ENGINEERING EXHIBIT
FURTHER AMENDED APPLICATION FOR CONSTRUCTION PERMIT
AURORA COMMUNICATIONS, INC.
CARMEL VALLEY, CALIFORNIA
CH. 290A 0.720 KW (H & V) 288 METERS

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Aurora Communications, Inc. (hereafter, Aurora) is the applicant in FCC File No. BNPH-20050103AIN for a new FM station to serve Carmel Valley, California. The instant Engineering Exhibit supports a further amendment to the application. The now proposed operation continues to be on allotted Channel 290A, but the effective radiated power and antenna height above average terrain are changed in this amendment to reflect the effects of a correction in the site elevation. The new effective radiated power is 0.720 kW (H & V) and the new antenna radiation center height above average terrain is 288 meters. The power/height combination is equivalent to the maximum that is permitted for a Class A station.

This Engineering Exhibit includes a demonstration that the urban portion of Carmel Valley, as defined by the 2000 Census, is predicted to receive signal strength in excess of 70 dBu (3.16 mV/m).

In consonance with the requirement that all responses for FCC Form 301 be furnished, some previously submitted material is repeated herein.

PROPOSED TRANSMITTER LOCATION

Figure 2 is a portion of the U.S. Geological Survey (U.S.G.S.) 7.5-minute Chew's Ridge, California, topographic quadrangle showing the proposed site and vicinity. The site fulfills all minimum separation requirements of Section 72.207 for the Ch. 290A allotment at Carmel Valley. Figure 3 is an allocation study which lists each channel of allocation interest; the closest facility meriting consideration on each channel; the minimum required separation; and the actual separation.

The site is in a remote area, and is not near any airport. Since the overall antenna supporting tower height will only be 50 meters above ground level and the nearby terrain to the southeast of the proposed site exceeds the 1086 meter overall height above mean sea level of the proposed structure, notification of the proposed construction to the FAA is not required, nor is an Antenna Structure Registration required.

PROPOSED FACILITIES

Engineering specifications for major aspects of the proposed operation are furnished in Figure 1. The new antenna will be a 3-bay, circularly polarized, model, which will have a nominal power gain in each polarization plane of 1.5 relative to a half-wave dipole.

The antenna will be mounted with the radiation center 45 meters above ground level; 1081 meters above mean sea level. The transmission line that will distribute energy from the transmitter to the antenna will have a nominal diameter of 4.1 centimeters, and an approximate length of 55 meters. The length may vary depending on the exact distance that the transmitter building will be located from the antenna supporting tower. The transmission line efficiency for the assumed length is 91.6%. The transmitter power output, that is needed to produce an effective radiated power of 0.720 kW (H & V), is 0.524 kW.

COVERAGE CONTOURS

Figure 4 provides the 3-16 kilometer terrain elevation average for each 45°-spaced radial and for a ninth radial at an azimuth of 322° True through Carmel Valley. The 322° True radial is toward the urban portion of the Carmel Valley Census Designated Place (CDP). The urban portion is identified in the American FactFinder maps of the 2000 Census.

The terrain elevation data for the averages were obtained from the U.S.G.S. 3-arcsecond terrain elevation database. A sampling interval of 0.1 kilometer was used. The site elevation was obtained from the U.S.G.S. topographic map of Figure 2. The antenna radiation center height above the terrain average in each direction is included in the tabulation of Figure 4. Only the averages for the standard 45°-spaced radials were used to determine the overall radiation center height above average terrain.

In those directions where the antenna radiation center height above the terrain average was less than 30 meters, an assumption of a height of 30 meters above average terrain was employed for the calculation of the distance to the coverage contour, as required by the F.C.C. Rules. The calculated coverage contours for the proposed operation are depicted in Figure 5.

The community outlines that are depicted on the base map of Figure 5 have been downloaded from the Bureau of the Census web site. The map shows the outline of the Carmel Valley CDP. Figure 5 shows that the CDP is completely encompassed by the proposed 70 dBu contour, as required by the Rules.

SECTION 73.315 PRINCIPAL COMMUNITY COVERAGE COMPLIANCE

While the requirement for principal community coverage using the FCC's prediction methodology has been satisfied, a question has been raised concerning Aurora's compliance with the Section 73.315(b) requirement that there be no major terrain obstructions to the principal community from the transmitting facility. This issue was raised by Buckley Broadcasting of California as part of a Petition to Deny that was submitted on February 7, 2005.

The 2000Census defines a relatively large area as the Carmel Valley Census Designated Place (CDP). However, the 2000 Census, also, shows within the CDP, the

portion which is considered to be urban. Along with a March 25, 2005, Opposition to the Petition to Deny, Aurora submitted an amendment specifying a new site that is the same as the site herein. The new site eliminates the major terrain obstruction of the initial application toward the portion of the CDP that is urban. Since some parts of the urban portion of Carmel Valley were still terrain obstructed, the Engineering Exhibit part of the Amendment included a study using the Longley-Rice prediction methodology as support for demonstrating that, despite some terrain obstructions, principal community signal strength of 70 dBu, or greater, would be provided to more than 80 % of the urban portion of Carmel Valley. Considering the restrictions imposed on the site location in order to satisfy allocation spacing requirements, the proposed site offers the best possible coverage to Carmel Valley.

Buckley, on April 6, 2005, submitted a Reply to Opposition to Deny in which exception was taken to the presentation and the conclusions reached. One of the arguments in the Engineering Statement was that the "urban portion" (of Carmel Valley) was not derived "from any official source but rather by subjective selection of certain census blocks from the 2000 Census."

This assertion by Buckley's engineering consultant is erroneous. Attached herewith as Figures 9 through 12 are downloaded maps from the 2000 Census. The maps are from an official source and clearly identify the urban portions of Carmel Valley. The maps overlap one another and must be assembled to obtain the complete boundary.

Buckley's engineering consultant has asserted that three census blocks that are located at the northwest end of the "urban portion" of Carmel Valley are outside the CDP. This assertion is accurate, and resulted from an incorrect interpretation of the 2000 Census map of Figure 9. The urban portion of Carmel Valley depicted in Figure 7 of this exhibit shows the revised outline without the three blocks that were identified by Buckley's engineering consultant.

Finally, Buckley's engineering consultant, because of the revised urban area for Carmel Valley, contests the claim by the undersigned that more than 80% of the urban portion of Carmel Valley would be served with signal strength of 70 dBu, or greater. Buckley's contention is that the principal community coverage requirement of Section 73.315(a) of the Rules is not satisfied. There is no disagreement that the 70 dBu coverage encompassment requirement of the Rule is met using the FCC's contour prediction methodology.

In recognition of the changes that result from the instant amendment, the issue of Section 73. 315(a) compliance is readdressed. This Rule requires that a minimum field strength of 70 dBu be placed over the entire principal community. The undersigned has elected an alternative presentation which persuasively demonstrates that the proposed Aurora operation comports fully with the principal community coverage requirement of Section 73.315(a).

Section 73.314(c) codifies the procedures to be employed for the collection of field strength measurements to determine FM broadcast service in a specific community. The procedures are designed for the purpose of determining, by means of field strength measurements, the mean (average) signal strength provided to a community by a FM station.

In order to obtain a statistically valid number of locations for the measurements and to ensure that the locations are unbiased, Section 73.314 (c) specifies that a uniform grid be overlaid on the community, and that the measurements be made at the grid intersection locations (or, as close thereto as possible). The number of measurement locations is determined as a function of the population of the community, but, in no event, is the number to be less than fifteen. After the completion of the measurements, the mean value of the measured field strengths is determined, and this value is the indicator of the signal strength level available to the community.

Since the Aurora facility for Carmel Valley is not yet built, the determination of Longley-Rice predicted signal strengths at grid intersection points, as set forth in Section 73.314(c), provides the best possible method for establishing the mean signal that likely would be available to the community when the station would be operational . The Longley-Rice calculation methodology is, generally, conceded to be the best available prediction tool for obtaining results which most closely approach real-world conditions.

Thus, use of the Section 73.314 grid sampling approach, in conjunction with the Longley-Rice predictions at those locations, to determine the mean signal strength to the community, is directly analogous to the codified procedure in the Rules for determining Section 73.315(a) compliance for FM service to a community by an operational FM facility. This procedure is a logical extension of Section 73.314(c) and, in the absence of actual measurements, is a reasonable procedure for determining compliance with the principal community signal strength requirement of Section 73.315(a).

Figure 7 is a map that shows the outline of the urban portion of Carmel Valley as determined from a composite of the maps of Figures 9, 10, 11 and 12. The uniform grid that was used to determine the geographic coordinates for the locations for the point-to-point Longley-Rice calculations is shown, also. The tabulation of Figure 8 provides the results of the study.

In all, Longley-Rice field strength predictions were made at eighteen grid intersection locations. The minimum number of locations for a statistically valid sample for the 2720 persons within the urban portion of Carmel Valley is seventeen, based on use of the formula given in Section 73.314 (c)(1)(ii). As shown in Figure 8, the mean value of the eighteen predicted field strengths is 3.48 mV/m, corresponding to 70.8 dBu. Thus, the value of 3.16 mV/m (70 dBu) that is used as the threshold for satisfying the Section 73.315(a), principal community, signal strength requirement, is achieved.

Aurora's proposal, as now amended, provides the requisite principal community coverage to the urban portion of Carmel Valley.

While a waiver of Section 73.315(a) is not believed necessary since compliance with the Rule is established, a waiver for the use of Section 73.314(c) procedures, in tandem with the Longley-Rice prediction methodology, may be required to permit Aurora to make the most reliable prediction that is possible in a manner that is in consonance with the Rules. If so, a waiver is requested.

The algorithm developed by EDX was used for performing the Longley-Rice calculations. Terrain elevation samples were taken at 0.1 kilometer intervals. The cell sides for the calculations were 0.1 kilometer. F(50,50), location and time statistical variables were used with a 0 dB confidence factor. The EDX program permits an on screen determination of the predicted signal strength level at the mouse location. The mouse location was set, in turn, to each grid intersection location, and the field strength level was read directly off the screen.

The grid intersection points were established using geographic coordinates. The computer mouse screen location provides a determination of the coordinates to 0.01". Since the calculation cells were at 0.1 km intervals, it was not always possible to obtain an exact match. The signal strength level that was recorded was for the cell with geographic coordinates that, when rounded, matched the coordinates for the particular grid intersection point being studied.

ENVIRONMENTAL IMPACT CONSIDERATIONS

Although the vicinity of the site is remote from any populated area, consideration has been given to minimizing visual conspicuity of the antenna supporting tower. The

overall structure height is modestly high enough to avoid obstruction of the radiated signals by local trees and other greenery.

Since aeronautical navigation safety concerns are not in issue, and painting and lighting of the tower are not required, the tower, with a galvanized finish, will not stand out particularly, and, in any event, will not extend much above the natural tree landscape. If deemed desirable by the local permitting authority, Aurora is prepared to paint the tower portion above the treetop level sky blue, or any other color that may be preferred.

Except for the proximity to the National Forest, the site is not known to be in, or near, any location that is listed in Section 1.1307 of the Rules as being of an environmentally sensitive nature. Consideration has been given to the avoidance of overexposure of the general public (uncontrolled locations) and workers (controlled locations) to radio frequency radiation (rfr) according to the FCC's adopted Standard.

A worst-case calculation has been performed that theorizes that the entire 1.44 kW ERP is directed downward to an imaginary target that is located 2 meters above ground level at the tower base. This calculation yielded a power density level of 0.026 mW/cm^2 at the target. This result represents 13.0% of the maximum permissible exposure (MPE) of 0.2 mW/cm^2 that is specified for uncontrolled locations for the Ch. 290 frequency of 105.9 MHz.

Since the imaginary target is as close to the radiating source that a person at an uncontrolled location can stand, the result represents the maximum exposure that can occur anywhere at ground level. The foregoing assumes flat earth conditions.

As to controlled location (worker) exposure concerns, the following is germane. The tower base will be fenced, and the entry gate will be kept locked with access available only to authorized personnel. A radiation hazard warning sign will be posted to

alert persons of the potential for overexposure. The fenced area, therefore, will meet the requirements for a controlled location.

Whenever a worker must perform a task on the tower that will place him, or her, within 5 meters of the antenna, prior arrangements for terminating excitation to the antenna will be made. In this manner, overexposure of workers to rfr will be avoided.

Based on the foregoing, both the general public and workers will not be overexposed to rfr. Compliance with the FCC's adopted Standard will be achieved.

The foregoing discussion demonstrates that an environmental assessment is not required for the instant proposal.

I declare under penalty of perjury that the foregoing is true and correct. Executed on April 25, 2005.

Bernard R. Segal, P.E.

Bernard R. Segal, P. E.

BERNARD R. SEGAL, P. E.
CONSULTING ENGINEER
KENSINGTON, MARYLAND

Figure 1

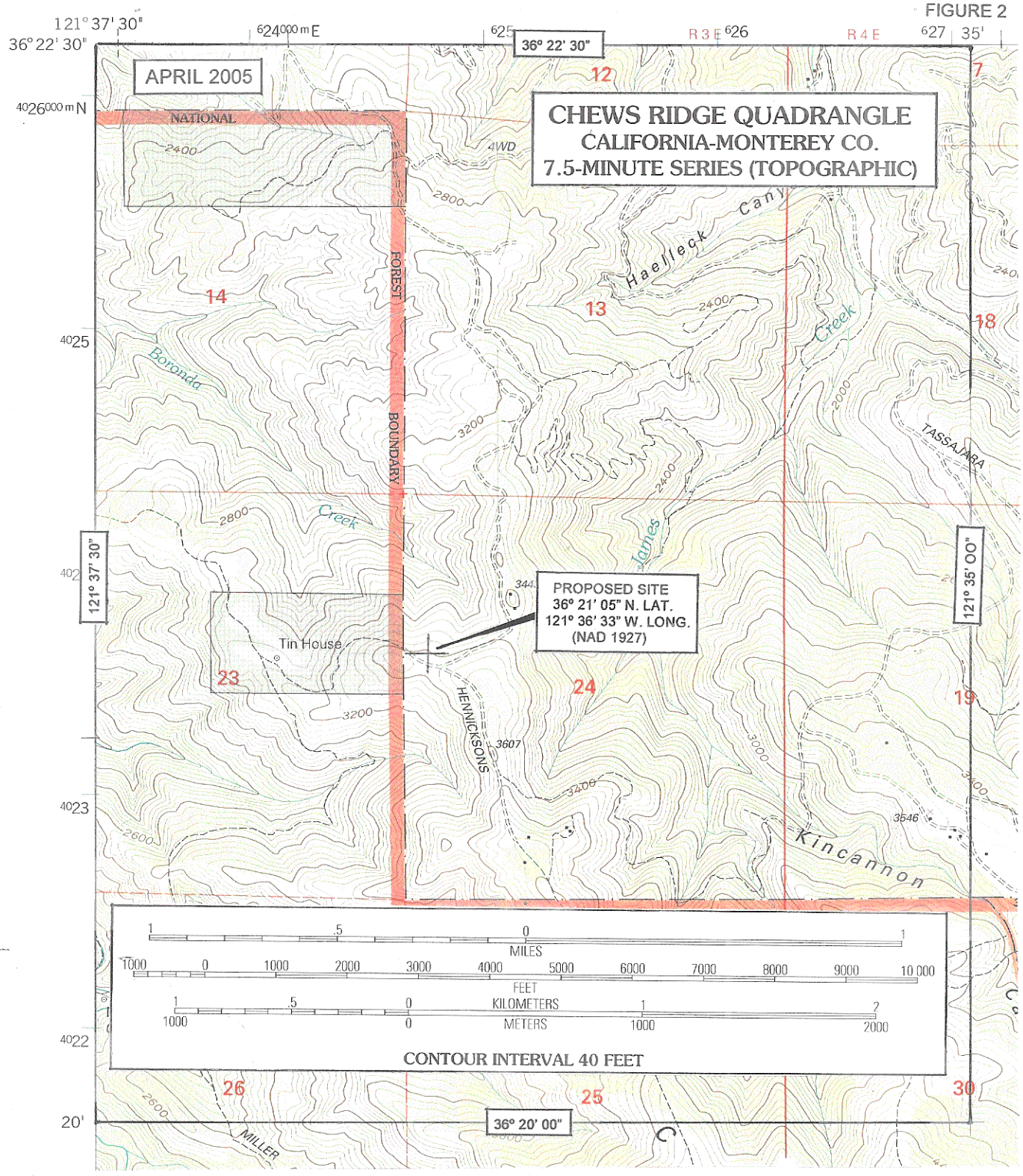
FURTHER AMENDED APPLICATION FOR CONSTRUCTION PERMIT
AURORA COMMUNICATIONS, INC.
CARMEL VALLEY, CALIFORNIA

Major Engineering Specifications

Channel	290A
Frequency	105.9 MHz
Site Coordinates (NAD 1927)	36° 21' 05" N. Lat. 121° 36' 33" W. Long.
Site elevation above mean sea level	1036 meters
Overall height of proposed antenna structure	
Above ground level	50 meters
Above mean sea level	1086 meters
Average elevation of terrain above mean sea level for eight standard radials, 3-16 kilometers	793 meters
Height of antenna radiation center	
Above ground level	45 meters
Above mean sea level	1081 meters
Above average terrain	288 meters

Note: Notification of the proposed construction to the FAA is not needed since the overall structure height is under 61 meters above ground level; is not near an airport, and the nearby terrain to the southeast of the site exceeds the overall structure height above mean sea level.

FIGURE 2



PROPOSED TRANSMITTER SITE AND VICINITY

AURORA COMMUNICATIONS, INC.
CARMEL VALLEY, CALIFORNIA
CH.290A 0.720 KW (H & V) 288 METERS

Bernard R. Segal, P. E. Consulting Engineer

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KENSINGTON, MARYLAND

Figure 3

FURTHER AMENDED APPLICATION FOR CONSTRUCTION PERMIT
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Allocation Study

Proposed Site Coordinates (NAD 1927): 36° 21' 05" N. Lat./121° 36' 33" W. Long.

Channel	Station/ Location	Geographic Coordinates (N. Lat./ W. Long.)	Class Relationship	Distance Required Minimum (km)	Distance Actual (km)
236	None sufficiently close for concern				
237	None sufficiently close for concern				
287	None sufficiently close for concern				
288	None sufficiently close for concern				
289	KVVF, Santa Clara, CA	37° 21' 32" 121° 45' 22"	A-B	113	112.6*
290	KKDG, Fresno, CA	37° 04' 23" 119° 25' 51"	A-B	178	210.5
291	None sufficiently close for concern				
292	KMJV, Soledad, CA	36° 16' 27" 121° 16' 15"	A-A	31	31.6
293	KEZR, San Jose, CA	37° 12' 32" 121° 46' 27"	A-B	69	96.2

* Rounds to 113 kilometers

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Figure 4

FURTHER AMENDED APPLICATION FOR CONSTRUCTION PERMIT
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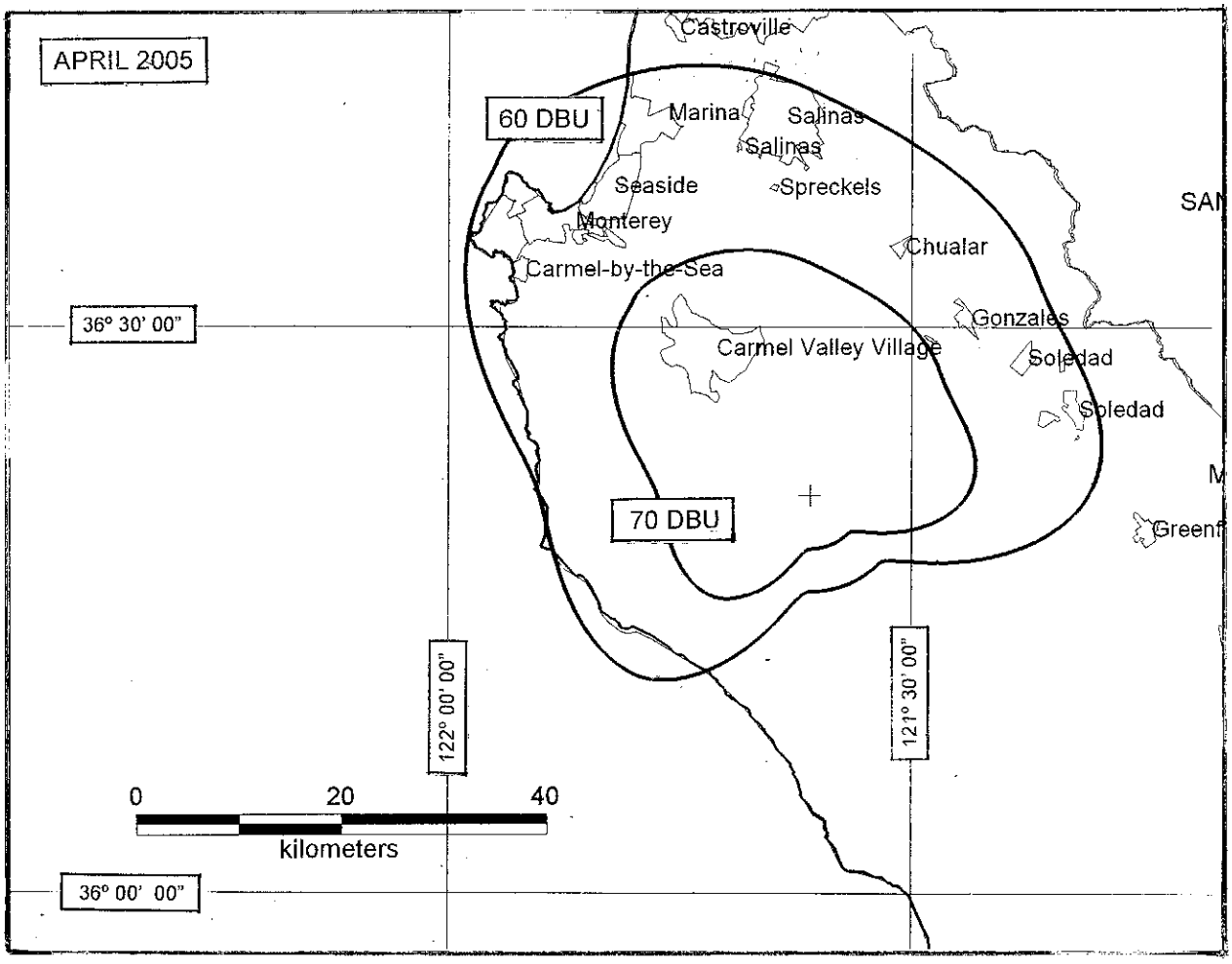
Tabulation of Average Elevations and Distances To Contours

Azimuth (Deg. T)	3-16 km Terrain Average (m AMSL)	Antenna Radiation Center Above Terrain Average (meters)	Distance To 70 dBu Contour (km)	Distance To 60 dBu Contour (km)
0	528	553	22.8	39.8
45	742	339	17.6	30.8
90	823	258	15.2	26.9
135	1088	-7	5.2	9.4
180	1051	30	5.2	9.4
225	867	214	13.8	24.6
270	836	245	14.8	26.2
315	413	668	25.2	43.9
322*	362	719	26.1	45.6
Average	793	288		

* Radial through Carmel Valley. The elevation data for this radial were not included in determining the overall averages

FIGURE 5



CALCULATED COVERAGE CONTOURS

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FIGURE 6

CALCULATED 70 DBU CONTOUR, ENLARGED

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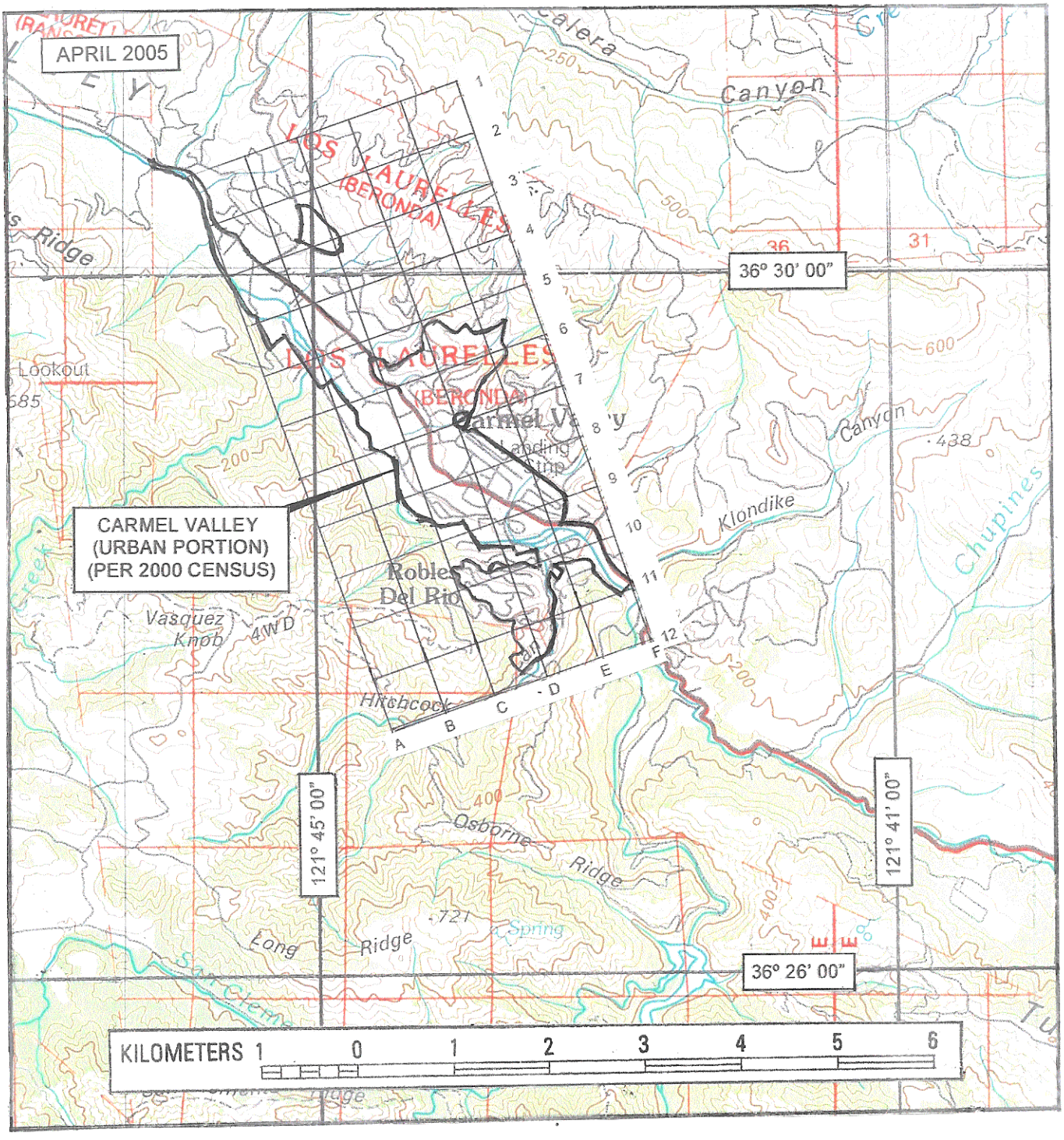
FIGURE 7.



URBAN PORTION OF CARMEL VALLEY
AND GRID FOR LONGLEY-RICE CALCULATIONS

AURORA COMMUNICATIONS, INC.
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Figure 8

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Tabulation of Longley-Rice Calculation Results

Point Number	Grid Location	Geographic Coordinates (N. Lat./ W. Long.)	Longley-Rice F(50,50) Field Strength (dBu)	(mV/m)
1	1-A	36° 30' 34"/ 121° 45' 51"	78.5	8.41
2	2-A	36° 30' 17"/ 121° 45'44"	70.9	3.51
3	3-A	36° 30' 00"/ 121° 45' 36"	69.4	2.95
4	3-C	36° 30' 10"/ 121° 44' 53"	79.1	9.02
5	4-B	36° 29' 40"/ 121° 45' 06"	61.3	1.16
6	5-B	36° 29' 31"/ 121° 44' 59"	69.0	2.82
7	6-C	36° 29' 20"/ 121° 44' 30"	66.1	2.02
8	6-D	36° 29' 26"/ 121° 44' 08"	72.5	4.22
9	6-E	36° 29' 33"/ 121° 43' 46"	79.9	9.89
10	7-C	36° 29' 03"/ 121° 44' 22"	65.5	1.88
11	7-D	36° 29' 09"/ 121° 44' 01"	69.5	2.99
12	8-C	36° 28' 46"/ 121° 44' 15"	68.6	2.69
13	8-D	36° 28' 52"/ 121° 43' 53"	66.2	2.04
14	9-D	36° 28' 34"/ 121° 43' 46"	63.4	1.48
15	9-E	36° 28' 40"/ 121° 43' 25"	67.6	2.40
16	10-D	36° 28' 18"/ 121° 43' 39"	63.4	1.48
17	10-E	36° 28' 20"/ 121° 43' 18"	64.0	1.58
18	11-D	36° 28' 01"/ 121° 43' 31"	66.6	2.14
		Mean		3.48

FIGURE 9

U.S. Census Bureau

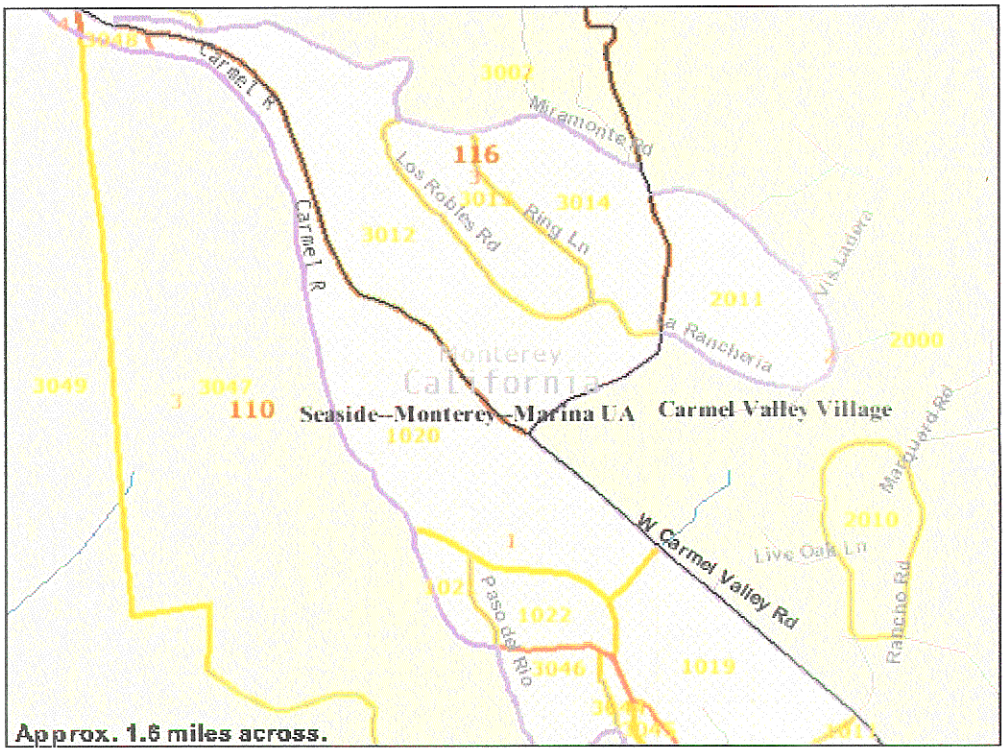
American FactFinder

APRIL 2005

Legend

Boundaries
- State
- '00 County
- '00 Census Tract
- '00 Block Group
- '00 Block
- '00 Place
- '00 Urban Area
- '00 Urban Area

Features
- Major Road
- Street
- Stream/Waterbody
- Stream/Waterbody



2000 CENSUS MAP OF NORTHWEST PART
OF URBAN PORTION OF CARMEL VALLEY

AURORA COMMUNICATIONS, INC.
CARMEL VALLEY, CALIFORNIA
CH.290A 0.720 KW (H & V) 288 METERS

Bernard R. Segal, P. E. Consulting Engineer

FIGURE 10

U.S. Census Bureau

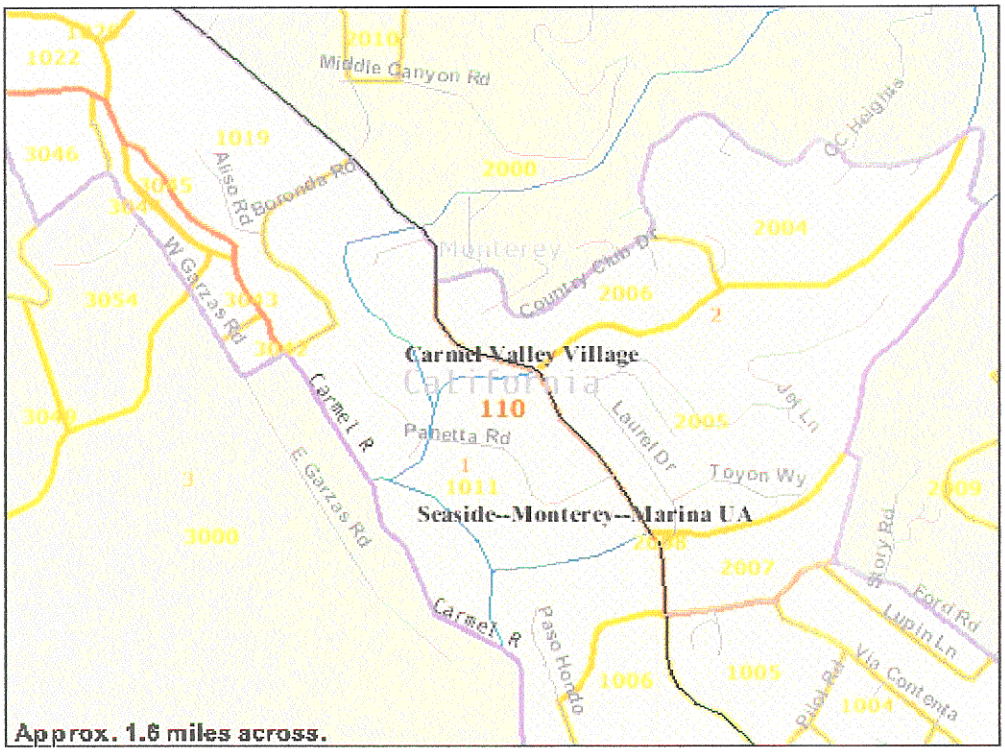
American FactFinder

APRIL 2005

Legend

Boundaries
- State
- '00 County
- '00 Census Tract
- '00 Block Group
- '00 Block
- '00 Place
- '00 Urban Area
- '00 Urban Area

Features
- Major Road
- Street
- Stream/Waterbody
- Stream/Waterbody



2000 CENSUS MAP OF NORTHWEST CENTER PART OF URBAN PORTION OF CARMEL VALLEY

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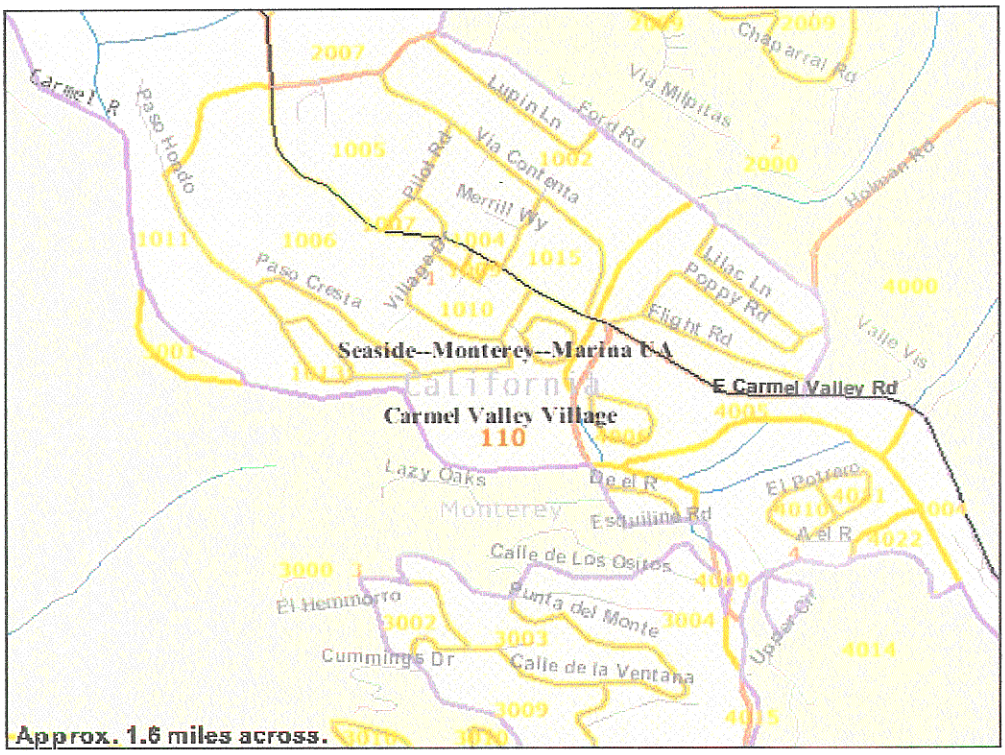
U.S. Census Bureau
American FactFinder

APRIL 2005

Legend

Boundaries
- State
- '00 County
- '00 Census Tract
- '00 Block Group
- '00 Block
- '00 Place
- '00 Urban Area
- '00 Urban Area

Features
- Major Road
- Street
- Stream/Waterbody
- Stream/Waterbody



2000 CENSUS MAP OF SOUTHEAST CENTER PART OF URBAN PORTION OF CARMEL VALLEY

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Bernard R. Segal, P. E. Consulting Engineer

FIGURE 12

U.S. Census Bureau

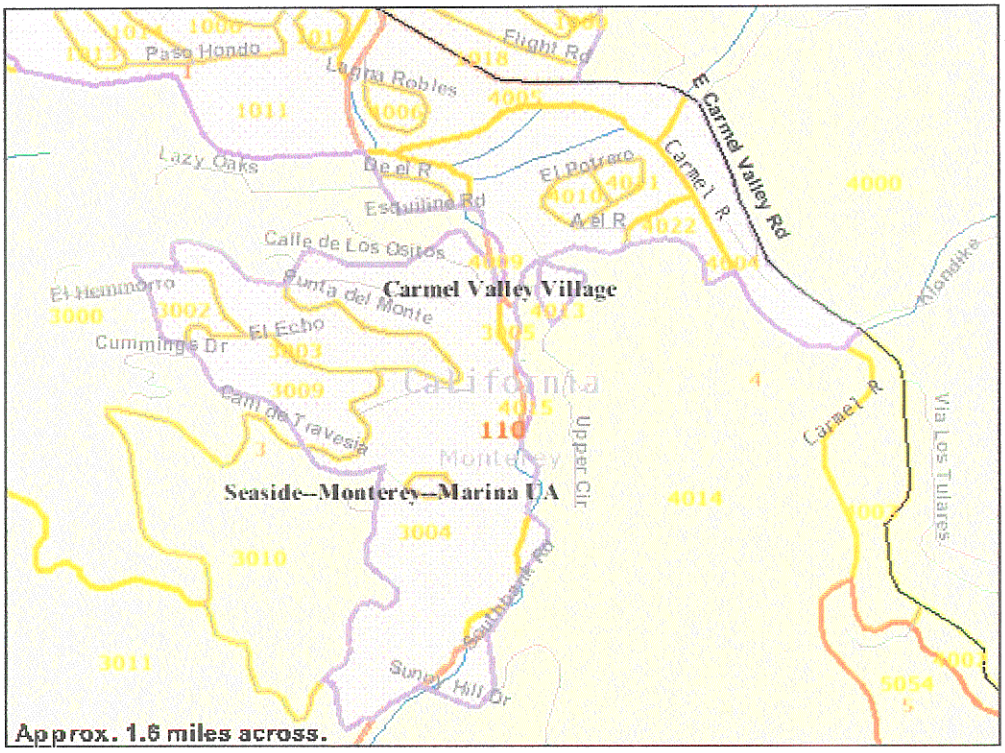
American FactFinder

APRIL 2005

Legend

Boundaries
- State
- '00 County
- '00 Census Tract
- '00 Block Group
- '00 Block
- '00 Place
- '00 Urban Area
- '00 Urban Area

Features
- Major Road
- Street
- Stream/Waterbody
- Stream/Waterbody



2000 CENSUS MAP OF SOUTHEAST PART OF URBAN PORTION OF CARMEL VALLEY

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