Comprehensive Technical Exhibit

Application for Construction Permit

K249EL - Williamsburg, Iowa

Extreme Grace Media, Inc.

July, 2011

Application for Construction Permit

The following engineering statement and attached exhibits have been prepared for **Extreme Grace Media, Inc.** ("XGM"), licensee of FM translator station K249EL at Williamsburg, Iowa, and are in support of their application for construction permit to modify that facility.[1] This submission seeks to relocate the licensed translator, and change its channel of operation. The antenna center of radiation above mean sea level will also be modified as will the effective radiated power.

K249EL currently translates NCE FM Station KXGM-FM at Hiawatha, Iowa. Under this proposed relocation, the primary station will remain unchanged. The Facility ID for KXGM-FM at Hiawatha, Iowa is 85165. Exhibit E-1 compares the proposed K249EL 60 dBu service contour to the licensed KXGM-FM 60 dBu service contour.

K249EL would continue to receive its programming via off-air reception. As indicated in Exhibit E-1, a portion of the translator 60 dBu service contour would lie outside of the primary station 60 dBu contour. Thus, the facility would not be considered a fill-in translator, and would be bound by the height/power limitation table in Section 74.1235. The proposed effective radiated power of 62 Watts is consistent with those limitations.

The table below lists the average terrain along the relevant translator azimuths. As this table indicates, the radial with the lowest average terrain elevation is the 120 degree radial at an average of 232.7 meters above mean sea level. As indicated on the form pages, the center of radiation is proposed to be located at 279 meters AMSL, or 46.3 meters above average terrain. At

[1] The Facility ID for K246BE at Williamsburg, IA is 152290. The FCC File Number of the original application is BPFT-20110309ABM.

this height, a maximum effective radiated power of 250 Watts would be permissible, although a lower maximum effective radiated power is proposed under this application.

30 Second Terrain Database

Starting point coordinates: 41 50 8 91 50 57

Maximum distance: 16.0 km Distance increment: .050 km

Azimuth	Endpoint Coordinates		3 - 16 km Average Elevation	Total Path Delta H
.0	41.9795	91.8492	259.3 meters	23.0 meters
30.0	41.9602	91.7524	249.9	24.0
60.0	41.9074	91.6817	255.2	24.0
90.0	41.8354	91.6560	243.5	32.0
120.0	41.7635	91.6821	232.7	45.0
150.0	41.7109	91.7528	234.7	38.0
180.0	41.6916	91.8492	244.8	43.0
210.0	41.7109	91.9456	240.4	43.0
240.0	41.7635	92.0163	244.3	44.0
270.0	41.8354	92.0423	258.4	35.0
300.0	41.9074	92.0166	254.2	16.0
330.0	41.9602	91.9459	256.6	13.0

Average of all radials: 247.8 meters

The proposed facility would comply with the interference provisions of Section 74.1204 of the Commission's Rules. The television channel six interference provisions of Section 74.1205 are not applicable due to the channel of operation. Compliance with the interference provisions is demonstrated through contour, Longley-Rice, and tabular methodologies.

Exhibit E-2 is a tabular contour based allocation study for the proposed facility, while Exhibit E-3 graphically illustrates the contour situation. As these two exhibits demonstrate, the proposed facility would not have any prohibited contour overlap with any proposed or authorized co-channel or first adjacent channel facility. Exhibit E-2 demonstrates that there would be normally prohibited contour overlap between the proposed facility and WMT-FM at Cedar Rapids, Iowa.[2]

[2] The Facility ID for WMT-FM at Cedar Rapids, Iowa is 73594.

Even though normally prohibited contour overlap between the two facilities would exist, this overlap is not predicted to cause interference to any resident or transient population within the vicinity of the K249EL site. Initially the proposed facility was studied under the Longley-Rice propagation model. Exhibit E-4 is the map detailing the findings of this study, and Exhibit E-5 is the population tabulation for the study. As both exhibits demonstrate, the proposed facility is not predicted to cause interference to WMT-FM.

In addition to the Longley-Rice study, a contour/tabulation based field strength study was also performed. This study considered a family of FCC service contours from WMT-FM, and then using the defined U/D ratio for interference determined the field strength at which interference is predicted to occur. Exhibit E-6 illustrates the family of contours, and demonstrates that the WMT-FM field strength is approximately 77 dBu in the immediate vicinity of the proposed tower site. For the purposes of this study, the WMT-FM field strength will be reduced to 76 dBu for a worst-case scenario.

The proposed facility would operate as a third adjacent facility to WMT-FM. Since the U/D ratio for third adjacent facilities is 40 dB, the field strength at which interference from the proposed facility to WMT-FM would occur is 116 dBu.

The power density for the proposed facility at a field strength of 116 dBu is given by the following equation:

$$S = \frac{E^2}{Z_0} = \frac{(0.6310)^2}{377} = 0.001056 \qquad \textit{Eq. 1}$$

In this equation, S represents the calculated power density in Watts per square meter, E is the electric field intensity, which for 116 dBu is 0.6310 Volts per meter, and Z_0 is the characteristic impedance of free space of 377 Ohms.

The power density is also given by:

$$S = \frac{P}{4\pi R^2} \qquad \textit{Eq. 2}$$

Where S is in the same units, P is the power in Watts (62 in this case), and R is the distance. Rearranging the terms in the equation, it can be solved for the distance to the desired power density as follows:

$$R^2 = \frac{P}{4\pi S} \qquad \textit{Eq. 3}$$

The results of these calculations for depression angles of 0 degrees to 90 degrees are tabulated in Exhibit E-7. It was assumed for these calculations that a Shively 6812-2 antenna would be utilized. This antenna is assumed to be omni-directional in the horizontal plane. The relative field values at the listed depression angles are based on the published data for the antenna.

The resulting "R" or radius value from Eq. 3 corresponds to the "Field Strength Radius" column in Exhibit E-7. Since each radius is assigned to a specific depression angle, the radius has both a horizontal and vertical component to it. The specific horizontal and vertical distances from the center of radiation were derived using basic trigonometry. Depression angles where the vertical radius is less than approximately 3 meters AGL, including negative values, result in areas

where interference is assumed to potentially be experienced by resident population in the area. As indicated in the tabulation, no such area exists, thus no population is expected to be impacted.

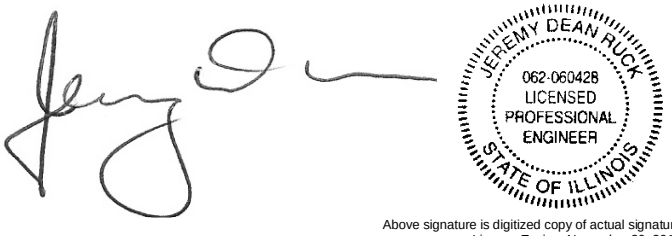
Exhibit E-8 consists of a photograph that illustrates the area around the location of the proposed site. The closest point to the ground at which predicted interference may occur is 6.30 meters, which occurs 11.0 meters from the base of the tower. From the image in Exhibit E-8 it can be reasonably inferred that there are no structures of that height in this region. Furthermore, the closest residences to the tower are of a sufficient distance that the calculated field strength will not exceed the U/D ratio value.

These two studies have demonstrated that a small amount of normally prohibited contour overlap would occur. This area, however, does not result in predicted interference to WMT-FM. This is due to the fact that the field strength from WMT-FM in this region is quite high, and the maximum effective radiated power of the proposed facility quite low. The lack of interference is consistent with the provisions of Section 74.1204(d) of the Commission's Rules.

The proposed translator should be exempt from environmental processing. The supporting structure to be utilized by XGM for this translator is a mast that will not require excavation at the site. In addition, the structure is of insufficient height to be considered an obstruction to air navigation, and as such, does not require registration or obstruction lighting. RF exposure hazards to the general public will not exist due to the low effective radiated power. The Commission's *FM Model* software package predicts a maximum power density at ground level of 0.87 $\mu W/cm^2$ at 16 meters from the base of the structure. This is considerably less than the upper limit permissible under the uncontrolled environment condition of the applicable safety standard. XGM will

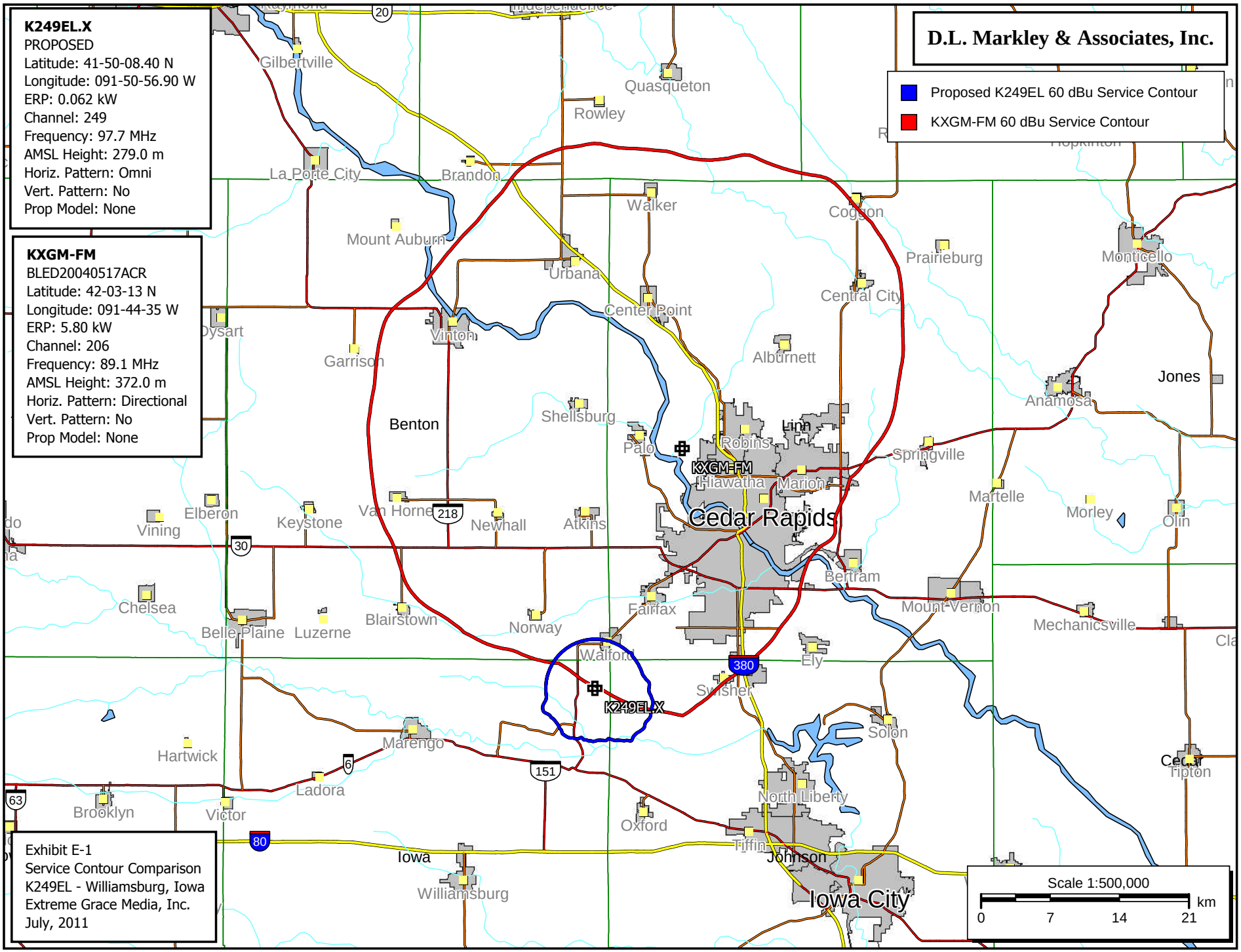
coordinate with other users to reduce power or cease operation as necessary to prevent workers from being exposed to levels of radiofrequency radiation in excess of applicable standards.

The preceding statement and attached exhibits have been prepared by me, or under my direction, and are true and accurate to the best of my belief and knowledge.



Above signature is digitized copy of actual signature
License Expires November 30, 2011

Jeremy D. Ruck, PE
July 5, 2011


K249EL.X
PROPOSED
Latitude: 41-50-08.40 N
Longitude: 091-50-56.90 W
ERP: 0.062 kW
Channel: 249
Frequency: 97.7 MHz
AMSL Height: 279.0 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model: None
KXGM-FM
BLED20040517ACR
Latitude: 42-03-13 N
Longitude: 091-44-35 W
ERP: 5.80 kW
Channel: 206
Frequency: 89.1 MHz
AMSL Height: 372.0 m
Horiz. Pattern: Directional
Vert. Pattern: No
Prop Model: None
D.L. Markley & Associates, Inc.
Proposed K249EL 60 dBu Service Contour
KXGM-FM 60 dBu Service Contour
Exhibit E-1
Service Contour Comparison
K249EL - Williamsburg, Iowa
Extreme Grace Media, Inc.
July, 2011
Scale 1:500,000
0 7 14 21 km
Gilbertville
Quasqueton
Rowley
La Porte City
Brandon
Walker
Coggon
Mount Auburn
Urbana
Prairieburg
Monticello
Center Point
Central City
Vinton
Dysart
Garrison
Alburnett
Jones
Anamosa
Benton
Shellsburg
Linn
Palo
Robins
KXGM-FM
Hiawatha
Marion
Springville
Martelle
Morley
Olin
Van Horne
Elberon
Vining
Keystone
Newhall
Atkins
Cedar Rapids
Bertram
Chelsea
Belle Plaine
Luzerne
Blairstown
Norway
Fairfax
Mount Vernon
Mechanicsville
Walford
Ely
Swisher
K249EL.X
Solon
Hartwick
Marengo
Ladora
Brooklyn
Victor
Oxford
North Liberty
Tiffin
Iowa
Johnson
Williamsburg
Iowa City
Tipton
20
30
218
380
6
151
63
80

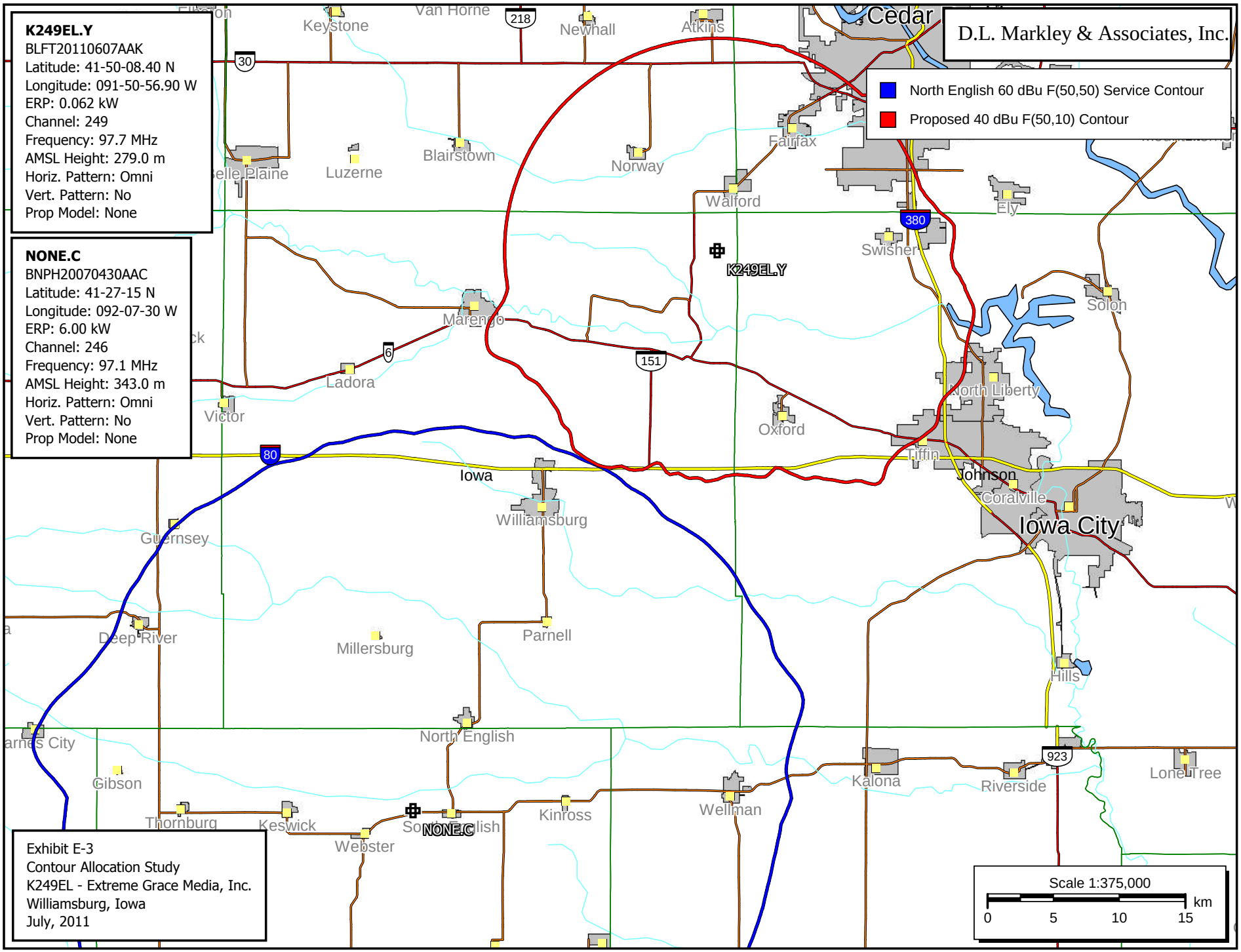
D.L. Markley & Associates, Inc.
Consulting Engineers

Exhibit E-2 - Tabular Allocation Study
K249EL - Williamsburg, Iowa

REFERENCE CH# 246D - 97.1 MHz, Pwr= 0.062 kW, HAAT= 34.2 M, COR= 282 M DISPLAY DATES
41 50 08.4 N. Average Protected F(50-50)= 5.31 km DATA 07-05-11
91 50 56.9 W. Omni-directional SEARCH 07-05-11

CH CALL / CITY	TYPE ANT / STATE	AZI <--	DIST / FILE #	LAT / LNG	PWR(kW) / HAAT(M)	INT(km) / COR(M)	PRO(km) / LICENSEE	*IN* (Overlap in km)	*OUT*
249D K249EL	LIC _C_	211.6	13.3	41 44 00.5	0.227	1.1	8.0	6.4	4.8
Williamsburg	IA	31.5	BLFT20110607AAK	91 55 59.5		282	Extreme Grace Media, Inc.		
246A AU7052741	VAC ___	208.3	48.1	41 27 15.0	6.000	88.3	29.6	-46.1*<	-0.8
North English	IA	28.1	RM10002	92 07 21.0	100	343	Iowa-keokuk Radio		
246A NONE	CP _CX	208.5	48.2	41 27 15.0	6.000	88.4	29.6	-46.0*<	-0.8
North English	IA	28.3	BNPH20070430AAC	92 07 30.0	100	343	Justin Mcluckie		
243C1 ALLO	USE ___	38.7	27.5	42 01 43.0	100.000	10.1	72.4	12.3	-45.4*
Cedar Rapids	IA	218.8		91 38 27.0	299	545			
243C1 WMT-FM	LIC _CX	38.9	27.5	42 01 40.0	100.000	7.5	60.4	14.9	-33.5*
Cedar Rapids	IA	219.0	BMLH20050908ACY	91 38 25.0	158	411	Citicasters Licenses, Inc.		
248D 635405	APP _C_	46.5	18.9	41 57 09.0	0.140	0.8	11.8	12.8	6.6
Cedar Rapids	IA	226.6	BNPFT20030314BHO	91 41 00.0	113	359	Educational Media Foundati		
247D 634455	APP _C_	123.0	30.1	41 41 17.0	0.250	14.8	10.6	9.0	10.4
Iowa City	IA	303.2	BNPFT20030311ANL	91 32 43.0	73	300	Starboard Media Foundation		
247D 649751	APP _C_	120.7	31.7	41 41 24.0	0.250	14.4	10.4	10.9	12.2
Iowa City	IA	300.9	BNPFT20030317HOX	91 31 19.0	69	296	E-string Wireless, Ltd		
247D 636837	APP _C_	126.8	32.9	41 39 31.0	0.250	10.1	7.1	16.3	16.5
Iowa City	IA	307.0	BNPFT20030314CCW	91 31 58.0	16	238	University Of Northern Iow		
247D 645359	APP _C_	126.2	36.5	41 38 30.2	0.250	11.2	7.8	18.9	19.5
Iowa City	IA	306.4	BNPFT20030317DUI	91 29 43.3	38	259	Radio Assist Ministry, Inc		
248D 637524	APP _C_	114.5	34.8	41 42 20.0	0.250	1.1	10.9	27.3	23.3
Iowa City	IA	294.8	BNPFT20030317FZG	91 28 07.0	69	300	Educational Media Foundati		
246D K246AP	LIC _C_	283.4	62.1	41 57 44.0	0.250	23.8	7.1	33.4	38.9
Tama	IA	102.9	BLFT20070803ADY	92 34 42.0	-15	265	Starboard Media Foundation		
249D 645346	APP _C_	81.2	48.7	41 54 04.9	0.140	0.8	12.8	42.3	35.3
Mount Vernon	IA	261.5	BNPFT20030317HFJ	91 16 10.3	113	372	Radio Assist Ministry, Inc		
247C3 ALLO	USE ___	47.8	101.6	42 26 42.0	25.000	58.1	37.3	38.3	57.0
Epworth	IA	228.4		90 55 55.0	100	406			
249C3 ALLO	USE ___	315.1	82.2	42 21 25.0	25.000	4.1	39.2	73.1	42.4
Grundy Center	IA	134.7		92 33 14.0	100	396			
248D 640150	APP _C_	108.0	55.0	41 40 51.9	0.205	1.0	11.2	47.8	43.3
West Liberty	IA	288.5	BNPFT20030317HFW	91 13 15.4	97	324	Radio Assist Ministry, Inc		
249C3 KCRR	LIC _CN	317.8	83.7	42 23 28.0	16.000	3.9	37.8	74.8	45.3
Grundy Center	IA	137.4	BLH19940110KA	92 31 57.0	124	416	Cumulus Licensing Llc		
247C1 ALLO	USE ___	263.7	159.7	41 39 47.0	100.000	107.1	73.9	47.6	78.8
Des Moines	IA	82.4		93 45 21.0	299	577			
245B WXLP	LIC _CN	113.9	134.5	41 20 16.0	50.000	78.9	65.8	49.2	56.0
Moline	IL	294.9	BLH4960	90 22 46.0	152	374	Cumulus Licensing Llc		
245B ALLO	USE ___	113.9	134.5	41 20 16.0	50.000	78.2	65.1	50.0	56.7
Moline	IL	294.9		90 22 46.0	150	369			

Terrain database is NGDC 30 SEC , R= 73.215 qualifying spacings or FCC minimum Spacings in KM, M= Margin in KM
Contour distances are on direct line to and from reference station. Reference zone = 2, Co to 3rd adjacent.
Ant Column: (D= DA Standard, Z= DA 73.215, N= Not DA 73.215, _= Omni), Polarization (C,H,V,E), Beamtilt(Y,N,X)
"*"affixed to 'IN' or 'OUT' values = site inside protected contour.


K249EL.Y
BLFT20110607AAK
Latitude: 41-50-08.40 N
Longitude: 091-50-56.90 W
ERP: 0.062 kW
Channel: 249
Frequency: 97.7 MHz
AMSL Height: 279.0 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model: None
NONE.C
BNPH20070430AAC
Latitude: 41-27-15 N
Longitude: 092-07-30 W
ERP: 6.00 kW
Channel: 246
Frequency: 97.1 MHz
AMSL Height: 343.0 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model: None
D.L. Markley & Associates, Inc.
North English 60 dBu F(50,50) Service Contour
Proposed 40 dBu F(50,10) Contour
Exhibit E-3
Contour Allocation Study
K249EL - Extreme Grace Media, Inc.
Williamsburg, Iowa
July, 2011
Scale 1:375,000
0 5 10 15 km
Cedar
Van Horne
Keystone
Newhall
Atkins
Fairfax
Blairstown
Luzerne
Norway
Walford
Ely
Swisher
Solon
Marengo
Ladora
Victor
Oxford
North Liberty
Tiffin
Johnson
Coralville
Iowa City
Iowa
Williamsburg
Guernsey
Deep River
Millersburg
Parnell
Hills
North English
Gibson
Thornburg
Keswick
Webster
Kinross
Wellman
Kalona
Riverside
Lone Tree
K249EL.Y
NONE.C
30
218
380
6
151
80
923

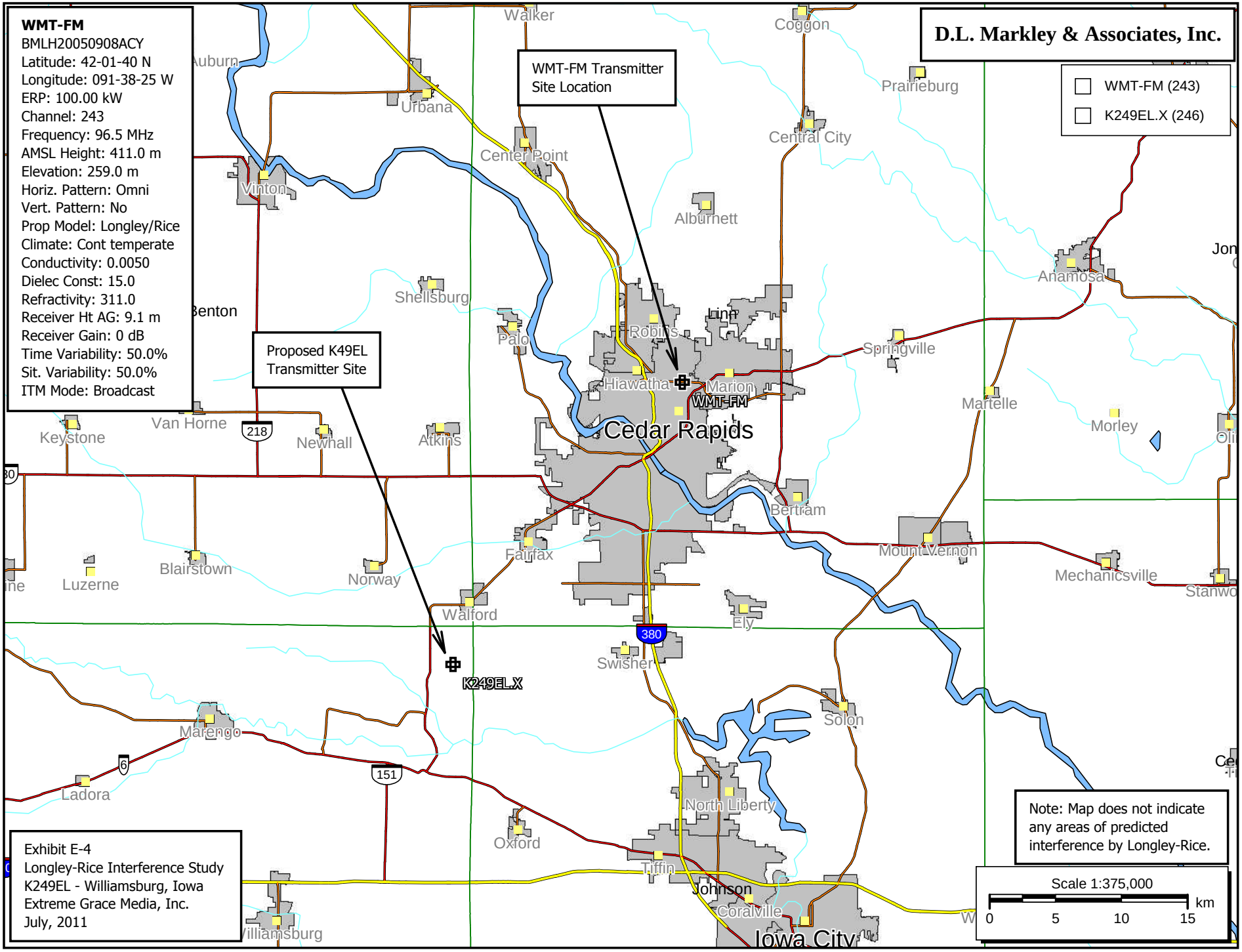

WMT-FM
BMLH20050908ACY
Latitude: 42-01-40 N
Longitude: 091-38-25 W
ERP: 100.00 kW
Channel: 243
Frequency: 96.5 MHz
AMSL Height: 411.0 m
Elevation: 259.0 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model: Longley/Rice
Climate: Cont temperate
Conductivity: 0.0050
Dielec Const: 15.0
Refractivity: 311.0
Receiver Ht AG: 9.1 m
Receiver Gain: 0 dB
Time Variability: 50.0%
Sit. Variability: 50.0%
ITM Mode: Broadcast
D.L. Markley & Associates, Inc.
WMT-FM Transmitter Site Location
Proposed K49EL Transmitter Site
WMT-FM (243)
K249EL.X (246)
WMT-FM
K249EL.X
Cedar Rapids
Iowa City
Walker
Coggon
Prairieburg
Central City
Urbana
Center Point
Vinton
Alburnett
Shellsburg
Benton
Palo
Robins
Hiawatha
Marion
Springville
Anamosa
Martelle
Morley
Keystone
Van Horne
218
Newhall
Atkins
Bertram
Fairfax
Mount Vernon
Mechanicsville
Luzerne
Blairstown
Norway
Walford
Ely
380
Swisher
Solon
Marengo
6
151
Ladora
North Liberty
Oxford
Tiffin
Johnson
Coralville
Williamsburg
Exhibit E-4
Longley-Rice Interference Study
K249EL - Williamsburg, Iowa
Extreme Grace Media, Inc.
July, 2011
Note: Map does not indicate any areas of predicted interference by Longley-Rice.
Scale 1:375,000
0
5
10
15
km

Exhibit E-5
Summary of Longley-Rice Interference Study
Population Database: 2010 US Census (PL)

WMT-FM (243) Cedar Rapids, IA - BMLH20050908ACY
Lat: 42-01-40 N Lng: 091-38-25 W ERP: 100.00 kW AMSL: 411.0 m
FM Interference Study
Protected: Circle: R = 100 km
Interference considered within 50 km.
Signal Resolution: 0.25 km

Study Date: 7/5/2011
FM Database Date: 7/5/2011

D/U Ratios Used:
Co: 20.0 dB
First Adj: 6.0 dB
Second Adj: -40.0 dB
Third Adj: -40.0 dB

Threshold for reception: 48.0 dBu.

Primary Terrain: V-Soft 3 Second US Terrain
Secondary Terrain: V-Soft 30 Second US Database

Population Database: 2010 US Census (PL)

Percentages calculated using a baseline population of 732,001.

Stations considered which do not cause interference:

K249EL.X (246)

Call Letters	City	State	Dist	Azi
K249EL.X (246)	Williamsburg	IA	27.5	219.1

Totals for WMT-FM (243)

Calculation Area Population:	924,694	[31384.0 sq. km]
Not Affected by Terrain Loss:	732,001	[24546.6 sq. km]
Interfered Population:	0	[0.0 sq. km]
Interference Free:	732,001	[24546.6 sq. km]
Percent Interference:	0.00 %	
Terrain Blocked Population:	192,693	[6837.4 sq. km]

Interference Free Breakdown:

White:	651,827	[89.0%]
Black:	27,251	[3.7%]
Hispanic:	25,547	[3.5%]
Native American:	1,635	[0.2%]
Asian:	13,317	[1.8%]
Pacific Islander:	506	[0.1%]
Mixed Race:	11,330	[1.5%]
Other:	588	[0.1%]
Total:	732,001	

	Housing Units	Population	%
Illinois			
Mercer County			
Total	7,358	16,434	
WMT-FM (243)	87	200	
IxFree	87	200	100.00
Rock Island County			
Total	65,756	147,546	
WMT-FM (243)	496	1,174	
IxFree	496	1,174	100.00
Iowa			
Benton County			
Total	11,095	26,076	
WMT-FM (243)	11,091	26,068	
IxFree	11,091	26,068	100.00
Black Hawk County			
Total	55,887	131,090	
WMT-FM (243)	52,517	123,022	
IxFree	52,517	123,022	100.00
Bremer County			
Total	9,915	24,276	
WMT-FM (243)	1,792	4,234	
IxFree	1,792	4,234	100.00
Buchanan County			
Total	8,968	20,958	
WMT-FM (243)	8,954	20,926	
IxFree	8,954	20,926	100.00
Butler County			
Total	6,682	14,867	
WMT-FM (243)	29	71	
IxFree	29	71	100.00
Cedar County			
Total	8,064	18,499	
WMT-FM (243)	8,064	18,499	
IxFree	8,064	18,499	100.00
Clayton County			
Total	8,999	18,129	
WMT-FM (243)	1,709	3,658	
IxFree	1,709	3,658	100.00
Clinton County			
Total	21,733	49,116	
WMT-FM (243)	4,169	9,536	

IxFree	4,169	9,536	100.00
Delaware County			
Total	8,028	17,764	
WMT-FM (243)	7,864	17,385	
IxFree	7,864	17,385	100.00
Dubuque County			
Total	38,951	93,653	
WMT-FM (243)	6,318	15,987	
IxFree	6,318	15,987	100.00
Fayette County			
Total	9,558	20,880	
WMT-FM (243)	4,897	10,618	
IxFree	4,897	10,618	100.00
Grundy County			
Total	5,530	12,453	
WMT-FM (243)	1,434	3,308	
IxFree	1,434	3,308	100.00
Henry County			
Total	8,280	20,145	
WMT-FM (243)	651	1,552	
IxFree	651	1,552	100.00
Iowa County			
Total	7,258	16,355	
WMT-FM (243)	7,189	16,177	
IxFree	7,189	16,177	100.00
Jackson County			
Total	9,415	19,848	
WMT-FM (243)	3,259	7,228	
IxFree	3,259	7,228	100.00
Jasper County			
Total	16,181	36,842	
WMT-FM (243)	41	84	
IxFree	41	84	100.00
Jefferson County			
Total	7,594	16,843	
WMT-FM (243)	57	122	
IxFree	57	122	100.00
Johnson County			
Total	55,967	130,882	
WMT-FM (243)	55,966	130,880	
IxFree	55,966	130,880	100.00
Jones County			
Total	8,911	20,638	
WMT-FM (243)	8,698	20,129	
IxFree	8,698	20,129	100.00
Keokuk County			
Total	4,931	10,511	
WMT-FM (243)	3,053	6,436	
IxFree	3,053	6,436	100.00
Linn County			
Total	92,251	211,226	
WMT-FM (243)	92,251	211,226	
IxFree	92,251	211,226	100.00
Louisa County			
Total	5,002	11,387	
WMT-FM (243)	1,393	3,352	

IxFree	1,393	3,352	100.00
Mahaska County			
Total	9,766	22,381	
WMT-FM (243)	84	144	
IxFree	84	144	100.00
Marshall County			
Total	16,831	40,648	
WMT-FM (243)	359	828	
IxFree	359	828	100.00
Muscatine County			
Total	17,910	42,745	
WMT-FM (243)	10,187	24,746	
IxFree	10,187	24,746	100.00
Poweshiek County			
Total	8,949	18,914	
WMT-FM (243)	5,075	11,563	
IxFree	5,075	11,563	100.00
Scott County			
Total	71,835	165,224	
WMT-FM (243)	4,405	10,318	
IxFree	4,405	10,318	100.00
Tama County			
Total	7,766	17,767	
WMT-FM (243)	5,307	11,986	
IxFree	5,307	11,986	100.00
Washington County			
Total	9,516	21,704	
WMT-FM (243)	8,957	20,499	
IxFree	8,957	20,499	100.00
Wisconsin			
Grant County			
Total	21,581	51,208	
WMT-FM (243)	27	45	
IxFree	27	45	100.00

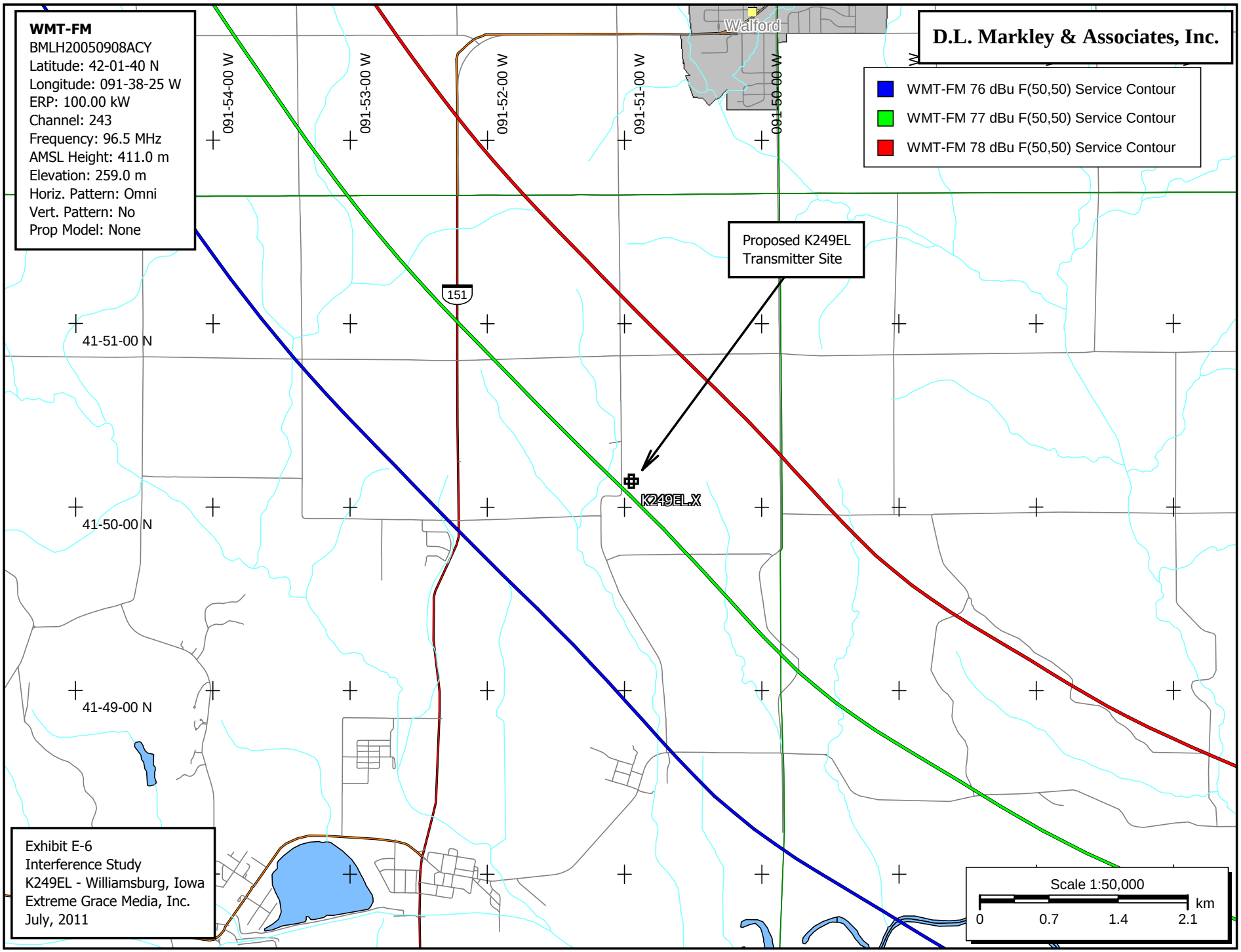

WMT-FM
BMLH20050908ACY
Latitude: 42-01-40 N
Longitude: 091-38-25 W
ERP: 100.00 kW
Channel: 243
Frequency: 96.5 MHz
AMSL Height: 411.0 m
Elevation: 259.0 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model: None
D.L. Markley & Associates, Inc.
WMT-FM 76 dBu F(50,50) Service Contour
WMT-FM 77 dBu F(50,50) Service Contour
WMT-FM 78 dBu F(50,50) Service Contour
Walford
091-54-00 W
091-53-00 W
091-52-00 W
091-51-00 W
091-50-00 W
Proposed K249EL
Transmitter Site
151
41-51-00 N
41-50-00 N
41-49-00 N
K249ELX
Exhibit E-6
Interference Study
K249EL - Williamsburg, Iowa
Extreme Grace Media, Inc.
July, 2011
Scale 1:50,000
0
0.7
1.4
2.1
km

Exhibit E-7 - Summary of Power Density Calculations								
Facility:	K246BE							
COR:		27.0	m AGL				Z0 (Ohms)	377
ERP:		62	Watts				**ALL distances meters**	
Antenna:		SHI 6812-2						
FS Contour:		116	dBu					
E Field Strength:		0.6310	V/m					
Power Density:		0.0010559872	W/m^2					
Dep.			ERP in	Radius	Field Strength	Radius	Radius	Radius
θ	Erel	Prel	Watts	Squared	Radius	Vert. Dist.	AGL	Horiz. Dist.
0	1.000	1.000	62.00	4672.219	68.35	0.00	27.00	68.35
1	0.999	0.998	61.88	4662.879	68.29	1.19	25.81	68.27
2	0.995	0.990	61.38	4625.613	68.01	2.37	24.63	67.97
3	0.989	0.978	60.64	4569.995	67.60	3.54	23.46	67.51
4	0.980	0.960	59.54	4487.199	66.99	4.67	22.33	66.82
5	0.969	0.939	58.22	4387.031	66.23	5.77	21.23	65.98
6	0.956	0.914	56.66	4270.109	65.35	6.83	20.17	64.99
7	0.941	0.885	54.90	4137.161	64.32	7.84	19.16	63.84
8	0.923	0.852	52.82	3980.399	63.09	8.78	18.22	62.48
9	0.903	0.815	50.56	3809.769	61.72	9.66	17.34	60.96
10	0.881	0.776	48.12	3626.394	60.22	10.46	16.54	59.30
11	0.858	0.736	45.64	3439.519	58.65	11.19	15.81	57.57
12	0.832	0.692	42.92	3234.222	56.87	11.82	15.18	55.63
13	0.805	0.648	40.18	3027.715	55.02	12.38	14.62	53.61
14	0.776	0.602	37.33	2813.498	53.04	12.83	14.17	51.47
15	0.745	0.555	34.41	2593.198	50.92	13.18	13.82	49.19
16	0.714	0.510	31.61	2381.878	48.80	13.45	13.55	46.91
17	0.681	0.464	28.75	2166.793	46.55	13.61	13.39	44.51
18	0.647	0.419	25.95	1955.833	44.22	13.67	13.33	42.06
19	0.612	0.375	23.22	1749.952	41.83	13.62	13.38	39.55
20	0.576	0.332	20.57	1550.130	39.37	13.47	13.53	37.00
21	0.539	0.291	18.01	1357.378	36.84	13.20	13.80	34.40
22	0.502	0.252	15.62	1177.418	34.31	12.85	14.15	31.81
23	0.465	0.216	13.41	1010.251	31.78	12.42	14.58	29.26
24	0.427	0.182	11.30	851.881	29.19	11.87	15.13	26.66
25	0.389	0.151	9.38	707.005	26.59	11.24	15.76	24.10
26	0.352	0.124	7.68	578.907	24.06	10.55	16.45	21.63
27	0.314	0.099	6.11	460.662	21.46	9.74	17.26	19.12
28	0.277	0.077	4.76	358.495	18.93	8.89	18.11	16.72
29	0.240	0.058	3.57	269.120	16.40	7.95	19.05	14.35
30	0.203	0.041	2.55	192.537	13.88	6.94	20.06	12.02
31	0.168	0.028	1.75	131.869	11.48	5.91	21.09	9.84
32	0.132	0.017	1.08	81.409	9.02	4.78	22.22	7.65
33	0.098	0.010	0.60	44.872	6.70	3.65	23.35	5.62
34	0.065	0.004	0.26	19.740	4.44	2.48	24.52	3.68
35	0.032	0.001	0.06	4.784	2.19	1.25	25.75	1.79
36	0.001	0.000	0.00	0.005	0.07	0.04	26.96	0.06
37	0.029	0.001	0.05	3.929	1.98	1.19	25.81	1.58
38	0.058	0.003	0.21	15.717	3.96	2.44	24.56	3.12

Exhibit E-7 - Summary of Power Density Calculations								
Facility:	K246BE							
COR:		27.0	m AGL				Z0 (Ohms)	377
ERP:		62	Watts				**ALL distances meters**	
Antenna:		SHI 6812-2						
FS Contour:		116	dBu					
E Field Strength:		0.6310	V/m					
Power Density:		0.0010559872	W/m^2					
Dep.			ERP in	Radius	Field Strength	Radius	Radius	Radius
θ	Erel	Prel	Watts	Squared	Radius	Vert. Dist.	AGL	Horiz. Dist.
39	0.086	0.007	0.46	34.556	5.88	3.70	23.30	4.57
40	0.112	0.013	0.78	58.608	7.66	4.92	22.08	5.86
41	0.137	0.019	1.16	87.693	9.36	6.14	20.86	7.07
42	0.161	0.026	1.61	121.109	11.00	7.36	19.64	8.18
43	0.183	0.033	2.08	156.468	12.51	8.53	18.47	9.15
44	0.204	0.042	2.58	194.439	13.94	9.69	17.31	10.03
45	0.224	0.050	3.11	234.433	15.31	10.83	16.17	10.83
46	0.242	0.059	3.63	273.624	16.54	11.90	15.10	11.49
47	0.258	0.067	4.13	311.002	17.64	12.90	14.10	12.03
48	0.273	0.075	4.62	348.216	18.66	13.87	13.13	12.49
49	0.287	0.082	5.11	384.846	19.62	14.81	12.19	12.87
50	0.299	0.089	5.54	417.701	20.44	15.66	11.34	13.14
51	0.310	0.096	5.96	449.000	21.19	16.47	10.53	13.34
52	0.319	0.102	6.31	475.450	21.80	17.18	9.82	13.42
53	0.327	0.107	6.63	499.596	22.35	17.85	9.15	13.45
54	0.334	0.112	6.92	521.214	22.83	18.47	8.53	13.42
55	0.339	0.115	7.13	536.936	23.17	18.98	8.02	13.29
56	0.343	0.118	7.29	549.682	23.45	19.44	7.56	13.11
57	0.346	0.120	7.42	559.339	23.65	19.83	7.17	12.88
58	0.348	0.121	7.51	565.824	23.79	20.17	6.83	12.61
59	0.348	0.121	7.51	565.824	23.79	20.39	6.61	12.25
60	0.347	0.120	7.47	562.577	23.72	20.54	6.46	11.86
61	0.345	0.119	7.38	556.111	23.58	20.63	6.37	11.43
62	0.343	0.118	7.29	549.682	23.45	20.70	6.30	11.01
63	0.339	0.115	7.13	536.936	23.17	20.65	6.35	10.52
64	0.334	0.112	6.92	521.214	22.83	20.52	6.48	10.01
65	0.328	0.108	6.67	502.656	22.42	20.32	6.68	9.48
66	0.322	0.104	6.43	484.434	22.01	20.11	6.89	8.95
67	0.315	0.099	6.15	463.601	21.53	19.82	7.18	8.41
68	0.306	0.094	5.81	437.488	20.92	19.39	7.61	7.84
69	0.298	0.089	5.51	414.912	20.37	19.02	7.98	7.30
70	0.288	0.083	5.14	387.533	19.69	18.50	8.50	6.73
71	0.278	0.077	4.79	361.088	19.00	17.97	9.03	6.19
72	0.267	0.071	4.42	333.078	18.25	17.36	9.64	5.64
73	0.256	0.066	4.06	306.199	17.50	16.73	10.27	5.12
74	0.244	0.060	3.69	278.165	16.68	16.03	10.97	4.60
75	0.231	0.053	3.31	249.314	15.79	15.25	11.75	4.09
76	0.218	0.048	2.95	222.043	14.90	14.46	12.54	3.60
77	0.205	0.042	2.61	196.350	14.01	13.65	13.35	3.15

Exhibit E-7 - Summary of Power Density Calculations								
Facility:	K246BE							
COR:		27.0	m AGL				Z0 (Ohms)	377
ERP:		62	Watts				**ALL distances meters**	
Antenna:		SHI 6812-2						
FS Contour:		116	dBu					
E Field Strength:		0.6310	V/m					
Power Density:		0.0010559872	W/m^2					
Dep.			ERP in	Radius	Field Strength	Radius	Radius	Radius
θ	Erel	Prel	Watts	Squared	Radius	Vert. Dist.	AGL	Horiz. Dist.
78	0.191	0.036	2.26	170.447	13.06	12.77	14.23	2.71
79	0.177	0.031	1.94	146.376	12.10	11.88	15.12	2.31
80	0.162	0.026	1.63	122.618	11.07	10.91	16.09	1.92
81	0.148	0.022	1.36	102.340	10.12	9.99	17.01	1.58
82	0.132	0.017	1.08	81.409	9.02	8.93	18.07	1.26
83	0.117	0.014	0.85	63.958	8.00	7.94	19.06	0.97
84	0.101	0.010	0.63	47.661	6.90	6.87	20.13	0.72
85	0.085	0.007	0.45	33.757	5.81	5.79	21.21	0.51
86	0.069	0.005	0.30	22.244	4.72	4.70	22.30	0.33
87	0.052	0.003	0.17	12.634	3.55	3.55	23.45	0.19
88	0.036	0.001	0.08	6.055	2.46	2.46	24.54	0.09
89	0.018	0.000	0.02	1.514	1.23	1.23	25.77	0.02
90	0.000	0.000	0.00	0.000	0.00	0.00	27.00	0.00

Exhibit E-8
Satellite Image of Vicinity