

ENGINEERING STATEMENT
APPLICATION TO INCREASE DAYTIME POWER
WFED, SILVER SPRING, MARYLAND
1050 KHZ 0.044/3.5 KW ND-U

JANUARY 2007

COHEN, DIPPELL AND EVERIST, P.C.
CONSULTING ENGINEERS
RADIO AND TELEVISION
WASHINGTON, D.C.

COHEN, DIPPELL AND EVERIST, P. C.

City of Washington)
) ss
District of Columbia)

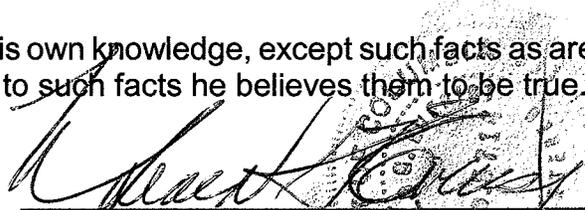
Donald G. Everist, being duly sworn upon his oath, deposes and states that:

He is a graduate electrical engineer, a Registered Professional Engineer in the District of Columbia, and is President, Secretary and Treasurer of Cohen, Dippell and Everist, P.C., Consulting Engineers, Radio - Television, with offices at 1300 L Street, N.W., Suite 1100, Washington, D.C. 20005;

That his qualifications are a matter of record in the Federal Communications Commission;

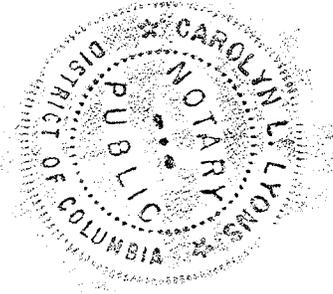
That the attached engineering report was prepared by him or under his supervision and direction and

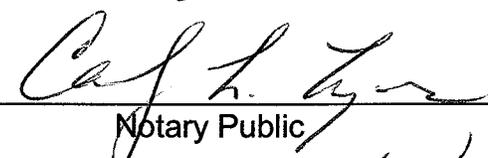
That the facts stated herein are true of his own knowledge, except such facts as are stated to be on information and belief, and as to such facts he believes them to be true.



Donald G. Everist
District of Columbia
Professional Engineer
Registration No. 5714

Subscribed and sworn to before me this 17th day of January, 2007.





Notary Public

My Commission Expires: 2/28/2008

COHEN, DIPPELL AND EVERIST, P. C.

City of Washington)
) ss
District of Columbia)

Martin R. Doczkat being duly sworn upon his oath, deposes and states that:

He is a graduate electrical engineer of the Pennsylvania State University, and is a staff engineer at Cohen, Dippell and Everist, P.C., Consulting Engineers, Radio - Television, with offices at 1300 L Street, N.W., Suite 1100, Washington, D.C. 20005;

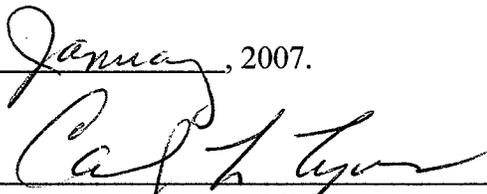
That the attached engineering report was prepared by him or under his supervision and direction and

That the facts stated herein are true of his own knowledge, except such facts as are stated to be on information and belief, and as to such facts he believes them to be true.



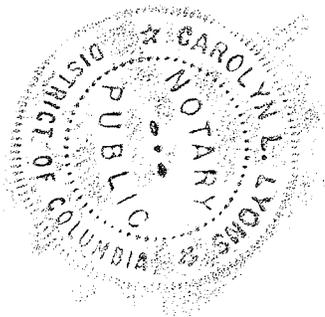
Martin R. Doczkat

Subscribed and sworn to before me this 17th day of January, 2007.



Notary Public

My Commission Expires: 2/28/2008



This engineering statement has been prepared on behalf of Bonneville Holding Company, licensee of WFED, Silver Spring, Maryland, in support of its application to increase daytime power from 1 kW to 3.5 kW using the existing transmitter site and antenna system. No other changes are requested.

The licensed geographic coordinates of the existing site abstracted from the current license remain unchanged and are as follows:

North Latitude: 39° 00' 51"

West Latitude: 71° 01' 46"

NAD-27

The antenna registration number is 1058238.

The proposed power increase will raise the daytime radiation efficiency for the non-directional operation of WFED from 307.38 mV/m at one kilometer to 575.06 mV/m at one kilometer.

Antenna Data

Physical height: 74.1 meters

Electrical height: 92.2 degrees

Ground system: 120 radials 240' long plus 120 radials 50' long.

Theoretical efficiency: 307.38 mV/m/kW

Antenna is diplexed with a 1540 KHz station, WACA.

Transmitter

Physical location: Near junction of Capital Beltway & Sligo Creek Pkwy,
Silver Spring, MD

Remote location: 3400 Idaho Avenue, NW, Washington, DC 20016

Currently WFED operates non-directionally at nighttime with a power of 0.044 kW. Further, in accordance with Section 73.99 of the FCC Rules, WFED is authorized by a telegraphic authority pre-sunrise for an operation between 6 AM local time and sunrise times specified in basic instrument of authorization with daytime antenna and a power of 500 watts determined by the direct method. A copy of that telegraphic authority is included as Attachment A. No change in these current authorizations is requested.

Preliminary field strength measurements were performed in various directions and on those stations of allocation significance. These preliminary field strength measurements were analyzed and the actual groundwave conductivities were found substantially lower than that depicted in the FCC conductivity map, Figure M-3. Accordingly, the technical staff composed of the Bonneville Holding Company and the WTOP technical staff performed additional measurements on numerous radials to and from various daytime stations involved in this allocation situation. These field strength measurements were made in order to obtain the required data to establish that no prohibited overlap of the pertinent contours based on current FCC Rules or policy of the respective stations occurs.

Domestic Allocation

Daytime field strength measurements were performed on the following stations:

<u>Station</u>	<u>Location</u>	<u>Frequency</u>	<u>Operation</u>
WFED	Silver Spring, MD	1050 KHz	1 kW ND
WVXX	Norfolk, VA	1050 KHz	5 kW DA
WMSG	Oakland, MD	1050 KHz	1 kW ND-D
KYW	Philadelphia, PA	1060 KHz	50 kW DA-1
WWGB	Indian Head, MD	1030 KHz	50 kW DA-D

Further to supplement the WMSG measurements, the test transmitter measurements performed in 1962 by this office's predecessor at the former site are included. The distances between WFED and the former and current WMSG site is slightly less than two miles in this direction.

The values of conductivity used as a basis for the coverage map and for the interference studies for all stations are those shown on the map entitled, "F.C.C. Figure M-3 Estimated Effective Ground Conductivity in the United States" dated 1954, except where field strength measurements are performed. The distances to the various contours were obtained with reference to Graph 12, 970-1030 kHz and Graph 13, 1040-1100 kHz of Section 73.184 of the FCC Rules. Where changes in conductivity occur, the equivalent distance method of computation was used.

Along certain directions which the signal traverses the Chesapeake Bay, the changes in conductivity beyond the measured data was obtained by abstracting the relevant information from

Washington World Aeronautical Chart. This map, as well as other 1/100,000 scale maps, were developed by this firm's predecessor in the late 1950's. The FCC estimated conductivity data was transferred to these 1/1,000,000 scale maps using an original Mylar print map published by the United States Department of Interior Geological Survey with a scale of 1/2,500,000. These base conductivity values which replicate the Commission's estimated conductivity map but on a larger scale map were and have been used by this firm or its predecessors which have resulted in numerous grants and hearing cases over the past 40 years. The maps permit more detailed determination of conductivity changes to relevant earth surface features. Hence, manual equivalent distance calculations can be performed and plotted. For example, in this special case, in and around the Chesapeake Bay area this effort is especially necessary to produce the most accurate contour prediction. Then, the relevant contours, thus determined were transferred to the allocation map provided herein. The basic conductivity values published in the FCC Rules have been transferred to a Maptitude map as shown on the allocations exhibit, Exhibit E-4.

The estimated conductivity values abstracted from the M-3 map were assumed for computing the extent of the present and proposed 1000 mV/m contour. It is believed that the increase in daytime power will not result in any significant interference per Section 73.88 of the FCC Rules within the proposed 1000 mV/m contour. However, in the event an interference situation arises, WFED will satisfy all reasonable complaints.

A table of azimuths, inverse distance field values and the conductivity used as a basis for all coverage and interference contours are shown in Table I. Coverage maps for the present 1 kW (Exhibit E-2), and the proposed 3.5 kW (Exhibit E-3) non-directional operation are included.

Detailed maps portraying the proposed WFED co-channel interference contour and WVXX 0.5 mV/m predicted contour reflect insignificant overlap to WVXX. This slight overlap arises as a result of the salt water path in the Chesapeake Bay which the WVXX signal is propagated.

The WVXX operates daytime a directional antenna system composed of two towers. The design of the daytime radiation pattern restricts the energy to the north and has its major lobe directed south towards the populated area of Norfolk and surrounding Norfolk-Virginia Beach area. The suppressed area of the directional pattern serves to constrain its signal towards the rural areas to the north on either side of the Chesapeake Bay. For example, the City of Norfolk is totally separated by the bay in the area of the Delmarva Peninsula. The Chesapeake Bay Bridge-Tunnel connects the Norfolk-Virginia Beach area with the Delmarva Peninsula. Based on field measurements along the N 24°ET radials the WVXX 0.5 mV/m extends just into the Delmarva Peninsula near the Cheriton-Cape Charles area (southern most tip of the Delmarva Peninsula). The Delmarva Penninsula is a separate land mass and based on the latest Arbitron map is a completely separate market.

As noted above the WVXX antenna system suppresses the signal in the direction of the Chesapeake Bay and the Delmarva Peninsula. The predicted WVXX signal is not present for approximately 80 km along US Route 13 to the north towards Pocomoke City. The WVXX 0.5 mV/m signal is predicted to reoccur as it skirts along the bay further northward near the Delmarva Penninsula state line separating Virginia and Maryland. The only appearance of the 0.5 mV/m WVXX as a non-contiguous signal along the Delmarva Penninsula's shoreline is due to the saltwater path offered by the Chesapeake Bay. The majority of the WVXX 0.025 mV/m and 0.5 mV/m

contours shown on the allocation map, Exhibit E-4, have been extracted from Exhibit 7 of the November 1968¹ request for the proposed 1050 KHz WCMS operation to serve the Norfolk-Virginia Beach area, except in cases where measurements have been performed. Currently, there exists overlap in the non-contiguous WVXX service area by the current 1 kW WFED operation. The proposed 3.5 kW will increase slightly this overlap of the non-contiguous service area near the Virginia-Maryland state line on the Delmarva Peninsula as shown on Exhibit E-5. The overlap area is centered approximately over 100 km from the WVXX transmitter site and well away from the inherent contiguous WVXX 0.5 mV/m service area. The increase in overlap on the WVXX 0.5 mV/m non-contiguous service area due to the proposed 3.5 kW operation of WFED where overlap does not already occur from the currently licensed 1 kW operation of WFED is 8,041 people in 347.1 square kilometers.

Therefore, it is believed that the WFED proposal is in compliance with Section 73.37 of the FCC Rules. However, if a waiver of Section 73.37 is deemed necessary for the slight overlap, it is hereby requested.

Field strength measurements were performed by Talmage Ball and Art Rose. The field strength meter utilized for the measurements was a Potomac Instruments, Type FIM-21, Serial Number 973. The field strength meter was calibrated by the manufacturer on January 19, 2005. The meter has been compared with other meters of known accuracy.

¹Figure 7 entitled, "Allocation Study, WCMS Radio Norfolk, Incorporated; WCMS, Norfolk, Virginia, 1050 KHz, 50 kW Day, November 1968"

Tabulations of field strength measurements are shown in tabular form and provide the point number, distance in kilometers from the transmitter site, date and time, the measured field strength in mV/m and the coordinates obtained by using a GPS device.

Canadian Allocation

The frequency, 1050 KHz, is a Canadian, Class A channel and therefore under the treaty provisions, is entitled to special daytime consideration by proposed U.S. operations. The proposed WFED 0.005 mV/m daytime contour in the direction of the Canadian border is totally contained within the continental United States. The predicted proposed 0.005 mV/m contour at its furthest point is separated from the Canadian border by over 100 km. There are no critical hours requirements on this channel.

Population information is based on the computerized Bureau of the Census for 2000 population data.

The attached measured data contained in Appendix A was analyzed by graphical analysis on 8.5"x11" graph paper utilizing a computerized program for plotting the data. Family of curves are provided for reference.

Environmental Statement

No changes to the physical antenna structure or the surrounding area are proposed. The 20'x20' fence with a locked gate surrounding the existing WFED transmitter site exceeds the guidelines set forth in OET Bulletin No. 65, Edition 97-01, released August 1997, and Supplement A.

Cohen, Dippell and Everist, P.C.

ATTACHMENT A

CURRENT WFED AUTHORIZATION
FOR PRE-SUNRISE
SERVICE AUTHORITY
PER SECTION 73.99
OF THE FCC RULES

BC lic

FEDERAL COMMUNICATIONS COMMISSION	PRECEDENCE	SECURITY CLASSIFICATION
	ACTION: INFO:	

ACCOUNTING CLASSIFICATION COLLECT	DATE PREPARED 12-15-70 10:50	TYPE OF MESSAGE
--------------------------------------	---------------------------------	-----------------

FOR INFORMATION CALL		<input checked="" type="checkbox"/> SINGLE <input type="checkbox"/> BOOK <input type="checkbox"/> MULTIPLE ADDRESS
NAME Odis Hanson, Chief Aural Existing Facilities Branch	PHONE NUMBER 6327010	

THIS SPACE FOR USE OF COMMUNICATION UNIT

of

MESSAGE TO BE TRANSMITTED (Use double spacing and all capital letters)

TO:

WGA4
 WEA, INCORPORATED
 RADIO STATION W Q M R (PHONE AND MAIL)
 SILVER SPRING, MARYLAND

REFERENCE 8840-H . RELET ATTY 12-11-70.

PURSUANT TO SECTION 73.99 RULES THIS TELEGRAM CONSTITUTES
 PRE-SUNRISE SERVICE AUTHORITY FOR OPERATION BETWEEN
 6:00 AM LOCAL TIME AND SUNRISE TIMES SPECIFIED IN BASIC
 INSTRUMENT OF AUTHORIZATION WITH DAYTIME ANTENNA AND
 POWER OF 500 WATTS DETERMINED BY DIRECT METHOD. COMPUTE
 ANTENNA CURRENT UTILIZING LAST ANTENNA RESISTANCE
 MEASUREMENT DATA SUBMITTED TO COMMISSION. POST THIS
 AUTHORIZATION OR PHOTO COPY WITH STATION LICENSE.

FRANCIS R. WALSH, CHIEF BROADCAST BUREAU
 FEDERAL COMMUNICATIONS COMMISSION

A or A1

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~~Director's Room~~
 Bilger, Blair & Glaser

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SECURITY CLASSIFICATION

Cohen, Dippell and Everist, P.C.

TABLE I
AZIMUTH AND RADIATION
FOR INTERFERENCE STUDIES
OF THE PROPOSED DAYTIME OPERATION OF
WFED, SILVER SPRING, MARYLAND
1050 KHZ 3.5 KW ND-D
JANUARY 2007

WFED, Silver Spring, Maryland, 1050 KHz, 3.5 kW ND-D

<u>Contour</u>	<u>Azimuth</u> N ° E, T	<u>Inverse</u> <u>Distance Field</u> mV/m	<u>Conductivity</u> <u>Basis</u>
0.025,0.25,0.5 & 5.0	0	575.06	M-3
	10	575.06	M-3
	21	575.06	Measured, M-3
	31	575.06	Measured, M-3
	41	575.06	Measured, M-3
	51	575.06	Measured, M-3
	61	575.06	Measured, M-3
	71	575.06	Measured, M-3
	80	575.06	Measured, M-3
	90	575.06	Measured, M-3
	100	575.06	Measured, M-3
	105	575.06	Measured, M-3
	110	575.06	Measured, M-3
	120	575.06	Measured, M-3
	125	575.06	Measured, M-3
	130	575.06	Measured, M-3
	135	575.06	Measured, M-3
145	575.06	Measured, M-3	

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FOR INTERFERENCE STUDIES
OF THE PROPOSED DAYTIME OPERATION OF
WFED, SILVER SPRING, MARYLAND
1050 KHZ 3.5 KW ND-D
JANUARY 2007
(continued)

<u>Contour</u>	<u>Azimuth</u> N ° E, T	<u>Inverse</u> <u>Distance Field</u> mV/m	<u>Conductivity</u> <u>Basis</u>
0.025,0.25,0.5 & 5.0	155	575.06	Measured, M-3
	165	575.06	Measured, M-3
	175	575.06	Measured, M-3
	185	575.06	Measured, M-3
	195	575.06	Measured, M-3
	205	575.06	Measured, M-3
	215	575.06	Measured, M-3
	220	575.06	M-3
	230	575.06	M-3
	240	575.06	M-3
	250	575.06	M-3
	262	575.06	Measured, M-3
	272	575.06	Measured, M-3
	282	575.06	Measured, M-3
	292	575.06	Measured, M-3
	302	575.06	Measured, M-3
	310	575.06	M-3
	320	575.06	M-3

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AZIMUTH AND RADIATION
FOR INTERFERENCE STUDIES
OF THE PROPOSED DAYTIME OPERATION OF
WFED, SILVER SPRING, MARYLAND
1050 KHZ 3.5 KW ND-D
JANUARY 2007
(continued)

<u>Contour</u>	<u>Azimuth</u> N ° E, T	<u>Inverse</u> <u>Distance Field</u> mV/m	<u>Conductivity</u> <u>Basis</u>
0.025,0.25,0.5 & 5.0	330	575.06	M-3
	340	575.06	M-3
	350	575.06	M-3

KYW, Philadelphia, Pennsylvania, 1060 KHz, 50 kW, DA-1

<u>Contour</u>	<u>Azimuth</u> N ° E, T	<u>Inverse</u> <u>Distance Field</u> mV/m	<u>Conductivity</u> <u>Basis</u>
0.25 & 0.5	190	2859.05	Measured, M-3
	205	2162.51	Measured, M-3
	215	1824.32	Measured, M-3
	232	1595.07	Measured, M-3
	252	1915.91	Measured, M-3

WVXX, Norfolk, Virginia, 1050 KHz, 5 kW, DA-2

<u>Contour</u>	<u>Azimuth</u> N ° E, T	<u>Inverse</u> <u>Distance Field</u> mV/m	<u>Conductivity</u> <u>Basis</u>
0.025 & 0.5	24	306.92	Measured, M-3
	310	713.38	Measured, M-3

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TABLE I
AZIMUTH AND RADIATION
FOR INTERFERENCE STUDIES
OF THE PROPOSED DAYTIME OPERATION OF
WFED, SILVER SPRING, MARYLAND
1050 KHZ 3.5 KW ND-D
JANUARY 2007
(continued)

325	526.31	Measured, M-3
340	354.44	Measured, M-3

WMSG, Oakland, Maryland, 1050 KHz, 1 kW, ND-1

<u>Contour</u>	<u>Azimuth</u> N ° E, T	<u>Inverse</u> <u>Distance Field</u> mV/m	<u>Conductivity</u> <u>Basis</u>
0.025 & 0.5	92	295.4	Measured, M-3
	102	295.4	Measured, M-3
	112	295.4	Measured, M-3

WWGB, Indian Head, Maryland, 1030 KHz, 50 kW, DA-D

<u>Contour</u>	<u>Azimuth</u> N ° E, T	<u>Inverse</u> <u>Distance Field</u> mV/m	<u>Conductivity</u> <u>Basis</u>
5.0	15	961.64	Measured, M-3
	315	4160.43	Measured, M-3
	335	3624.98	Measured, M-3
	355	2317.10	Measured, M-3

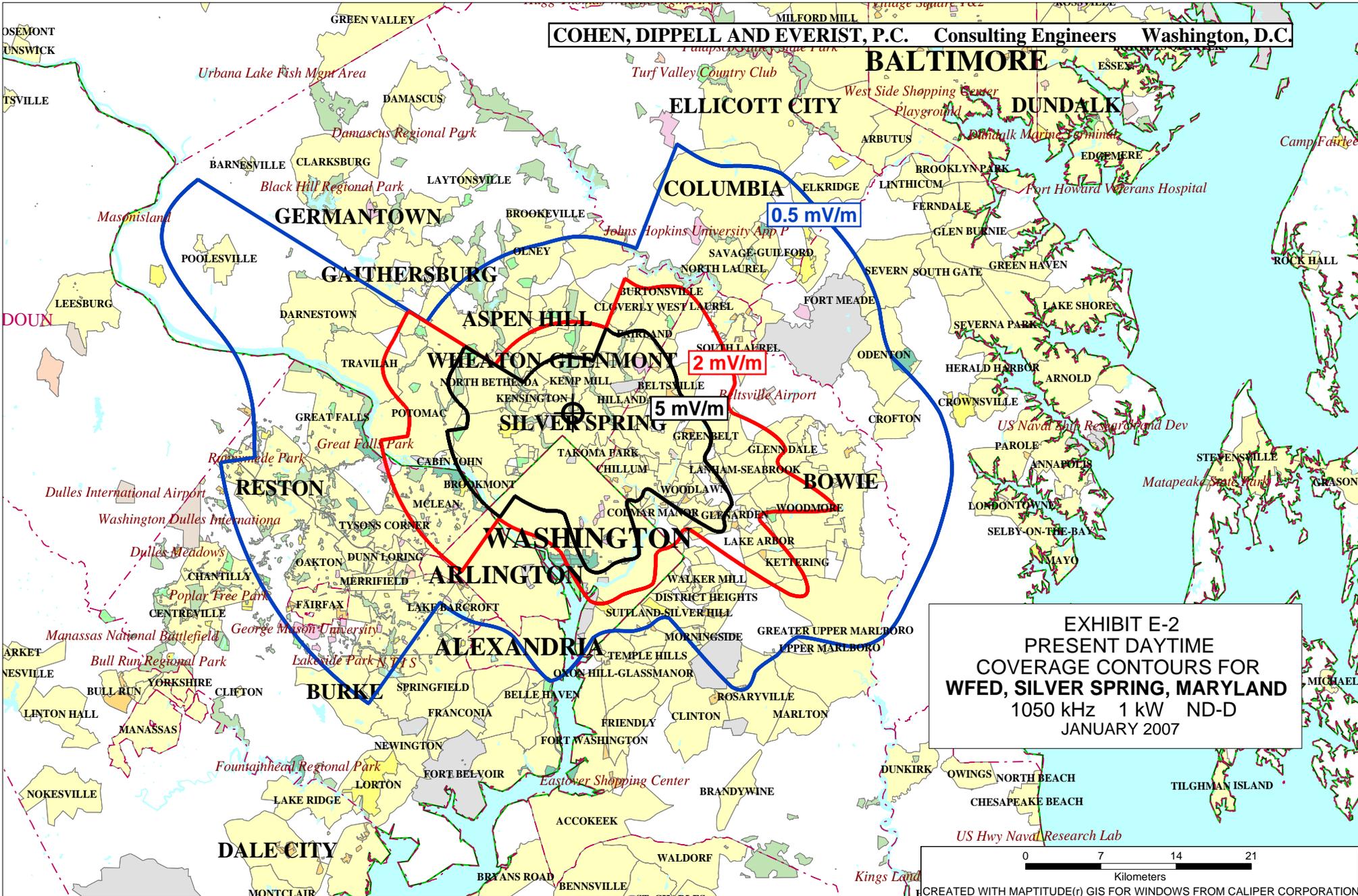


EXHIBIT E-2
PRESENT DAYTIME
COVERAGE CONTOURS FOR
WFD, SILVER SPRING, MARYLAND
1050 kHz 1 kW ND-D
JANUARY 2007

0 7 14 21
Kilometers

