

***APPLICATION FOR CONSTRUCTION PERMIT
DIGITAL COMPANION CHANNEL***

**W18BT – FLINT, MICHIGAN
CHANNEL 30**

DIGITAL NETWORKS–MIDWEST, LLC

MARCH 2020

APPLICATION FOR CONSTRUCTION PERMIT

The following engineering statement and attached exhibits have been prepared for **Digital Networks-Midwest, LLC** ("Midwest"), licensee of analog low power television station W18BT at Alpena, Michigan, and are in support of their application for construction permit for a new digital companion channel low power television facility at Flint, Michigan. The Facility ID for W18BT at Alpena, Michigan is 67049. The current license for the facility is under FCC File No. BLTT-19981113JB.

W18BT operates as an analog low-power television station on channel 18 with a maximum effective radiated power of 17.4 kW at a center of radiation of 329 meters above mean sea level, utilizing a directional antenna. The proposed digital companion channel would operate on channel 30 with a maximum effective radiated power of 2.0 kW at a center of radiation of 326.5 meters above mean sea level, 30 meters above ground level, utilizing a composite directional antenna system. The proposed antenna system consists of two Kathrein-Scala PR-TV antennas with equal power division. One of the antennas is oriented at 70 degrees true, while the other is oriented at 180 degrees true.

The proposed 51 dBu F(50,90) service contour from the proposed digital companion channel technical parameters would overlap the licensed W18BT 74 dBu F(50,50) service contour. Additionally, the proposed transmitter site for the digital companion channel is located within 30 miles of the licensed analog site. The map in Exhibit E-1 illustrates these constructs.

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3.24.2020

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The proposed technical parameters would not result in interference to other proposed, authorized, or licensed facilities in excess of that permitted under the Commission's Rules. Exhibit E-2 provides tabular output from *TVStudy*. This study demonstrates no interference check failures.

It should be noted that Exhibit E-2 indicates that the predicted 24.15 dBu interference contour from the proposed facility crosses the Canadian border, and that coordination with Industry Canada is required. A graphical check of this situation that the contour lies over the waters of Lake Huron, and does not encompass any Canadian land area. It is therefore respectfully submitted that Canadian coordination should not be necessary in this instance. Exhibit E-3 illustrates the predicted 24.15 dBu F(50,10) contour resulting from the proposed technical parameters.

The proposed facility is located within the State of Michigan. Per the *TVStudy* output, the distance to the Allegan monitoring station is 308.7 kilometers, or 191.8 miles. At this distance the predicted field strength from the proposed facility is less than 10 mV/m.

The proposed facility would not constitute a significant environmental impact, and is exempt from environmental processing. The proposed antenna would be mounted to an existing tower that is registered with the Commission. The addition of the antenna to this tower would not increase the existing environmental impact already present from the tower.

Using the equations in Supplement A of *OET Bulletin 65*, the calculated worst-case power density at ground level assuming a downward radiation relative field of 0.2 is $4.16 \mu\text{W}/\text{cm}^2$. This

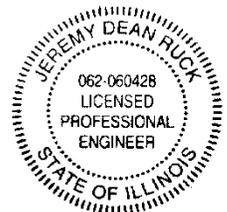
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value is less than the upper limit of the uncontrolled environment condition upper limit. Midwest certifies that it will coordinate with all other users of the site to ensure that workers and other personnel are not exposed to levels of radiofrequency radiation in excess of the applicable safety standards. Coordination activities will include, but are not necessarily limited to, a reduction in transmitter power or cessation of operation.

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, 2021

Jeremy D. Ruck, PE
March 24, 2020

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W18BT.X
PROPOSED
Latitude: 45-00-52.70 N
Longitude: 084-02-24.40 W
ERP: 2.00 kW
Channel: 30
AMSL Height: 326.5 m
Horiz. Pattern: Directional
Prop Model: FCC Contour

W18BT
BLTTL-19981113JB
Latitude: 45-09-22.60 N
Longitude: 083-28-03.70 W
ERP: 17.40 kW
Channel: 18-
AMSL Height: 329.0 m
Horiz. Pattern: Directional
Prop Model: FCC Contour

Jeremy Ruck & Associates, Inc.

-  Proposed 51 dBu F(50,90) Service Contour
-  Licensed 74 dBu F(50,50) Service Contour
-  Proposed Site 30-mile Radius

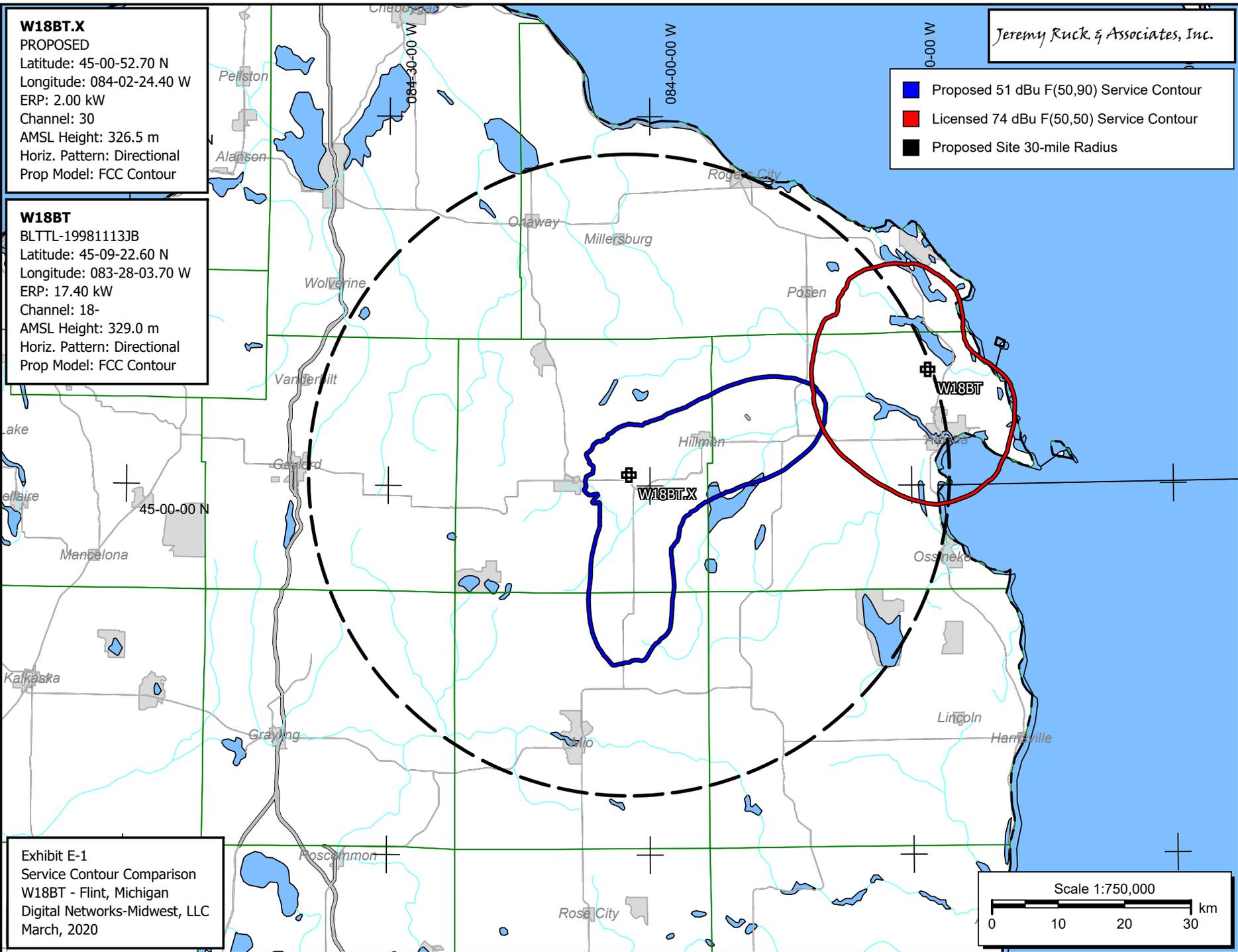


Exhibit E-1
Service Contour Comparison
W18BT - Flint, Michigan
Digital Networks-Midwest, LLC
March, 2020

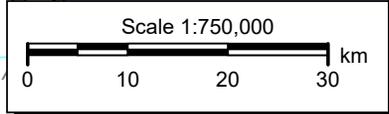


Exhibit E-2 - TVStudy Interference Study

tvstudy v2.2.5 (4uoc83)

Database: 127.0.0.1, Study: W18BT DCC Ch 30 ASRN 1244688 2 kW ERP 326.5 m AMSL PR-TV x2 1@70 1@180, Model: Longley-Rice
Start: 2020.03.24 14:07:05

Study created: 2020.03.24 14:07:05

Study build station data: LMS TV 2020-03-21

Proposal: W18BT D18 LD APP ALPENA, MI
File number: BLTTL19981113JB
Facility ID: 67049
Station data: User record
Record ID: 125
Country: U.S.
Zone: II

Build options:

Protect pre-transition records not on baseline channel

Stations potentially affected by proposal:

| IX | Call | Chan | Svc | Status | City, State | File Number | Distance |
|-----|---------|------|-----|--------|-------------------|-------------------|----------|
| No | WMNN-LD | D17 | LD | CP | LAKE CITY, MI | BLANK0000054262 | 132.6 km |
| No | WFFC-LD | D17 | LD | LIC | MIDLAND, MI | BLANK0000087273 | 180.5 |
| No | WFWA | D18 | DT | LIC | FORT WAYNE, IN | BLANK0000063130 | 444.6 |
| No | WUHO-LP | D18+ | LD | CP | KALAMAZOO, MI | BLANK0000071807 | 325.7 |
| No | W18ER-D | D18 | LD | LIC | MUSKEGON, MI | BLANK0000068548 | 253.3 |
| Yes | WURO-LD | D18 | LD | LIC | ROSCOMMON, MI | BLDTL20141113AFT | 65.5 |
| No | WEYI-TV | D18 | DT | LIC | SAGINAW, MI | BLANK0000075003 | 201.4 |
| No | WPBN-TV | D18 | LD | CP | TRAVERSE CITY, MI | BLANK0000094903 | 132.1 |
| No | WDTJ-LD | D18 | LD | LIC | TOLEDO, OH | BLDTL20121219ABP | 375.7 |
| No | WVTV | D18 | DT | LIC | MILWAUKEE, WI | BLCDT20101012ADH | 375.1 |
| No | WFKB-LD | D19 | LD | LIC | MIDLAND, MI | BLANK0000080439 | 180.5 |
| No | W19EA-D | D19 | LD | CP | ROSCOMMON, MI | BNPDTL20100223ACZ | 76.1 |

No non-directional AM stations found within 0.8 km

No directional AM stations found within 3.2 km

Record parameters as studied:

Channel: D18
Mask: Full Service
Latitude: 45 0 52.70 N (NAD83)
Longitude: 84 2 24.40 W
Height AMSL: 326.5 m
HAAT: 57.6 m
Peak ERP: 2.00 kW
Antenna: SCA PR-TV x2 Array 1@70 1@180 0.0 deg
Elev Patrn: Generic

49.1 dBu contour:

| Azimuth | ERP | HAAT | Distance |
|---------|----------|--------|----------|
| 0.0 deg | 0.010 kW | 61.9 m | 8.6 km |
| 45.0 | 0.175 | 73.8 | 19.0 |
| 90.0 | 0.416 | 79.0 | 24.1 |
| 135.0 | 0.027 | 78.6 | 12.1 |
| 180.0 | 2.00 | 67.8 | 30.5 |
| 225.0 | 0.018 | 17.0 | 6.9 |
| 270.0 | 0.010 | 37.9 | 6.7 |
| 315.0 | 0.013 | 44.8 | 7.8 |

**Proposal 24.15 dBu contour crosses Canadian border, coordination required

Distance to Canadian border: 96.1 km

Distance to Mexican border: 2275.1 km

Conditions at FCC monitoring station: Allegan MI
Bearing: 210.5 degrees Distance: 308.7 km

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Exhibit E-2 - TVStudy Interference Study

Proposal is not within the West Virginia quiet zone area

Conditions at Table Mountain receiving zone:
Bearing: 260.1 degrees Distance: 1809.9 km

No land mobile station failures found

Proposal is not within the Offshore Radio Service protected area

Study cell size: 1.00 km
Profile point spacing: 1.00 km

Maximum new IX to full-service and Class A: 0.50%
Maximum new IX to LPTV: 2.00%

Interference to BLDLTL20141113AFT LIC scenario 1

| Desired: | Call | Chan | Svc | Status | City, State | File Number | Distance |
|-------------|---------|------|-----|--------|-------------------|-------------------|----------|
| | WURO-LD | D18 | LD | LIC | ROSCOMMON, MI | BLDRTL20141113AFT | |
| Undesireds: | W18BT | N18- | TX | LIC | ALPENA, MI | BLTTL19981113JB | 105.4 km |
| | W18BT | D18 | LD | APP | ALPENA, MI | BLTTL19981113JB | 65.5 |
| | WMNN-LD | D17 | LD | CP | LAKE CITY, MI | BLANK0000054262 | 76.6 |
| | WEYI-TV | D18 | DT | LIC | SAGINAW, MI | BLANK0000075003 | 152.1 |
| | WPBN-TV | D18 | LD | CP | TRAVERSE CITY, MI | BLANK0000094903 | 105.1 |
| | W19EA-D | D19 | LD | CP | ROSCOMMON, MI | BNPDTL20100223ACZ | 25.6 |

| Service area | Terrain-limited | IX-free, before | IX-free, after | Percent New IX |
|--------------|-----------------|-----------------|----------------|----------------|
| 4864.9 | 60,130 | 4613.6 | 55,949 | 3686.6 |
| | | | | 43,197 |
| | | | | 3679.6 |
| | | | | 42,931 |
| | | | | 0.19 |
| | | | | 0.62 |

| Undesired | Total IX | Unique IX, before | Unique IX, after |
|--------------------|----------|-------------------|------------------|
| W18BT N18- TX LIC | 4.0 | 0 | 3.0 |
| W18BT D18 LD APP | 15.0 | 266 | 10.0 |
| WMNN-LD D17 LD CP | 13.0 | 406 | 0.0 |
| WEYI-TV D18 DT LIC | 820.0 | 12,276 | 770.8 |
| WPBN-TV D18 LD CP | 77.1 | 409 | 28.0 |
| W19EA-D D19 LD CP | 76.0 | 435 | 68.0 |

Interference to proposal scenario 1

| Desired: | Call | Chan | Svc | Status | City, State | File Number | Distance |
|-------------|---------|------|-----|--------|-------------------|-------------------|----------|
| | W18BT | D18 | LD | APP | ALPENA, MI | BLTTL19981113JB | |
| Undesireds: | WURO-LD | D18 | LD | LIC | ROSCOMMON, MI | BLDRTL20141113AFT | 65.5 km |
| | WEYI-TV | D18 | DT | LIC | SAGINAW, MI | BLANK0000075003 | 201.4 |
| | WPBN-TV | D18 | LD | CP | TRAVERSE CITY, MI | BLANK0000094903 | 132.1 |

| Service area | Terrain-limited | IX-free | Percent IX |
|--------------|-----------------|---------|------------|
| 888.1 | 5,873 | 865.8 | 5,873 |
| | | | 841.5 |
| | | | 5,810 |
| | | | 2.80 |
| | | | 1.07 |

| Undesired | Total IX | Unique IX | Prct Unique IX |
|--------------------|----------|-----------|----------------|
| WURO-LD D18 LD LIC | 19.2 | 58 | 15.2 |
| WEYI-TV D18 DT LIC | 8.1 | 11 | 5.1 |
| WPBN-TV D18 LD CP | 1.0 | 0 | 0.0 |

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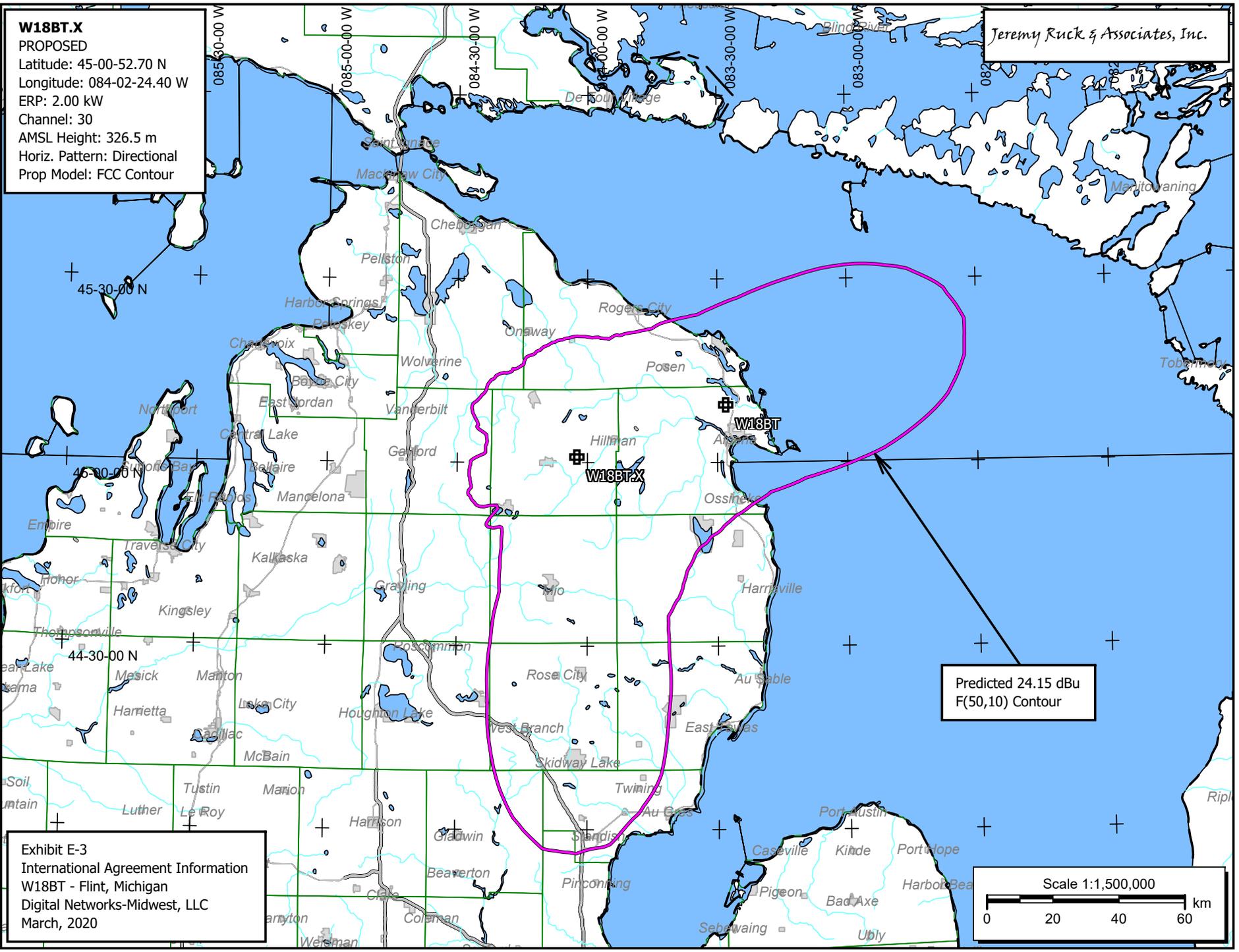
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AMSL Height: 326.5 m
Horiz. Pattern: Directional
Prop Model: FCC Contour

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Predicted 24.15 dBu
F(50,10) Contour

Exhibit E-3
International Agreement Information
W18BT - Flint, Michigan
Digital Networks-Midwest, LLC
March, 2020

