

[Exhibit 13]

## **Non-Interference Compliance**

Regarding Facility id 152169

Channel 250

### **Description of Exhibit 13 Contents**

This exhibit demonstrates that the proposed facility complies with contour overlap and interference protection provisions in all of the applicable rule sections and that this application for a construction permit is in full compliance with 47 C.F.R. § 74.1204.

**Let it be noted that should any actual real world interference occur, the applicant acknowledges that it will promptly suspend operation of this translator in accordance with 47 C.F.R. § 74.1203.**

Page 2 of this exhibit is an explanation of the method used to demonstrate compliance with contour overlap and interference provisions based on 47 C.F.R. § 74.1204(d), which states:

*[A]n application otherwise precluded by this section will be accepted if it can be demonstrated that no actual interference will occur due to intervening terrain, lack of population or such other factors as may be applicable.*

Page 3 contains a tabulation of the vertical radiation pattern of the proposed antenna and the minimum ground clearance of the interfering contour based on this pattern.

Page 4 includes a tabulation of the vertical radiation pattern for the proposed antenna provided by the antenna manufacturer.

Page 5 of this exhibit contains the tabulated data from the interference analysis, which shows all stations whose protected contours come within 50 km of the 34 dB $\mu$  F(50,10) contour of the proposed translator. These tabulated values were calculated using data from the FCC's CDBS files and 30 arc second terrain data. The column labeled "Adj" shows the number of channels difference between the entry and the proposed translator. The column labeled "Dist" shows the distance in km. The column labeled "Overlap" shows the area of contour overlap in square kilometers.

Page 6 of this exhibit is a portion of a USGS 1:24,000 scale 7.5 minute quadrangle at full scale with the calculated area of interference overlaid. The sheet includes the quadrangle name and measurement scale at the bottom-left corner (note: "Mt" refers to meters). The area of interference was calculated using the free space equation and 120 radials.

Pages 7 and 8 of this exhibit are aerial photos of the vicinity surrounding the proposed translator's tower site.

## Compliance with 47 C.F.R. § 74.1204(d)

All authorized second and third adjacent stations with which the proposed translator has contour overlap are tabulated below. Column four show the station's signal level at the proposed translator's tower site, and column five gives the minimum value within the entire standard interfering contour of the proposed translator (100 dB $\mu$  for most classes, 94 for class B, 97 for class B1). The minimum second or third adjacent F(50,50) contour within the proposed translator's standard interfering contour was used to calculate the proposed translator's actual "worst-case" interfering contour.

<b>Application_id</b>	<b>File Number</b>	<b>Callsign</b>	<b>Contour at Tower</b>	<b>Min. Contour</b>
1118749	BLH20060515AAB	KHKI	68.7	68.7
401568	BLH19990831AAD	KWQW	75	74.3

Minimum F(50,50) Contour of Adjacent Station within  
Proposed Translator's Standard Interfering Contour **68.7**

FCC 02-244 at Section II.A.5 states that "when demonstrating that 'no actual interference will occur due to . . . other factors,' pursuant to Section 74.1204(d), an applicant may use the undesired-to-desired signal ratio method." The undesired-to-desired ratio for second and third adjacent stations required by § 74.1204(a) is 40 dB. Since the minimum protected contour strength within the proposed translator's standard interference contour is **68.7 dB $\mu$** , this makes the proposed translator's worst-case interfering contour **108.7 dB $\mu$** . By the free-space equation, this contour is calculated to extend a maximum of **335.9 m** from the transmit antenna.

The maximum horizontal plane of the interfering contour was calculated for 120 radials and plotted on the pertinent portion of a USGS quadrangle (page 6 of this exhibit). However, the field strength of the proposed translator's antenna varies with angle of depression from horizontal. The antenna relative fields are tabulated on the following page at 5 degree increments, starting at 5 degrees below horizontal. Antenna relative field strength data was provided and certified by the manufacturer of the proposed antenna. Using a free-space calculation that neglects any loss due to reflection, the vertical ground clearance of the proposed translator's interference contour has been tabulated. As shown on the following page, the area of interference clears the tower ground level (TGL) by **41.3 m** at the lowest point. The applicant has taken into account USGS quadrangles and relevant aerial photography in stating that no structures, except possibly tower support structures, puncture the area of interference. Hence, in accordance with 47 C.F.R. § 74.1204(d) and the clarification provided by the FCC in the decision *Re: Living Way Ministries* (FCC 02-244), a lack of population has been demonstrated within the area of interference and this application is therefore in full compliance with 47 C.F.R. § 74.1204.

**Antenna Manufacturer:** PSI  
**Antenna Model:** FML-2(.75)  
**CORAGL:** 116 m  
**Maximum ERP:** 0.17 kW  
**Interfering Contour:** 108.7 dB $\mu$   
**Max Int. Contour Distance:** 335.9 m  
**Min Ground Clearance:** 41.3 m

Depression Angle Below Horizontal	Antenna Relative Field	ERP (watts)	Distance to Interfering Contour from Antenna (m)	Horizontal Distance of Interfering Contour from Tower (m)	Vertical Clearance of Interfering Contour above TGL (m)
5	.975	161.6	327.5	326.3	87.5
10	.903	138.6	303.3	298.7	63.3
15	.792	106.6	266.0	257.0	47.1
20	.650	71.8	218.3	205.2	41.3
25	.493	41.3	165.6	150.1	46.0
30	.331	18.6	111.2	96.3	60.4
35	.178	5.4	59.8	49.0	81.7
40	.043	0.3	14.4	11.1	106.7
45	.068	0.8	22.8	16.2	99.8
50	.149	3.8	50.1	32.2	77.7
55	.202	6.9	67.9	38.9	60.4
60	.227	8.8	76.3	38.1	50.0
65	.226	8.7	75.9	32.1	47.2
70	.205	7.1	68.9	23.6	51.3
75	.168	4.8	56.4	14.6	61.5
80	.118	2.4	39.6	6.9	77.0
85	.061	0.6	20.5	1.8	95.6
90	.001	0.0	0.3	0.0	115.7
Minimum Clearance above TGL:					<b>41.3 m</b>

**Propagation Systems Inc.**  
Elevation Pattern Tabulation  
Antenna: PSIFML-2 Special  
Bay spacing: 3/4 wave

Angle	Field	dB	Angle	Field	dB	Angle	Field	dB
-90.00	0.001	-60.000	-50.00	0.149	-16.513	-10.00	0.903	-0.883
-89.00	0.012	-38.221	-49.00	0.135	-17.364	-9.00	0.921	-0.713
-88.00	0.025	-32.201	-48.00	0.120	-18.405	-8.00	0.937	-0.561
-87.00	0.037	-28.679	-47.00	0.104	-19.677	-7.00	0.952	-0.429
-86.00	0.049	-26.207	-46.00	0.086	-21.289	-6.00	0.964	-0.315
-85.00	0.061	-24.285	-45.00	0.068	-23.404	-5.00	0.975	-0.219
-84.00	0.073	-22.748	-44.00	0.048	-26.425	-4.00	0.984	-0.139
-83.00	0.085	-21.443	-43.00	0.027	-31.481	-3.00	0.991	-0.079
-82.00	0.096	-20.349	-42.00	0.005	-46.848	-2.00	0.996	-0.036
-81.00	0.107	-19.378	-41.00	0.018	-34.664	-1.00	0.999	-0.009
-80.00	0.118	-18.538	-40.00	0.043	-27.417	0.00	1.000	0.000
-79.00	0.129	-17.792	-39.00	0.068	-23.365	1.00	0.999	-0.009
-78.00	0.139	-17.125	-38.00	0.094	-20.529	2.00	0.996	-0.036
-77.00	0.149	-16.522	-37.00	0.121	-18.329	3.00	0.991	-0.079
-76.00	0.159	-15.984	-36.00	0.149	-16.531	4.00	0.984	-0.139
-75.00	0.168	-15.508	-35.00	0.178	-14.998	5.00	0.975	-0.219
-74.00	0.176	-15.072	-34.00	0.207	-13.669	6.00	0.964	-0.315
-73.00	0.184	-14.685	-33.00	0.237	-12.489	7.00	0.952	-0.429
-72.00	0.192	-14.335	-32.00	0.268	-11.431	8.00	0.937	-0.561
-71.00	0.199	-14.026	-31.00	0.299	-10.475	9.00	0.921	-0.713
-70.00	0.205	-13.752	-30.00	0.331	-9.602	10.00	0.903	-0.882
-69.00	0.211	-13.518	-29.00	0.363	-8.801	11.00	0.884	-1.072
-68.00	0.216	-13.315	-28.00	0.395	-8.061	12.00	0.863	-1.279
-67.00	0.220	-13.146	-27.00	0.428	-7.377	13.00	0.841	-1.508
-66.00	0.224	-13.009	-26.00	0.460	-6.742	14.00	0.817	-1.757
-65.00	0.226	-12.904	-25.00	0.493	-6.151	15.00	0.792	-2.029
-64.00	0.228	-12.834	-24.00	0.525	-5.599	16.00	0.765	-2.322
-63.00	0.229	-12.800	-23.00	0.557	-5.083	17.00	0.738	-2.639
-62.00	0.229	-12.794	-22.00	0.589	-4.603	18.00	0.710	-2.979
-61.00	0.228	-12.829	-21.00	0.620	-4.154	19.00	0.680	-3.344
-60.00	0.227	-12.898	-20.00	0.650	-3.736	20.00	0.650	-3.736
-59.00	0.224	-13.009	-19.00	0.680	-3.344	21.00	0.620	-4.154
-58.00	0.220	-13.158	-18.00	0.710	-2.979	22.00	0.589	-4.603
-57.00	0.215	-13.351	-17.00	0.738	-2.639	23.00	0.557	-5.083
-56.00	0.209	-13.600	-16.00	0.765	-2.323	24.00	0.525	-5.599
-55.00	0.202	-13.894	-15.00	0.792	-2.029	25.00	0.493	-6.151
-54.00	0.194	-14.260	-14.00	0.817	-1.759	26.00	0.460	-6.742
-53.00	0.184	-14.685	-13.00	0.840	-1.510	27.00	0.428	-7.377
-52.00	0.174	-15.192	-12.00	0.863	-1.281	28.00	0.395	-8.061
-51.00	0.162	-15.795	-11.00	0.884	-1.072	29.00	0.363	-8.801
						30.00	0.331	-9.602

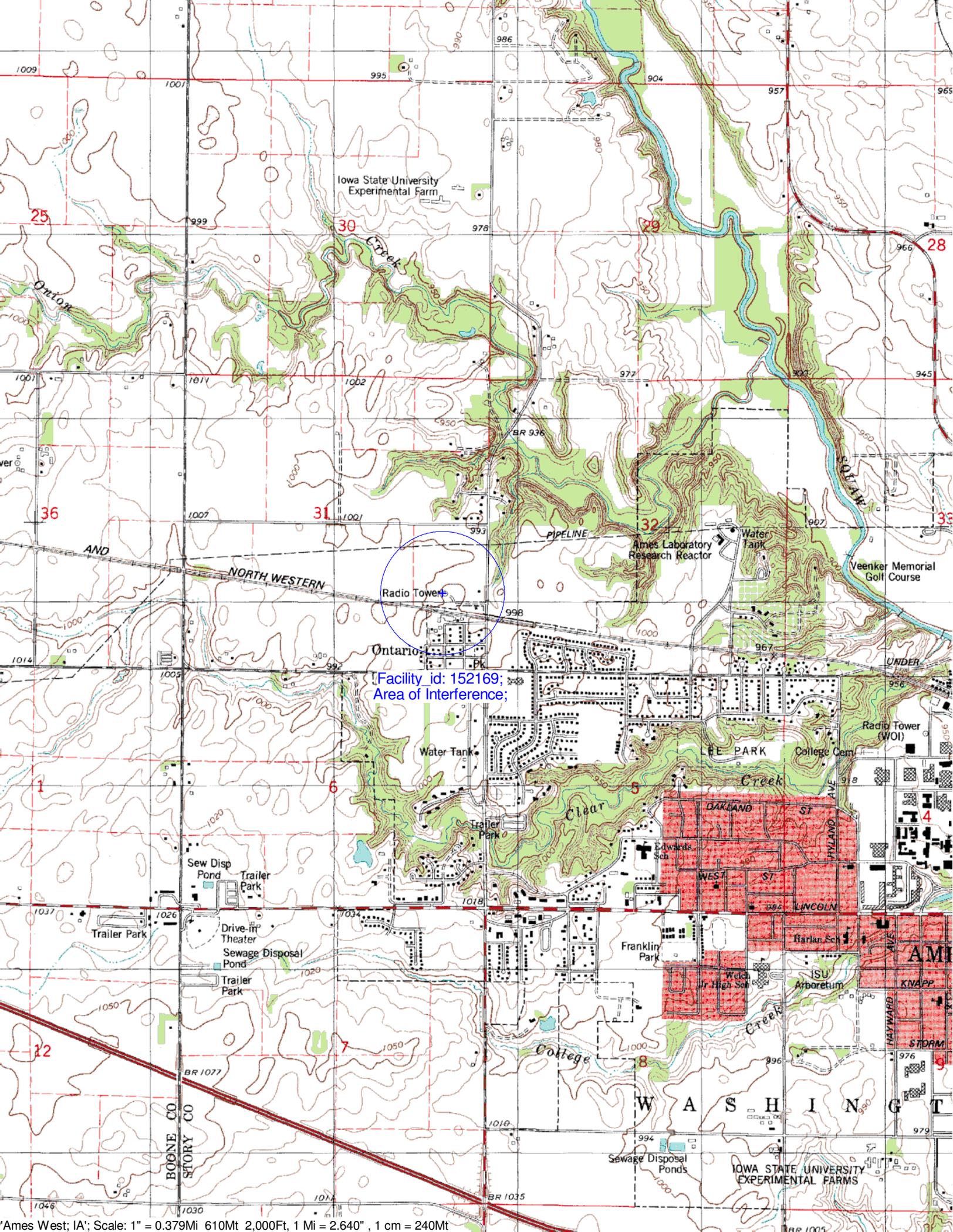
## Adjacent Channel Study For Station NEW, Facility\_id: 152169

### Co-channel through third adjacent:

Application_id	Facility_id	Prefix	ARN	Call	Licensee	Class	City	State	Status	ERP	RCAMSL	Channel	Adj	Dist	Overlap
401568	30116	BLH	19990831AAD	KWQW	RADIO LICENSE HOLDING CBC, LLC	C2	BOONE	IA	LIC	41	458	252	2	23.4	2.6274
1009721	30116	BXLH	20040830ACP	KWQW	RADIO LICENSE HOLDING CBC, LLC	C2	BOONE	IA	LIC	28	407.2	252	2	23.4	2.6274
288712	30116	Null	Null	KWQW	RADIO LICENSE HOLDING CBC, LLC	C2	BOONE	IA	USE	0	0	252	2	24.7	2.6274
1165217	12966	BXLH	20070104ACS	KHKI	RADIO LICENSE HOLDING CBC, LLC	C1	DES MOINES	IA	LIC	43	388.1	247	3	42.2	2.6274
1118749	12966	BLH	20060515AAB	KHKI	RADIO LICENSE HOLDING CBC, LLC	C1	DES MOINES	IA	LIC	105	425.1	247	3	42.2	2.6274
292594	12966	Null	Null	KHKI	RADIO LICENSE HOLDING CBC, LLC	C1	DES MOINES	IA	USE	0	0	247	3	42.2	2.6274
1362615	69355	BPFT	20100512AEQ	K269EJ	UNIVERSITY OF NORTHERN IOWA	D	DES MOINES	IA	CP	0.25	356	249	1	50.6	0
1437457	144093	BLFT	20110727AGW	K251BB	EDUCATIONAL MEDIA FOUNDATION	D	MARSHALLTOWN	IA	LIC	0.25	348	251	1	59.4	0
634380	142485	BNPFT	20030311AMD	NEW	STARBOARD MEDIA FOUNDATION, INC.	D	NEWTON	IA	APP	0.25	341	250	0	63.9	0
639763	147151	BNPFT	20030314AMJ	NEW	STARBOARD MEDIA FOUNDATION, INC.	D	GRINNELL	IA	APP	0.25	350	250	0	83.9	0
292759	10902	Null	Null	KHBT	NRG LICENSE SUB, LLC	A	HUMBOLDT	IA	USE	0	0	249	1	88.3	0
206133	10902	BMLH	19950202KB	KHBT	NRG LICENSE SUB, LLC	A	HUMBOLDT	IA	LIC	5.8	432	249	1	88.3	0
640640	147897	BNPFT	20030317ANA	NEW	DAVID M. STOUT	D	HUMBOLDT	IA	APP	0.25	419	253	3	89.6	0
289094	25471	Null	Null	KCRR	CUMULUS LICENSING LLC	C3	GRUNDY CENTER	IA	USE	0	0	249	1	99.4	0
193698	25471	BLH	19940110KA	KCRR	CUMULUS LICENSING LLC	C3	GRUNDY CENTER	IA	LIC	16	416	249	1	102.4	0
289482	17177	Null	Null	920507MA	DON TIMMERMAN BROADCASTING, INC.	C3	CEDAR FALLS	IA	USE	0	0	253	3	114.7	0
221209	66780	BLH	19960306KA	KOEL-FM	CUMULUS LICENSING LLC	C3	CEDAR FALLS	IA	LIC	15	407	253	3	114.9	0
168893	67199	BLH	19920121KB	KCMR	TLC BROADCASTING CORPORATION	A	MASON CITY	IA	LIC	6	448	250	0	126.9	0

### Intermediate Frequencies (53 and 54 channels difference):

Application\_id



Iowa State University  
Experimental Farm

Radio Tower

Facility id: 152169;  
Area of Interference;

Ontario

Ames Laboratory  
Research Reactor

Water Tank

Veenker Memorial  
Golf Course

Water Tank

College Cem

Radio Tower (WOI)

Trailer Park

Sew Disp  
Pond

Trailer Park

Drive-in  
Theater

Sewage Disposal  
Pond

Trailer Park

Franklin Park

Edwards Sch

Welch Jr High Sch

ISU  
Arboretum

Harlan Sch

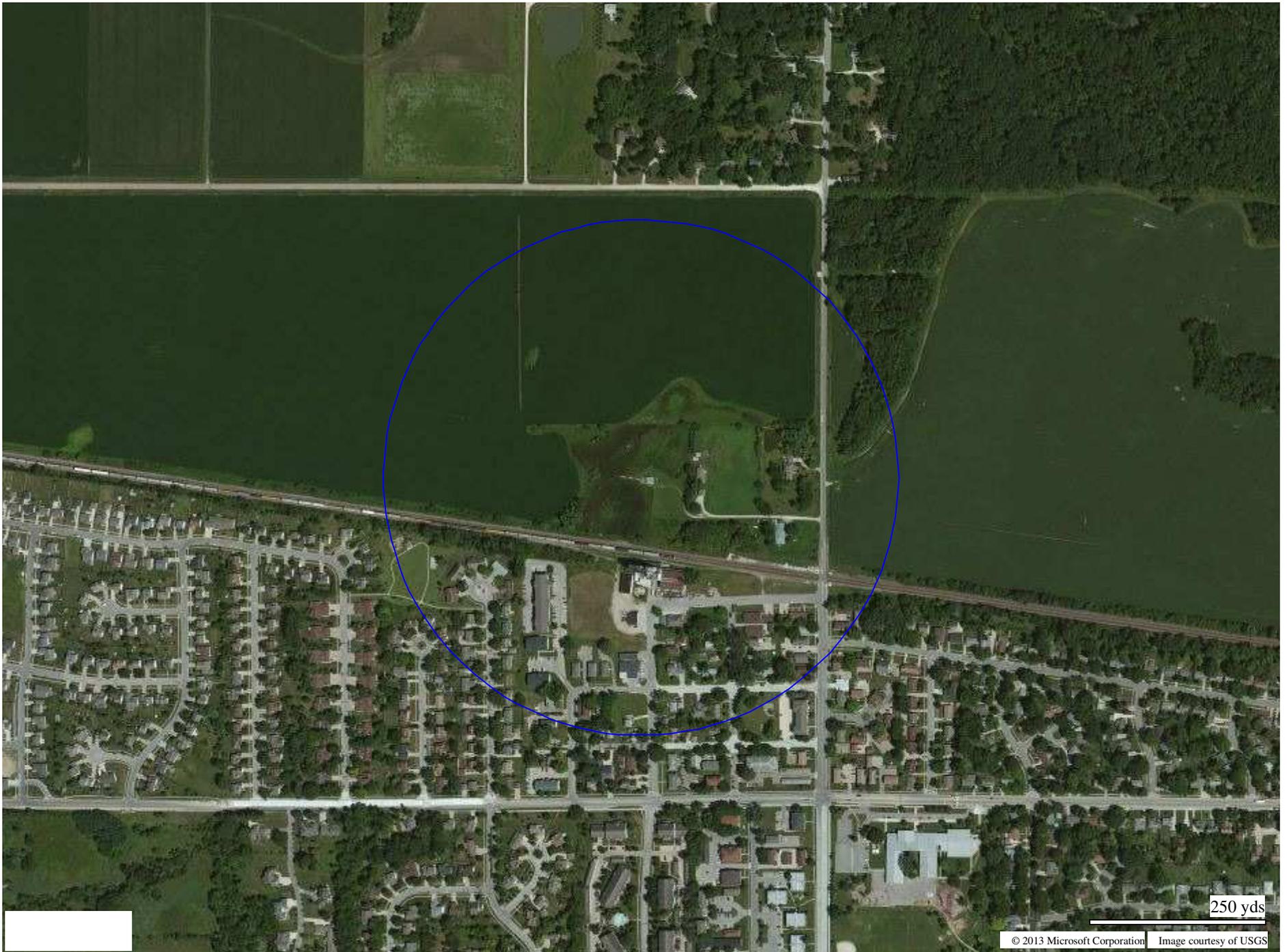
AM

KNAPP

STDRM

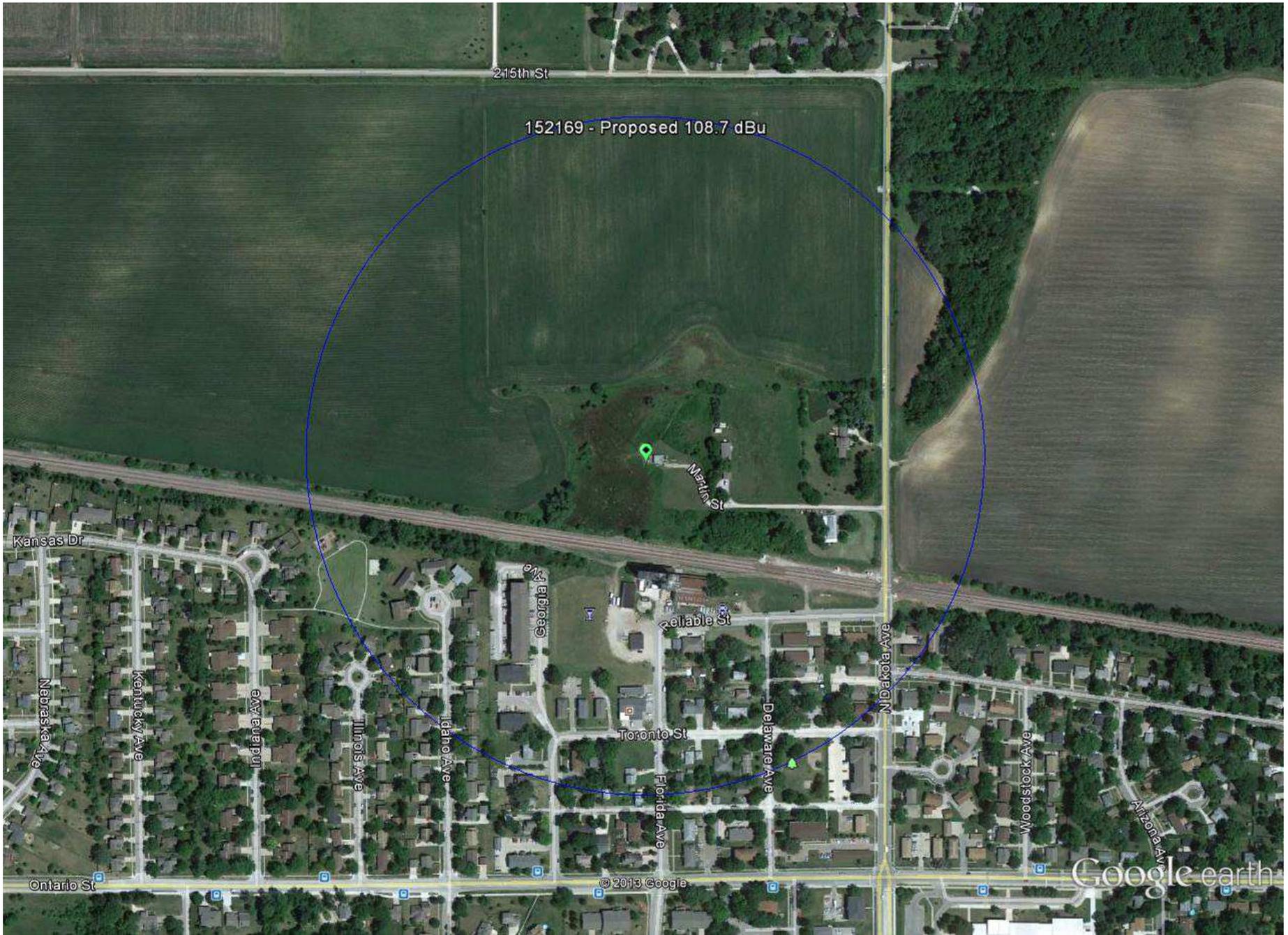
HAYWARD  
AVE

IOWA STATE UNIVERSITY  
EXPERIMENTAL FARMS



250 yds

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Google earth

feet  
meters

