relative loudness for each of these sources.

Table 1. Common Sounds on the A-Weighted Decibel Scale

Sound	Sound Level (dBA)	Relative Loudness (approximate)	Relative Sound Energy
Rock music, with amplifier	120	64	1,000,000
Thunder, snowmobile (operator)	110	32	100,000
Boiler shop, power mower	100	16	10,000
Orchestral crescendo at 25 feet, noisy kitchen	90	8	1,000
Busy street	80	4	100
Interior of department store	70	2	10
Ordinary conversation, 3 feet away	60	1	1
Quiet automobiles at low speed	50	½	.1
Average office	40	¼	.01
City residence	30	1/8	.001
Quiet country residence	20	1/16	.0001
Rustle of leaves	10	1/32	.00001
Threshold of hearing	0	1/64	.000001

Source: U.S. Department of Housing and Urban Development. Aircraft Noise Impact--Planning Guidelines for Local Agencies, Figure 2-2. 1972.

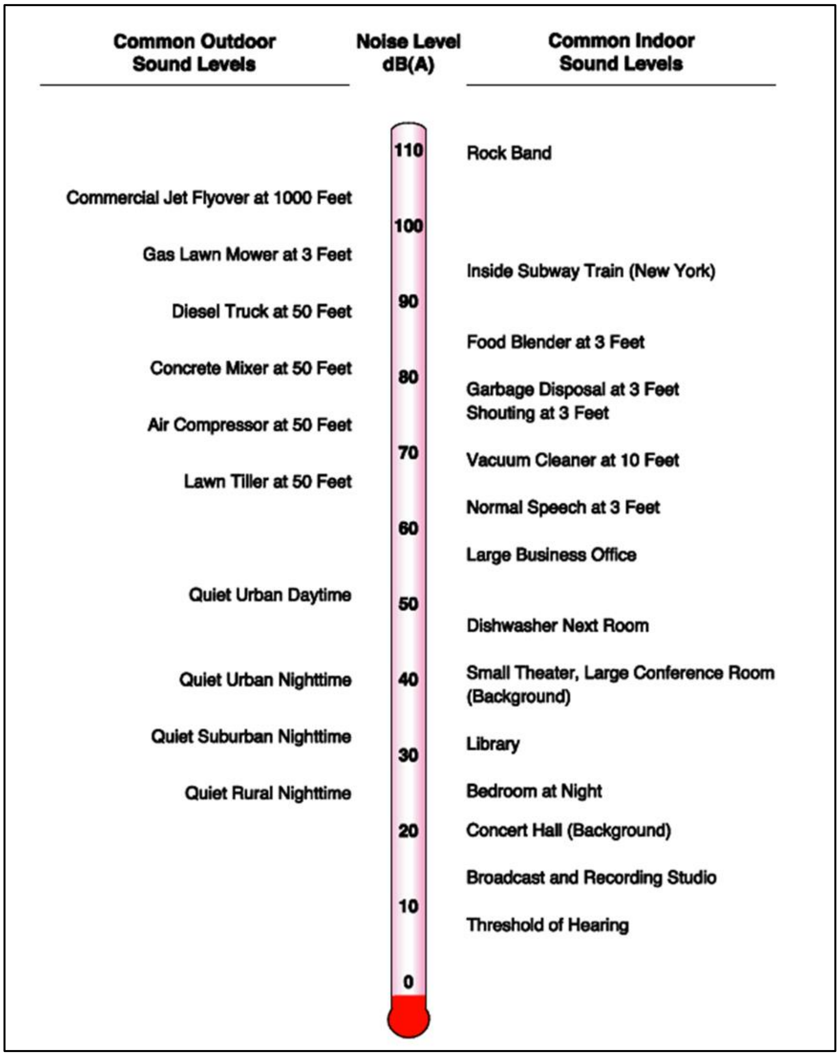

Figure 1. Sound Levels

Source: HMMH 2023

Noise levels can be measured, modeled, and presented in various formats. The noise metrics that were employed in this analysis have the following definitions:

- L_{eq}: Most environmental noise fluctuates from moment to moment, and it is common practice to characterize the fluctuating level by a single number, L_{eq}. Conventionally expressed in dBA, the L_{eq} is the energy-averaged, A-weighted sound level. It is defined as the steady, continuous sound level over a specified time, which has the same acoustic energy as the actual varying sound levels over the specified period. The daytime L_{eq} is the energy-averaged sound level for the daytime period (7:00 a.m. to 10:00 p.m.), and the nighttime L_{eq} is the energy averaged sound level for the nighttime period (10:00 p.m. to 7:00 a.m.). For traffic noise assessment, L_{eq} is typically evaluated over a one-hour period and may be denoted as $L_{eq(h)}$.
- L_{dn}: The L_{dn} is the average, hourly A-weighted L_{eq} for a 24-hour period, with a 10-dB penalty added to sound levels occurring during the nighttime hours (10:00 p.m. to 7:00 a.m.) to account for individuals' increased sensitivity to noise levels during nighttime hours.

- Community noise equivalent level: The energy-average of the A-weighted sound levels occurring during a 24-hour period, with 5 dB added to the sound levels occurring during evening hours (7:00 p.m. to 10:00 p.m.) and 10 dB added to noise levels occurring during nighttime hours (10:00 p.m. to 7:00 a.m.).
- L_{90}: The L_{90} is often used to describe the quieter background sound levels that occurred, since it represents the level exceeded 90 percent of the period.

2.1.2 Noise Attenuation

Construction noise typically dissipates at a rate of approximately 6.0 dB for each doubling of distance (between the noise source and the receptor). As an example, construction equipment with mufflers (independent of background ambient noise levels) during excavation and grading may generate a noise level of approximately 86 dBA L_{eq} at 50 feet from the noise source. Based on a sound dissipation rate of 6 dB per doubling of distance, a sound level of 86 dBA at 50 feet from the noise source would be approximately 80 dBA at a distance of 100 feet, 74 dBA at a distance of 200 feet, and so on. That sound drop-off rate does not take into account any intervening shielding (including landscaping or trees) or barriers, such as structures or hills between the noise source and noise receptor. A barrier that breaks the line-of-sight between a source and a receiver will typically result in at least 5 dB of noise reduction. A higher barrier may provide as much as 20 dB of noise reduction.

2.1.3 Effects of Noise on Humans

The effects of noise on humans can be grouped into three general categories (U.S. EPA, 1979, p. 3-1):

- Subjective effects of annoyance, nuisance, dissatisfaction;
- Physiological effects such as starting hearing loss; and,
- Interference with activities such as speech, sleep, and learning.

With respect to annoyance, human response to sound is highly individualized. Many factors influence the response to noise including the character of the noise, the variability of the sound level, the presence of tones or impulses, and the time of day of the occurrence. Additionally, non-acoustical factors, such as individual opinion of the noise source, the ability to adapt to the noise, the attitude towards the source and those associated with it, and the predictability of the noise, all influence the response to noise. These factors result in the reaction to noise being highly subjective, with the perceived effect of a particular noise varying widely among individuals in a community.

Noise-induced hearing loss usually takes years to develop. Hearing loss is one of the most obvious and easily quantifiable effects of excessive exposure to noise. While the loss may be temporary at first, it can become permanent after continued exposure. When combined with hearing loss associated with aging, the amount of hearing loss directly due to the environment is difficult to quantify. Although the major cause of noise-induced hearing loss is occupational, nonoccupational sources may also be a factor.

Noise can mask important sounds and disrupt communication between individuals in a variety of settings. This process can cause anything from a slight irritation to a serious safety hazard, depending on the circumstance. Noise can disrupt face-to-face communication and telephone communication, and the enjoyment of music and television in the home. Interference with communication has proved to be one of the most important components of noise-related annoyance.

3. Methodology

The proposed ORSC will include several on-site buildings and amenities that may produce miscellaneous sources of noise, including the Chicken N Pickle indoor/outdoor entertainment complex, a two-story hotel, retail shopping, and community recreation center. These structures will be mechanically heated and cooled via heating ventilation and air conditioning (HVAC) systems/cooling towers and may include interior equipment vented to the exterior via louvres. The proposed stadium will also include approximately 110,000 square feet of mechanically conditioned space. Additional miscellaneous noise sources may include small loading docks/designated delivery areas to accept deliveries at the proposed hotel, stadium, and retail spaces. The hotel, stadium, recreation center, and Chicken N Pickle may each have emergency generators for use during main power failures. Routine testing is typically required for generators, which results in a temporary increase in noise. On-site landscape maintenance equipment will also generate occasional noise. The Chicken N Pickle will include pickleball courts, outdoor seating and yard game areas, and outdoor amplified music. Additionally, the stadium will include an amplification system for music and announcements.

The potential for these miscellaneous noise sources to have a significant effect on the existing environment was evaluated. Publicly available studies with reference noise levels for each source were obtained, and approximate minimum distances between noise sources and noise-sensitive land uses surrounding the project site were identified. To approximate noise levels from miscellaneous noise sources at existing noise-sensitive land uses, simple geometric spherical spreading was assumed, as described in Section 2. This concept assumes each noise source is a point source, whereby noise levels decrease at a rate of 6 decibels per distance doubling. Conservatively, direct lines of sight from all land use to all noise sources were assumed, and no additional attenuation from ground effects was assumed.

4. Regulatory Framework

Several federal, state, and local regulations, ordinances, and guidelines have been established to control noise and vibration and minimize effects on humans. The Noise Control Act of 1972 (42 United States Code Section 4901) was the first comprehensive statement of national noise policy. It declared that "it is the policy of the United States to promote an environment for all Americans free from noise that jeopardizes their health or welfare" (GSA, 1972). The below sections summarize applicable noise and vibration criteria.

The State of California and the City of Ontario have adopted a number of policies that are based in part on federal and state regulations and are directed at controlling or mitigating environmental noise effects. Policies, standards and codes relevant to the control of commercial and industrial noise sources for the ORSC are discussed below.

4.1 State

CEQA Thresholds of Significance

According to Appendix G of the CEQA Guidelines, a project would normally have a significant effect on the environment if the project would result in:

- **Threshold A**: Would the project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?
- **Threshold B**: Would the project result in generation of excessive groundborne vibration or groundborne noise levels?
- **Threshold C**: For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

Applicable thresholds of significance are considered in the noise impact assessment. For commercial and miscellaneous noise sources, Threshold A is applicable and used to evaluate the potential for the project to have a significant effect on the environment. Threshold B does not apply to commercial/miscellaneous noise sources, as none of those sources would generate groundbourne vibration or noise. Threshold B is applicable to construction noise and therefore discussed within the *ORSC EIR Construction Noise and Vibration Technical Report.* It should be noted that Threshold C does not apply to the project because no noise-sensitive land uses would be located within an airport land use plan or in the vicinity of a private airstrip.

General Plan Guidelines

The Governor's Office of Planning and Research (OPR) is required to adopt and periodically revise the State of California's General Plan Guidelines (GPG), which establishes the framework for the development of general plans for cities and counties. With respect to noise, the GPG provides a basis for the control and abatement of environmental noise and limiting excessive noise exposure for California residents. The GPG focuses on land use compatibility with the existing ambient environment and establishes CNEL and L_{dn} thresholds for community noise exposure by land use category that define normally acceptable, conditionally acceptable, normally unacceptable, and clearly unacceptable conditions. The recommended thresholds within the GPG may be adopted by cities or modified based on site-specific conditions (State of California, 2023).

4.2 Local

The Ontario Plan

The Ontario Plan (TOP) 2050 includes a "Safety Element" designed to limit excessive community noise exposure through effective and guided land use compatible planning. **Table 2** summarizes the City of Ontario's land use compatibility standards to facilitate land use compatibility, relative to existing and future noise levels (City of Ontario, 2022).

Table 2. Ontario Noise Level Exposure and Land Use Compatibility Guidelines

Categories	Uses	CNEL (dBA)			
		Clearly Accepatble[1]	Normally Acceptable[2]	Normally Unacceptable[3]	Clearly Unacceptable[4]
Residential	Single Family/Duplex	<60	60-65	65-70	70-85
	Multifamily	<60	60-65	65-75	75-85
	Mobile Homes	<60	60-65	-	65-85
	Hotel/Motel	<65	65-70	70-80	80-85
Public/Institutional	Schools/Hospitals	<60	60-65	65-70	70-85
	Churches/Libraries	<60	60-65	65-70	70-85
	Auditoriums/Concert Halls	<55	55-60	60-70	70-85
Commercial	Offices	<65	65-75	75-80	80-85
	Retail	<70	70-75	75-80	80-85
Industrial	Manufacturing	<70	70-75	75-85	-
	Warehousing	<70	70-80	80-85	-
Recreational/ Open Space	Parks/Playgrounds	<65	65-70	70-75	75-85
	Golf Course/Riding Stables	<65	65-70	70-75	75-85
	Outdoor Spectator Sports	<60	60-65	65-70	
	Outdoor Music Shells/Amphitheaters	-	<60	60-65	65-85
	Livestock/Wildlife Preserves	<70	-	70-75	75-85
	Crop Agriculture	<55-85	-	-	-

Notes:
1. No special noise insulation required, assuming buildings of normal conventional construction.
2. Acoustical reports will be required for major new residential construction. Conventional construction with closed windows and fresh air supply systems of air conditioning will normally suffice.
3. New construction should be discouraged. Noise/aviation easements required for all new construction. If new construction does proceed, a detailed analysis of noise reduction requirements must be made, and necessary noise insulation features included.
4. No new construction should be permitted.

Source: Ontario 2022.

City of Ontario Municipal Code

The City of Ontario Municipal Code, Chapter 29: Noise (hereafter referred to as "the City's noise code"), establishes both exterior and interior noise standards for various land use types grouped into "noise zones." Maximum permissible noise level limits are established for each noise zone from 7:00 a.m. to 10:00 p.m. and 10:00 p.m. to 7:00 a.m., based on the L_{eq} metric and a duration of 15 minutes. Pursuant to §5-29.04 Exterior noise standards, the ambient noise level shall be the standard if ambient exceeds the established permissible limit at any time in any zone. The code also establishes a maximum instantaneous (L_{max}) permissible noise level limit of the established noise standard for the applicable zone plus 20 dBA during any period, measured in A-weighting on slow response. The limits established for Noise Zone I shall also apply to the exterior of schools, daycare centers, hospitals or other similar healthcare institutions, churches, libraries, or museums during hours of use, pursuant to §5-29.11 (City of Ontario, 2023). **Table 3** summarizes the allowable exterior noise level limits pursuant to §5-29.04(a).

Table 3. Exterior Noise Standards

Noise Zone	Land Use	Allowable Equivalent Noise Level, L_{eq} (dBA)	
		7:00 a.m. – 10:00 p.m.	10:00 p.m. – 7:00 a.m.
I	Single-Family Residential	65	45
II	Multi-Family Residential, Mobile Home Parks	65	50
III	Commercial Property	65	60
IV	Residential Portion of Mixed Use	70	70
V	Manufacturing and Industrial, Other Uses	70	70

Notes:
1. If the ambient level exceeds the standard, the ambient noise level shall be the standard.
2. Compliance is determined on the affected property.
3. Noise standards are based on a 15-min L_{eq}.
4. Maximum instantaneous noise levels (L_{max}) equal to the noise standard limit plus 20 dBA shall not be exceeded at any time, measured using A-weighted with the meter set to slow response. However, if ambient exceeds the standard, the standard shall be increased to reflect the maximum ambient noise level.
5. Noise Zone I noise standards also apply to the exterior of schools, daycare centers, hospitals or other similar healthcare institutions, churches, libraries, or museums during hours of use.
6. Noise Zone IV applies to the portion of the residential property within 100 feet of a commercial property or use, if the noise originates from the commercial property or use.
7. If the compliance location is on the boundary of two different noise zones, the lower noise level standard shall apply.

Source: Ontario 2023.

The City's noise code exempts various sources of noise, pursuant to §5-29.06 Exemptions, which are applicable to the control of commercial and industrial noise, include:

- Activities on public or private property conducted by any public entity or its authorized representatives including sporting and recreational activities that are sponsored, co-sponsored, permitted, or allowed by the City. This also includes sporting and entertainment events conducted pursuant to an approval, authorization, contract, lease, permit, or sublease by the appropriate public entity, specifically the planning commission or City Council.
- Noise sources associated with construction, repair, remodeling, demolition, or grading of any real property, as construction activities are instead subject to the provisions of §5-29.09.
- Noise sources associated with the maintenance of real property. Such activities shall instead be subject to the provisions of §5-29.08.
- Activities regulated by state or federal law.

Pursuant to §5-29.08 of the City's noise code, noise from maintenance of property shall not produce a disturbance to those who work or reside in the vicinity of the source, except between the hours of 8:00 a.m. and 6:00 p.m. In addition, landscaping and maintenance activities are generally restricted to specific times during weekdays and on weekends. These provisions do not apply to any maintenance that meets the noise limits established in §5-29.04. In addition, the maintenance, repair, or improvement of any public work or facility by public employees is exempt as long as the City Manager determines maintenance and repair is immediately necessary, cannot be feasibly conducted during normal business hours, or the City Council has an approved project specification or an environmental document authorizing maintenance during hours otherwise prohibited by §5-29.08.

The City's noise code also includes a provision regarding sound-amplification via loudspeakers, sound amplifiers, public address systems or similar devices. Use of said devices for providing instructions, giving speeches, lectures, etc. requires a permit from the Police Chief, pursuant to §5-29.13(b). Using sound amplification equipment on public or private property at public or private events attended by 100 or more people where sound would be audible at the property line is also subject to the amplified sound provisions. However, activities on public or private property conducted by a public entity or lessees authorized by the public entity are exempt from provisions of the City's noise code, including those related to amplified sound.

Pursuant to the City's noise code, use of sound-amplifying equipment and sound trucks in the City of Ontario shall be subject to the following:

- The only sounds permitted are music and human speech.
- Sound shall not be emitted within one hundred (100) yards of hospitals, churches, schools and City Hall.
- The volume of sound shall be controlled so that it will not be audible for a distance in excess of one hundred (100) feet from the sound amplifying equipment or sound truck, and so that the volume is not unreasonably loud, raucous, jarring, disturbing or a nuisance to persons within the range of allowed audibility.
- The sound amplifying equipment or sound truck shall not be used between the hours of 8:00 p.m. and 8:00 a.m.

5. Impact Analysis

In the current stage of design, the types, quantities, and locations of mechanical equipment for heating and cooling, small loading docks/delivery areas, and emergency generators are unknown. These noise sources are not specifically exempted by the City's code except for the use of mechanical devices in connection with an emergency. Noise associated with maintenance operations and the Chicken N Pickle are regulated by the City's municipal code. The impacts of all miscellaneous noise sources are described below with approximate noise source levels and anticipated noise levels at the closest noise-sensitive land uses.

HVAC Equipment

It is assumed that noise associated with operation of heating and cooling equipment will be minimized by the design and strategic placement of equipment. Noise levels from HVAC equipment can vary widely depending on the manufacturer and size of equipment required for a site's heating and cooling needs. The minimum distance from any structure that would include rooftop mechanical equipment to any noise-sensitive land use is approximately 260 feet (from the proposed indoor athletic facility along the southern boundary of the site to a residential structure along Chino Avenue). To ensure compliance with the more stringent overnight noise levels in the City's municipal code (45 dBA at single-family residences from 10:00 p.m. to 7:00 a.m.), HVAC equipment for the indoor athletic facility should be designed and/or placed to yield a sound level less than 58 dBA at 50 feet. Limiting HVAC equipment noise levels to 58 dBA at 50 feet would result in a noise level of approximately 44 dBA at residential land use along Chino Avenue. HVAC equipment noise levels on all other structures, including the proposed hotel, retail spaces, Chicken N Pickle, community center, and pool building should be limited to 65 dBA at 50 feet to ensure compliance with nighttime limits at residences along South Plymouth Avenue. Noise from mechanical equipment would not result in a significant effect on the existing environment due to the distances between potential equipment and noise sensitive land use.

Loading Docks

Activities at small loading docks/delivery areas for the hotel, stadium, Chicken N Pickle, and retail spaces may result in intermittent increases in noise levels from truck door slams and pure tone backup alarms on delivery vehicles, for example. Deliveries are anticipated to be infrequent, estimated at no more than once per week. Based on a study conducted for the Walmart Supercenter in Ontario, California, truck unloading activities may be as loud as approximately 67 dBA (L_{eq}) at 50 feet (David Evans and Associates, 2007). The closest distance to any noise-sensitive land use from potential loading docks is approximately 545 feet (from proposed retail space to a residence along South Plymouth Avenue). Assuming a direct line of sight and spherical spreading (see Section 3), noise levels from loading/unloading operations would thereby decrease to approximately 46 dBA along South Plymouth Avenue.

According to a study conducted by the Rensselaer Polytechnic Institute for the New York State Energy Research and Development Authority and the New York State Department of Transportation, "slamming doors" during delivery operations may result in a peak noise level of 74 dBA (Wang et al., 2013). Since a reference distance for this peak noise level was not provided within the study, conservatively assuming a reference distance of 50 feet yields a peak sound level of 53 dBA along South Plymouth Avenue. Therefore, peak noise levels from intermittent truck door slamming would not result in an increase of the municipal limits by 20 dBA or more.

Movement alarms on trucks may be as loud as 80 dBA at 50 feet,[1] which would equate to approximately 59 dBA along South Plymouth Avenue. Potential loading docks/areas can be located behind proposed on-site structures that provide shielding between loading/unloading activities and noise-sensitive land use. Additionally, all deliveries will occur during daytime hours (7:00 a.m. to 10:00 p.m.) to minimize disturbance during more sensitive hours. Intermittent noise increases from deliveries at small loading docks/areas are not anticipated to be significant or result in an exceedance of the City's daytime noise level limits. Therefore, loading/unloading activities would not result in a significant effect on the existing environment.

Emergency Generators

Manufacturer's specifications typically require routine testing of emergency generators, which is generally not exempted by municipal noise ordinances. However, testing would be periodic, assuming a total of 50 hours per year, translating to one hour per week. Depending on the size of emergency generators, maximum sound levels may range from 86 to 88 dBA at a distance of 23 feet for open generator sets (i.e., without weather or acoustical enclosures). Weather-proof enclosures would reduce maximum noise levels to approximately 81 dBA at a distance of 23 feet. With sound-attenuating enclosures, maximum sound levels at a distance of 23 feet may range between 72 to 75 dBA, depending on the level of enclosure (i.e., most manufacturers provide various levels of enclosures depending on sound-attenuation needs) (Carpenter et al., 2017). The minimum distance from any structure that would utilize an emergency generator to any noise-sensitive land use is approximately 260 feet (from the proposed indoor athletic facility along the southern boundary of the site to a residential structure along Chino Avenue). Assuming all emergency generators are equipped with weather-proof enclosures at a minimum, and assuming a direct line of sight between generators and noise-sensitive land use, a maximum noise level of approximately 60 dBA at the closest residence along Chino Avenue is feasible during weekly routine generator testing of a single generator. This noise level is below the City's daytime (7:00 a.m. to 10:00 p.m.) 15-min L_{eq} limit at residential land use. To ensure compliance with the City's noise level limits during routine testing, all emergency generators would be equipped with sound-attenuating enclosures, testing would only occur during daytime hours (7:00 a.m. to 10:00 p.m.) when noise limits are less stringent, and each emergency generator would be tested individually to preclude a cumulative noise level that exceeds the City's municipal limits. A substantial permanent increase in ambient noise levels above limits established in the City's noise code is thereby not anticipated. Therefore, periodic testing of emergency generators would not result in a significant effect on the existing environment.

Maintenance Equipment

As discussed within Section 4, maintenance of property can occur between 8:00 a.m. and 6:00 p.m., unless the equipment and activities comply with the noise level limits specified in the code. However, maintenance of public facilities is exempt from provisions of §5-29.08 of the City's noise code, as long as these activities are immediately necessary (i.e., repair and improvements necessary to maintain public service) or cannot be conducted during normal business hours. As shown in Figure 1, approximate noise levels associated with a gas lawn mower may be as high as 95 dBA at a distance of 3 feet. Residences along East Riverside Drive are closest to areas that would require lawn maintenance, at an approximate distance of 100 feet, equating to approximately 65 dBA at the closest residences. It is assumed that landscape maintenance activities can be performed between 8:00 a.m. and 6:00 p.m. whenever feasible, particularly in areas closest to noise-sensitive land use where it would be more difficult to otherwise comply with the City's noise level limits. Lawn maintenance is anticipated to be periodic, occurring two

[1] https://www.fhwa.dot.gov/environment/noise/construction_noise/rcnm2/

times per week, and lawn maintenance equipment would only result in temporary increases in noise levels. Therefore, periodic lawn maintenance would not result in a significant effect on the existing environment.

Chicken N Pickle

The Chicken N Pickle will include both indoor and outdoor entertainment areas with amplified music, a sports bar, pickleball courts, and yard games as well as outdoor dining and lounging areas. Based on hours of operation from other existing Chicken N Pickle locations, the entertainment complex opens as early as 8:00 a.m. on weekdays and weekends, and closes at 11:00 p.m. on Monday through Thursday, midnight on Fridays, and 10:00 p.m. or 11:00 p.m. on Sundays. Amplified music will be subject to provisions of the City's noise code, including audibility and time of day restrictions.

The analysis of concert events at the proposed stadium was used as a conservative proxy for the impact of amplified music from the Chicken N Pickle. As presented in Figure 5 in the *ORSC EIR Stadium Noise Technical Report*, noise levels from concerts held at the proposed stadium would be less than 40 dBA within all surrounding residential neighborhoods. Therefore, amplified music from the outdoor bar areas associated with the Chicken N Pickle is also likely to be less than 40 dBA within adjacent residential neighborhoods due to its location on-site and distance to adjacent neighborhoods (closest residence along South Plymouth Avenue is approximately 875 feet from the Chicken N Pickle site, while closest residence to the stadium is approximately 970 feet). Amplified music would rarely be audible within the adjacent communities, as it is anticipated to be below background (L_{90}) noise levels (refer to Table 4 and Table 5 in the *ORSC EIR Traffic Noise Technical Report* for average background noise levels).

Noise generated from pickle ball games and mechanical equipment associated with the facility's HVAC system will also be subject to the City's noise level limits. The minimum distance from any structure that would include rooftop mechanical equipment on the Chicken N Pickle to any noise-sensitive land use is approximately 592 feet (i.e., to residences along Plymouth Avenue). HVAC equipment noise levels associated with the Chicken N Pickle should thereby be limited to 65 dBA at 50 feet to ensure compliance with the nighttime limit in the City's municipal code at residences along South Plymouth Avenue. Limiting HVAC equipment noise levels at the Chicken N Pickle to 65 dBA at 50 feet would result in a noise level of approximately 44 dBA at residential land use along Plymouth Avenue.

Reference sound levels for pickleball are identified in a noise study conducted in Arizona (Woo, 2012). Based on that study, pickleball noise from 32 players at a distance of 10 feet from the edge of the court was measured at 66.9 dBA. Assuming a minimum distance of 875 feet from the Chicken N Pickle to the nearest residence and direct line of sight, pickleball noise levels would be reduced to approximately 28 dBA. Therefore, pickleball noise is not anticipated to result in a significant effect on the existing environment.

Other sources of noise would include a public address system and/or other sound amplification devices at the proposed minor league baseball stadium, which is addressed in the *ORSC EIR Stadium Noise Technical Report.*

6. Mitigation

In the current stage of design, the types, quantities, and locations of mechanical equipment for heating and cooling, loading docks/delivery areas, and emergency generators are unknown. However, these sources of noise are not specifically exempt from the City's noise level limits. Therefore, noise studies will need to be conducted before finalizing site designs and once mechanical equipment is sized and specified to ensure compliance with the City's noise code.

Other sources of noise, such as landscape maintenance activities are expected to be performed during weekday daytime hours, whenever feasible, which will minimize disturbance to adjacent residents. The ORSC will not include public address systems or other sound amplification devices, other than at the proposed minor league baseball stadium and potential amplified music at the Chicken N Pickle entertainment complex. To ensure compliance with the City's noise code, the privately-owned Chicken N Pickle entertainment complex will be required to prepare a noise study documenting all anticipated noise sources and predicted noise levels within the existing community. Amplified music at the Chicken N Pickle will be limited to time of day and audibility restrictions established in the City's noise code to avoid elevated noise levels during more sensitive times of day for adjacent residents.

In general, miscellaneous noise sources are not anticipated to generate noise levels in excess of standards in the City's general plan or noise ordinance or cause permanent substantial noise increases, relative to ambient noise levels.

7. References

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Appendix K Service Response Letters

Appendices

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From: Kimberly Ruddins <Kruddins@ontarioca.gov>
Sent: Tuesday, October 17, 2023 5:09 PM
To: Paul Ehrman <PEhrman@ontarioca.gov>; Joseph G. Estrada <JEstrada@ontariopolice.org>
Cc: Scott Murphy <SMurphy@ontarioca.gov>; Rudy Zeledon <RZeledon@ontarioca.gov>
Subject: Ontario Regional Sports Complex FIre and Police Service for EIR Project Description - Due by October 25, 2023
Importance: High

Hello,

Below please find the Conceptual Site Plan for the Ontario Regional Sports Complex for your review. In addition, as part of preparing the Supplemental Environmental Impact Report, it is very important that we have your agency's input. Below, please answer the questions related to your agency and **submit back by October 25, 2023**. If you have any questions, please call/e-mail as this is a priority project. Thank you in advance!

Fire

1. Which Fire Station(s) would serve the Ontario Regional Sports Complex (ORSC).
    - Please provide equipment for this station(s).
    - Please provide daily staffing for this station(s).

The primary response station is Station 3 with a 4 person paramedic engine. (4)
The secondary response stations are Station 6 with a four person paramedic engine (4) and Station 9 with a 4 person paramedic engine and a 4 person ladder truck. Haz Mat 139 is also cross staffed at this station. (8)

2. Please confirm or update the following Statement from the 2022 The Ontario Plan (TOP) 2050 SEIR: Ontario Fire Department (OFD) has 227 personnel, including 186 sworn firefighters and 41 professional staff members and operates with a daily staffing level of 59 sworn firefighters.

248 personnel, 204 sworn and 44 professional staff. Daily suppression staffing of 66

3. OFD's response to the department questionnaire for TOP 2050 SEIR stated that OFD's response time goal is to be on scene under 10 minutes at least 90 percent of the time for both fire and EMS calls.
    - Are these response times currently being met by the fire station(s) that would serve the project site?

Yes, we analyze our response data on a monthly basis and currently reach our response time goals approximately 93% of the time.

4. The Minor League Baseball Stadium would host fire works shows on Saturdays nights around 9:15 PM during the baseball season (April to September). These shows would need to be coordinate with the OFD.
    - Are there any restrictions about where fireworks could be set off from?
    - Are there any concerns regarding plans by the MiLB to provide weekly fireworks during the baseball season?

    There are no restrictions on the location from which the fireworks would be set off, but they would be required to go through an overall permitting process and have pyrotechnic standby just like we do with the 4th of July, Chaffey graduation, etc.

5. Does the OFD have concerns about providing service to the ORSC? If yes:
    - What additional equipment would be needed to maintain the Department's service goals with implementation of the project?
    - What additional personnel needs would be needed to maintain the Department's service goals with implementation of the project?

OFD has the equipment and manpower to handle day to day events at the ORSC. During special events with high crowd capacities, fire and/or medical teams may be required (similar to our medic carts at Route 66)

KIMBERLY RUDDINS
SUSTAINABILITY MANAGER

CITY OF ONTARIO PLANNING DEPARTMENT

909.395.2169 DIRECT
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CITY OF ONTARIO
303 EAST B STREET
ONTARIO, CA 91764

Police

1. Please confirm that the Ontario Police Department (OPD) station on 2500 S. Archibald Avenue in Ontario would respond to calls from the Ontario Regional Sports Complex (ORSC)?
   a. Please provide daily staffing for this station(s).

   Yes, Officers responding to calls for service will be assigned to our main station (2500 S. Archibald Ave). Currently, we have six different shifts for the patrol division. The minimum staffing for every shift is 17 (14 officers, 3 supervisors), except weekends swing shift which is 11 (8 officers, 3 supervisors).

2. Please confirm that OPD's existing staffing (sworn and non-sworn) is 300 officers, as stated in the 2022 The Ontario Plan (TOP) 2050 SEIR.

   We are slotted for 314 sworn with 27 openings.
   We are slotted for 115 non-sworn with 35 openings.

3. Please indicate the type of service calls or service demands anticipated by the proposed uses (baseball stadium, retail/hotel, community recreation)?

   The typical calls for service for this type of venue would be disturbances (loud music and verbal arguments), public intoxication, assaults, thefts, trespassing, illegal street vendors, and traffic related issues (parking and collisions).

4. Does the OPD have an established target response time for responding to calls? If so, is the OPD currently meeting those response times?

   We do not have a target response time, but we prioritize the calls for service based on the urgency. For example, a Priority 1 (most urgent) call will be dispatched to the closest most appropriate officer that is available to ensure we get officers on scene asap.

5. Does the OPD have concerns about providing service to the ORSC? If yes:
   a. What additional equipment would be needed to maintain the Department's service goals with implementation of the project? (e.g., lighting, security cameras, other)

   Required lighting for all walkways, driveways, doorways, parking areas, and other areas used by the public shall be provided and operate on photosensor. LED lighting will be required for all lighting fixtures. Optimal lighting for visibility and video color rendering is approximately 3400 degrees Kelvin. The lighting shall be as close to 3400 degrees Kelvin as possible. Photometrics shall be provided to the Police Department. Photometrics shall include the types of fixtures proposed and demonstrate that such fixtures meet the vandal-resistant requirement. Planned landscaping shall not obstruct lighting.

   Currently, we contract with Convergint Technologies and would go off their recommendations for optimum security camera coverage. The recommendation would be consistent with industry standards.

b. What additional personnel needs would be needed to maintain the Department's service goals with implementation of the project?

   We do not have any initial concerns about providing service to the ORSC, but as the project is completed and as more events are planned additional personnel will likely be required.

6. The ORSC includes a Minor League Baseball Stadium as well as youth sports events. As part of the project, an event management plan would be implemented. Please provide recommendations, if any, that could reduce the demand for police services created by the proposed project, including recommendations on parking and drop off.

   Recommendations for reduction of traffic related issues would be long que lines for vehicles waiting to pay for parking. This would ensure that traffic will not impact the main thoroughfare. Dedicated ride share pick up and drop off locations. Fixed digital overhead signage and a dedicated emergency lane. Lastly, dedicated pedestrian routes of travel, so they don't impede vehicle traffic.

From:	Jeremy Currier
To:	Lexie Zimny
Cc:	Sonia Diaz
Subject:	Re: Preparation of a Draft SEIR for the Proposed Ontario Regional Sports Complex
Date:	Tuesday, October 31, 2023 12:51:37 PM
Attachments:	image001.png School Impact Mitigation Funding Agreement - MVSD - Revised April 2015.pdf MountainViewSD_SchoolSites_SY2223.pdf

Good Afternoon Lexie –

Thank you for the email. Please see answers to your questions below as well as corresponding attachments.

1. *Is the elementary school site cited in the Armstrong Ranch Specific Plan considered a future school site by Mountain View School District? Please see the proposed location of the school site in Figure 5 of the NOP.* Yes, currently the school site indicated in Figure 5 of the NOP is a proposed future school site for MVSD.
    a. *If so, does the District have any existing documents (i.e. facilities master plan) that reference this school site and the District's plans for it? Please send any such documentation if available.* The proposed elementary is identified in the School Impact Mitigation Agreement between Mountain View School District and the owners of the New Model Colony (NMC) development. I have attached the agreement for your reference. Currently, the proposed elementary is identified as "Armstrong Elementary" in the Armstrong Ranch Specific Plan. I have also attached our recently updated Ontario Ranch proposed school site map for reference. On this map the site is identified as "ES #6 – Armstrong."

2. *Since the Proposed Project would not allow for the development of a school on this site, would this require the District to consider alternative sites for a new potential elementary school?* If the District were to determine that the changes to the Armstrong Specific Plan significantly impacted (lowered) the number of residential homes from which students would be generated, it is possible that the Armstrong proposed school site would not be necessary. Currently, the District is working to determine need for all proposed school sites in the Ontario Ranch development. In all likelihood, were to District to consider eliminating a proposed school site it would be the Armstrong school site.
    a. *If so, please send any available information about the alternative development sites/plans.* At this time, the District would not be able to indicate an alternative site, as this would require consultation with the developers who are party to our School Impact Mitigation Agreement.

3. *Does the District anticipate any additional impacts to school services or its long-range plans as a result of the Proposed Project?* If the plan is to replace what is originally planned as residential with a sports complex and supporting commercial property, there

would likely not be any additional impacts to school services or related long-term plans. The proposed plan revisions is situated on the western edge of the District, making it less impactful on school district services.

4. *Please list any additional comments that you may have on the Proposed Project.* No additional comments at this time.

Thank You -

Jeremy Currier
Assistant Superintendent
Personnel and Administrative Services
Mountain View School District