

Exhibit B

This Exhibit B presents the power flux-density (“PFD”) contour analysis and associated assessments prepared by Northwood Space Corporation (“Northwood”) pursuant to Section 25.136(a)(4) of the Federal Communications Commission’s (“FCC”) rules¹ for Northwood’s gateway earth station facility located at or near Talkeetna in Matanuska-Susitna Borough, Alaska (the “Site”) relative to the Upper Microwave Flexible Use Service (“UMFUS”) deployments in the 27.5–28.35 GHz band in the county. For purposes of this discussion, County and Borough will be used interchangeably.

1. PFD Contour Generation

a. Earth Station Parameters

Table 1 below sets forth the earth station parameters used by Northwood to generate the PFD contour for the Site. The latitude and longitude values reflect the Site’s confirmed coordinates.

Table 1. Northwood Earth Station Parameters

Field	Value	Units
County / Municipality	Matanuska-Susitna Borough	
Latitude	62.333541	° N
Longitude	–150.037719	° W
Simulation Frequency	28	GHz
Maximum Number of Simultaneously Active Antennas ²	6	antennas
Antenna Centerline Height (Above Ground Level)	1.52	meters
Worst-case Antenna Gain toward the Horizon	–10	dBi
Average Antenna Gain toward the Horizon	–20	dBi
RF Transmit Power Density (antenna input)	24.0	dBW/MHz
Per-Antenna EIRP Density toward the Horizon	4.0	dBW/MHz
Aggregate EIRP Density toward the Horizon (6 antennas)	11.8	dBW/MHz

The RF transmit power in Table 1 represents the power required to communicate with GSO satellites. Power levels for communications with much lower altitude NGSO satellites will be several orders of magnitude lower.

¹ 47 C.F.R. § 25.136(a)(4).

² A single antenna is the typical number of antennas transmitting at any one time. All six antennas were used for modelling the worst-case aggregate interference.

The gain toward the horizon in Table 1 reflects the off-axis characteristics of Northwood's 2.4-meter Ka-band antennas together with the Site's operational pointing geometry. Each antenna is highly directive, with an on-axis gain of 55.2 dBi and a half-power beamwidth of approximately 0.3 degrees, and its gain declines steeply with off-axis angle. The reference radiation pattern in Recommendation ITU-R S.465-6 declines to -10 dBi for off-axis angles at and beyond approximately 48 degrees. In reality, the measured off-axis gain of Northwood's antennas is substantially better than this reference envelope. For purposes of this Section 25.136 analysis, we use a mean off-axis antenna gain of -20 dBi to represent the earth station's antenna gain toward the horizon. The actual off-axis gain toward the horizon varies between approximately -10 dBi and -30 dBi across large portions of the angular range (and drops as low as -50 dBi at certain angles). A mean off-axis gain of -20 dBi is a reasonable, statistically representative simplification that accounts for the full range of sidelobe variation across all operational beam positions. This approach is consistent with industry practice of evaluating earth station emissions against emission envelopes rather than requiring exhaustive enumeration of every antenna pattern variation. The aggregate input value in Table 1 conservatively applies the full $10 \cdot \log_{10}(6)$ combination of all six antennas, without any reduction for the varying and independent pointing of the antennas.

b. PFD Contour Methodology

To demonstrate compliance with the criteria in Section 25.136(a)(4) of the Commission's rules allowing fixed-satellite service ("FSS") earth station transmissions in the 27.5–28.35 GHz band without providing additional interference protection to co-frequency UMFUS licensees, Northwood generated the Site's -77.6 dBm/m²/MHz PFD contour using the earth station parameters set forth in Table 1. The contour was generated by creating a raster grid of measurement points located 10 meters above ground level and surrounding the earth station, and by calculating the path attenuation, received power, and power flux-density to each point.

Northwood used bare-Earth digital terrain elevation data obtained from the U.S. Geological Survey to characterize the terrain surrounding the Site. Northwood applied Recommendation ITU-R P.452 to estimate the basic transmission loss not exceeded for 10% of time between the Site and each point on the PFD measurement grid. To account for clutter losses at the UMFUS base station receive point, Northwood applied Recommendation ITU-R P.2108 and assumed that 80% of UMFUS base station deployments are located below rooftop level and therefore experience clutter losses consistent with that recommendation. No clutter loss was assumed at the Northwood earth station. Northwood designed the Site to ensure that the PFD produced by the earth station does not exceed -77.6 dBm/m²/MHz at 10 meters above ground level anywhere outside of the contour depicted in Figure 1 below.

c. Gateway PFD Contour Figure

Figure 1 below depicts the Site's -77.6 dBm/m²/MHz PFD contour together with the boundaries of the U.S. Census tabulation blocks that intersect the contour. The green dot in Figure 1 marks the location of the Site. The map plots each intersecting census block by its block identifier against the Site's latitude and longitude, and identifies the total population determined to be covered by the contour. This figure and the population coverage tables in Section 2.b below are derived from the population-block intersection analysis performed for the Site.

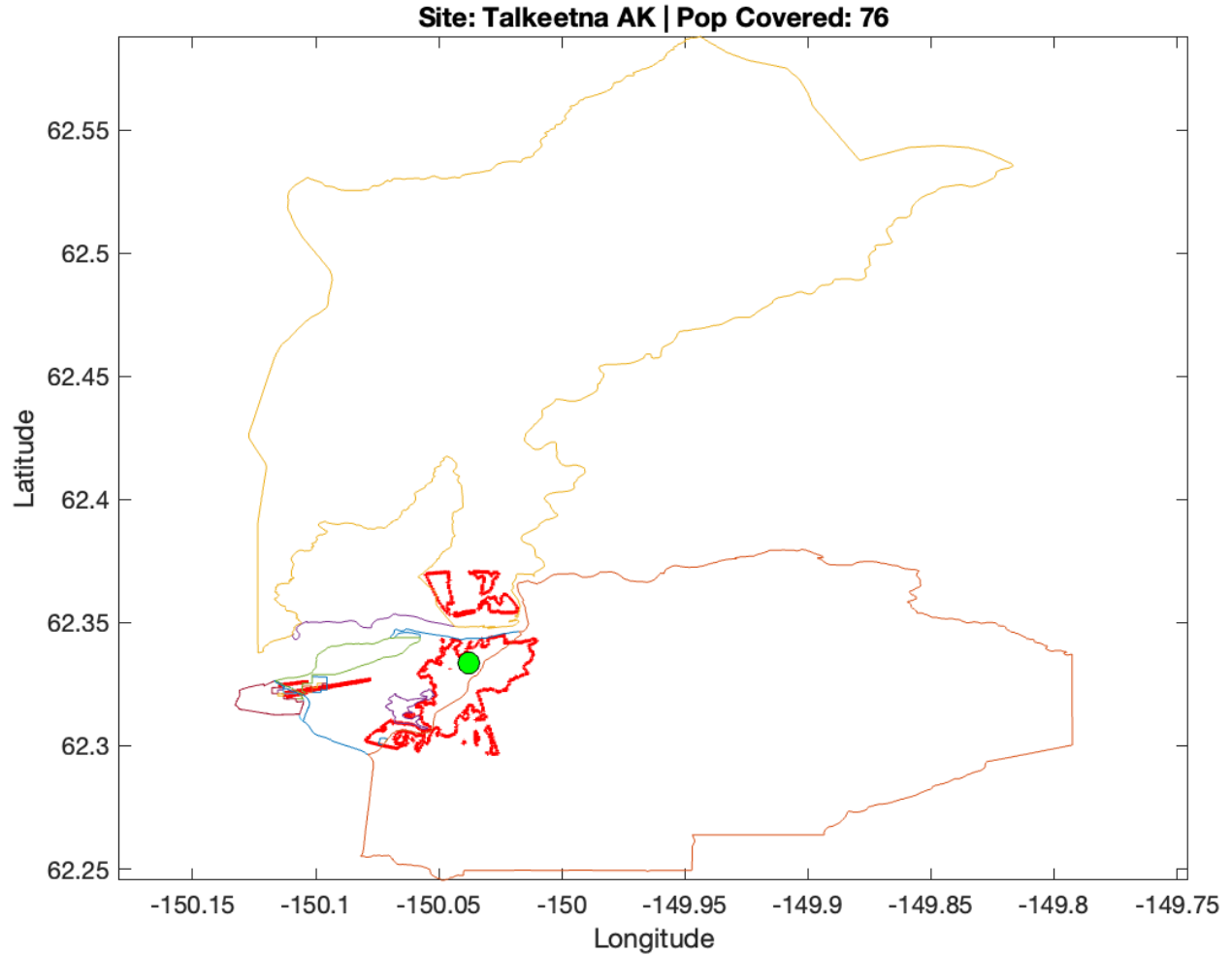


Figure 1. Talkeetna, AK Gateway PFD Contour ($-77.6 \text{ dBm/m}^2/\text{MHz}$)

2. Section 25.136(a)(4) Protection Criteria Analysis

a. Other Earth Stations Located in the County (47 C.F.R. § 25.136(a)(4)(i))

Section 25.136(a)(4)(i) of the Commission’s rules requires the applicant to demonstrate that there are no more than two other authorized earth stations operating in the 27.5–28.35 GHz band pursuant to Section 25.136(a) in the same county.³

Northwood has reviewed the Commission’s licensing database and identified, as of the date of this submission, one other FSS earth station within Matanuska-Susitna Borough.⁴ This earth station is

³ 47 C.F.R. § 25.136(a)(4).

⁴ See Application of WorldVu Satellites Limited, ICFS File No. SES-LIC-20180604-01082 (granted Nov. 8, 2019) (“OneWeb Application”).

not collocated with the Site. However, this station's $-77.6 \text{ dBm/m}^2/\text{MHz}$ PFD contour partially overlaps with the Site's contour depicted in Figure 1 above.

b. Population Covered by Census Block (47 C.F.R. § 25.136(a)(4)(ii))

Section 25.136(a)(4)(ii) requires the applicant to demonstrate that the area covered by the earth station's PFD contour, "together with the similar area of any other earth station" authorized under Section 25.136(a), does not cover, in the aggregate, a population exceeding certain prescribed limits.⁵ These limits are: (1) 0.1% of the county population if that population exceeds 450,000; (2) 450 people if the county population is between 6,000 and 450,000; or (iii) 7.5% of the county population if that population is fewer than 6,000.⁶ Under FCC guidance implementing Section 25.136(a)(4)(ii), where the PFD contours of two earth stations overlap within the same licensing area, the population covered by the overlap is counted only once against the aggregate population limit for that licensing area, and where a contour covers multiple licensing areas, the covered population in each licensing area is counted against the limit applicable to that specific area.⁷

The total population of Matanuska-Susitna Borough, according to 2020 U.S. Census Bureau data, is 107,081 and therefore the applicable population limit pursuant to Section 25.136(a)(4)(ii) is 450 persons.⁸

Table 2 below sets forth, on a census-block basis, the total population, total block area, the percentage of each block's area falling within the Site's PFD contour, and the resulting covered population which is calculated to be proportional to the covered area of each block.

Table 2. Population Covered by Census Block

County Name	Block ID	Total Population	Total Area	Partial Area	% Area	Covered Population
Matanuska-Susitna Borough	1001	22	59913.96205	13067.63	21.81066	4.798345
Matanuska-Susitna Borough	2049	4	15486021.76	6021.597587	0.038884	0.001555
Matanuska-Susitna Borough	1005	8	38370.4402	38370.4402	100	8
Matanuska-Susitna Borough	1014	9	131316.0664	249.1323884	0.18972	0.017075
Matanuska-Susitna Borough	1004	21	31913.90093	7082.536864	22.19264	4.660454
Matanuska-Susitna Borough	1000	157	13103317.76	3478098.096	26.54364	41.67352
Matanuska-Susitna Borough	1011	6	56269.29488	17473.88223	31.05403	1.863242
Matanuska-Susitna Borough	2048	1	178998942.5	1200462.214	0.670653	0.006707

⁵ 47 C.F.R. § 25.136(a)(4)(ii).

⁶ 47 C.F.R. § 25.136(a)(4)(ii), Table 1.

⁷ *Space Bureau Updates its Guidance on Siting Methodologies for Earth Stations Seeking to Operate in the 24.75-25.25 GHz, 27.5-28.35 GHz, 37.5-40 GHz, 47.2-48.2 GHz, and 50.4-51.4 GHz Bands to Demonstrate Compliance with Section 25.136*, 40 FCC Rcd 1547, 1556 (rel. Mar. 10, 2025) ("2025 UMFUS Guidance").

⁸ See *Matanuska-Susitna Borough, Alaska, U.S. Census Bureau*, <https://www.census.gov/quickfacts/fact/table/matanskasusitnaboroughalaska/PST045225> (last visited Aug. 22, 2026).

Matanuska-Susitna Borough	1044	0	20165.85207	54.86877276	0.272088	0
Matanuska-Susitna Borough	1023	14	90344.24894	30681.42914	33.96058	4.754481
Matanuska-Susitna Borough	1016	15	38317.4711	14743.67806	38.47769	5.771654
Matanuska-Susitna Borough	1019	33	1337259.085	1397.564403	0.10451	0.034488
Matanuska-Susitna Borough	1015	3	48047.21636	9711.539307	20.21249	0.606375
Matanuska-Susitna Borough	2044	140	148066624.1	3266939.359	2.206398	3.088958
Matanuska-Susitna Borough	1021	9	13287.80379	62.57630788	0.47093	0.042384
Matanuska-Susitna Borough	1002	7	612916.4357	1500.075822	0.244744	0.017132
Matanuska-Susitna Borough	1008	20	2277257.946	23276.60844	1.022133	0.204427

Table 3 below sets forth the total population covered by the Site's PFD contour in the county.

Table 3. Population Covered by County

County Name	Population Covered
Matanuska-Susitna Borough	76

Note: Covered population figures in Table 2 are summed and the result is rounded up to the next whole number of persons

As mentioned above, at the time of this filing, there is one other FSS earth station in the 27.5–28.35 GHz band in Matanuska-Susitna Borough, operated by WorldVu Satellites Limited (“OneWeb”). The licensee has provided its -77.6 dBm/m²/MHz PFD contour in its application. Using 2020 U.S. Census Bureau data and the actual area method, Northwood has determined that OneWeb’s station’s contour covers 177 people.

As noted above, the Site’s contour partially overlaps with the OneWeb station’s contour. The aggregate population coverage for the Site is 253 without subtracting the population covered by the overlap.⁹ The aggregate population coverage therefore does not exceed the 450 population limit.

c. Infrastructure-Crossing Analysis (47 C.F.R. § 25.136(a)(4)(iii))

Section 25.136(a)(4)(iii) of the Commission’s rules provides that an earth station’s PFD contour shall not cross any roads classified as Interstate, Other Freeways and Expressways, or Other Principal Arterials, as defined in the functional classification guidelines issued by the Federal Highway Administration. The Space Bureau’s Revised Siting Guidance¹⁰ clarifies that applicants should consult the Federal Highway Administration Office of Planning, Environment, and Realty’s

⁹ See 2025 UMFUS Guidance at 3 (“Where two PFD contours or the protection zones of two earth stations overlap within the same licensing area, the Bureau intends to count the population covered by the overlap only once against the aggregate population limit for that licensing area.”).

¹⁰ 2025 UMFUS Guidance, 40 FCC Rcd at 1557.

Executive Geographic Information System (“HEPGIS”) map to determine the classification of roads in the vicinity of the proposed earth station, and specifically the 2022 Highway Performance Monitoring System Functional Class on National Highway System (“NHS”) layer.

Northwood has reviewed the HEPGIS map and the 2022 NHS functional classification data for the area surrounding the Site. Based on this review, the Site’s $-77.6 \text{ dBm/m}^2/\text{MHz}$ PFD contour depicted in Figure 1 above does not intersect with any roads classified as Interstate, Other Freeways and Expressways, or Other Principal Arterials.

Section 25.136(a)(4)(iii) also provides that an earth station’s PFD contour shall not encompass any major event venue, urban mass transit route, passenger railroad, or cruise ship port. Northwood’s analysis of the Site confirms that the PFD contour depicted in Figure 1 does not encompass any such infrastructure, and this requirement is therefore satisfied.

d. UMFUS Coordination (47 C.F.R. § 25.136(a)(4)(iv))

Section 25.136(a)(4)(iv) requires that the applicant complete coordination with UMFUS licensees within the earth station’s PFD contour. Northwood has completed such coordination and has attached the coordination report as Exhibit A to the application.¹¹

¹¹ 47 C.F.R. § 25.136(a)(4)(iv).