

XPANDAcell Repeaters

**Carrier Class Solutions to
Expand Your Cellular Coverage**

<http://www.xpandacell.com>

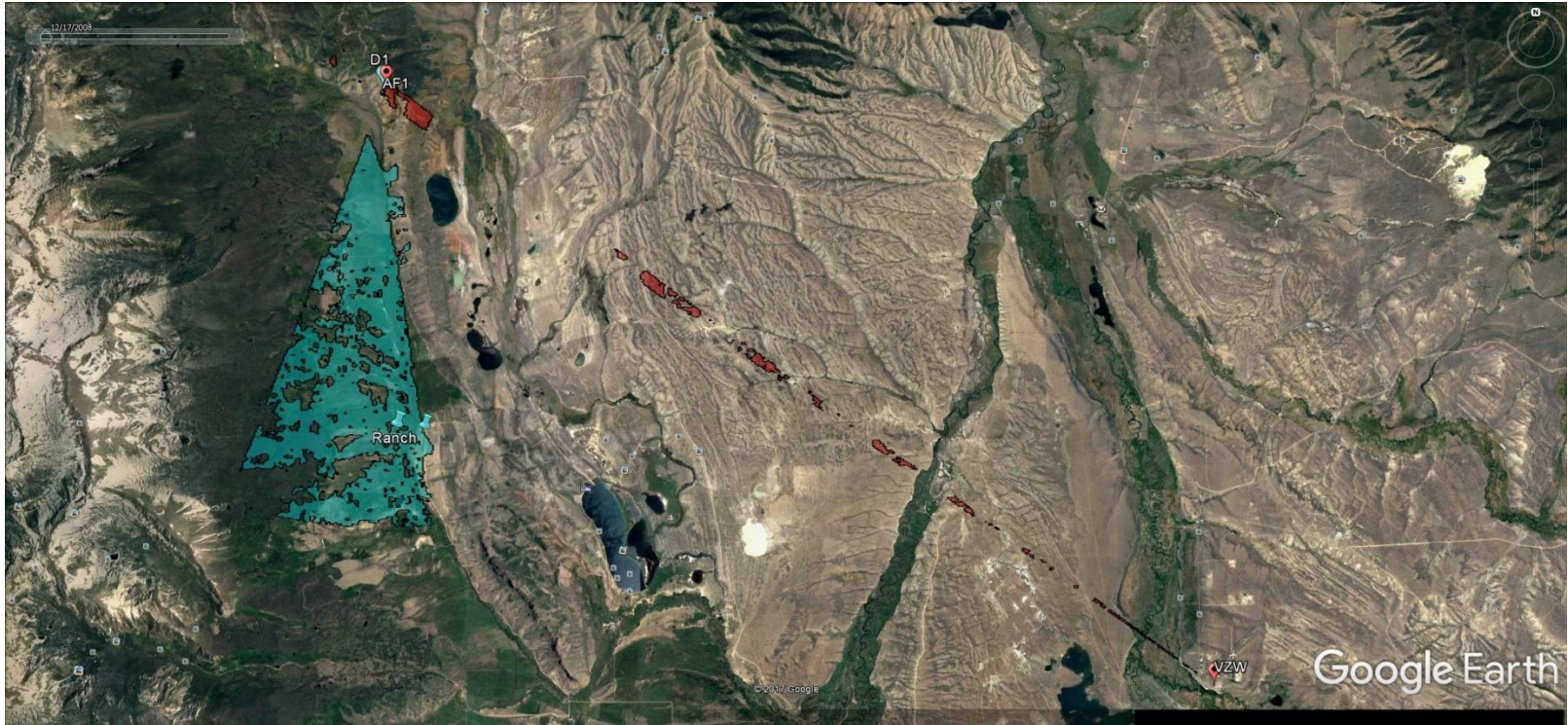
What it does

- RPT-9000 solves coverage problem
- Repeats LTE/UMTS/CDMA/GSM signals from a cell site to target locations for local coverage.
- Enables the Operator to:
 - Firm up coverage in fringe, low lying and limited reception areas
 - Selectively extend coverage
 - Provide coverage where the cost of a base station is not justifiable

Case Study – Single Repeater Link

- Western U.S. Ranch 24 Km from nearest cell tower
- Remote area - no coverage at ground level throughout valley
- Use of VHF two-way radios
- Need for cell service to facilitate better communications around the main ranch locations, cabins and field along valley

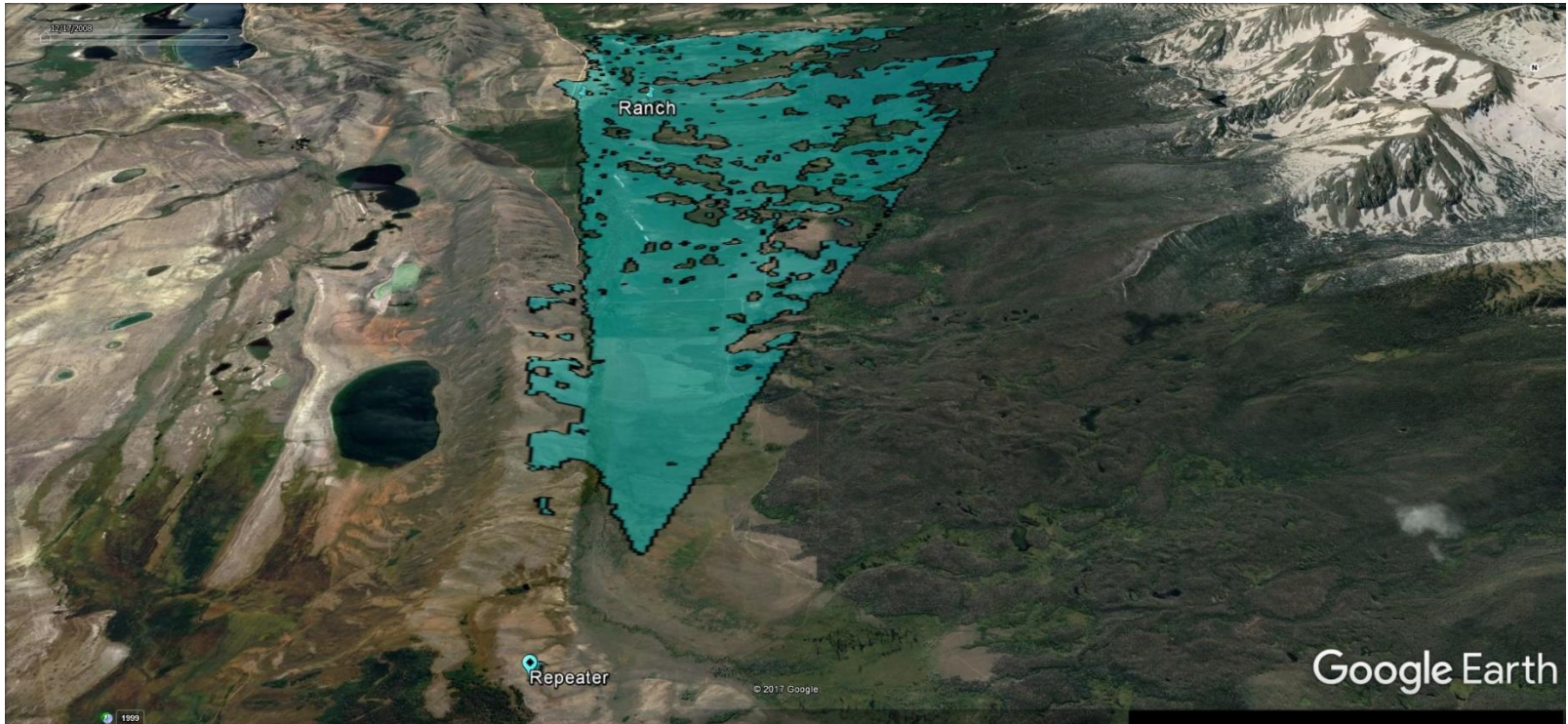
Case Study – Single Repeater Link



Example of Single Repeater Link providing coverage to Ranch and Farm

- 850 MHz Cell Tower is located 28 Km to the southeast of the property
- No cell coverage at ground level due to hills to the east of the valley
- Line of site from the north where the repeater is located
- Verizon Wireless signal available for voice, SMS and data

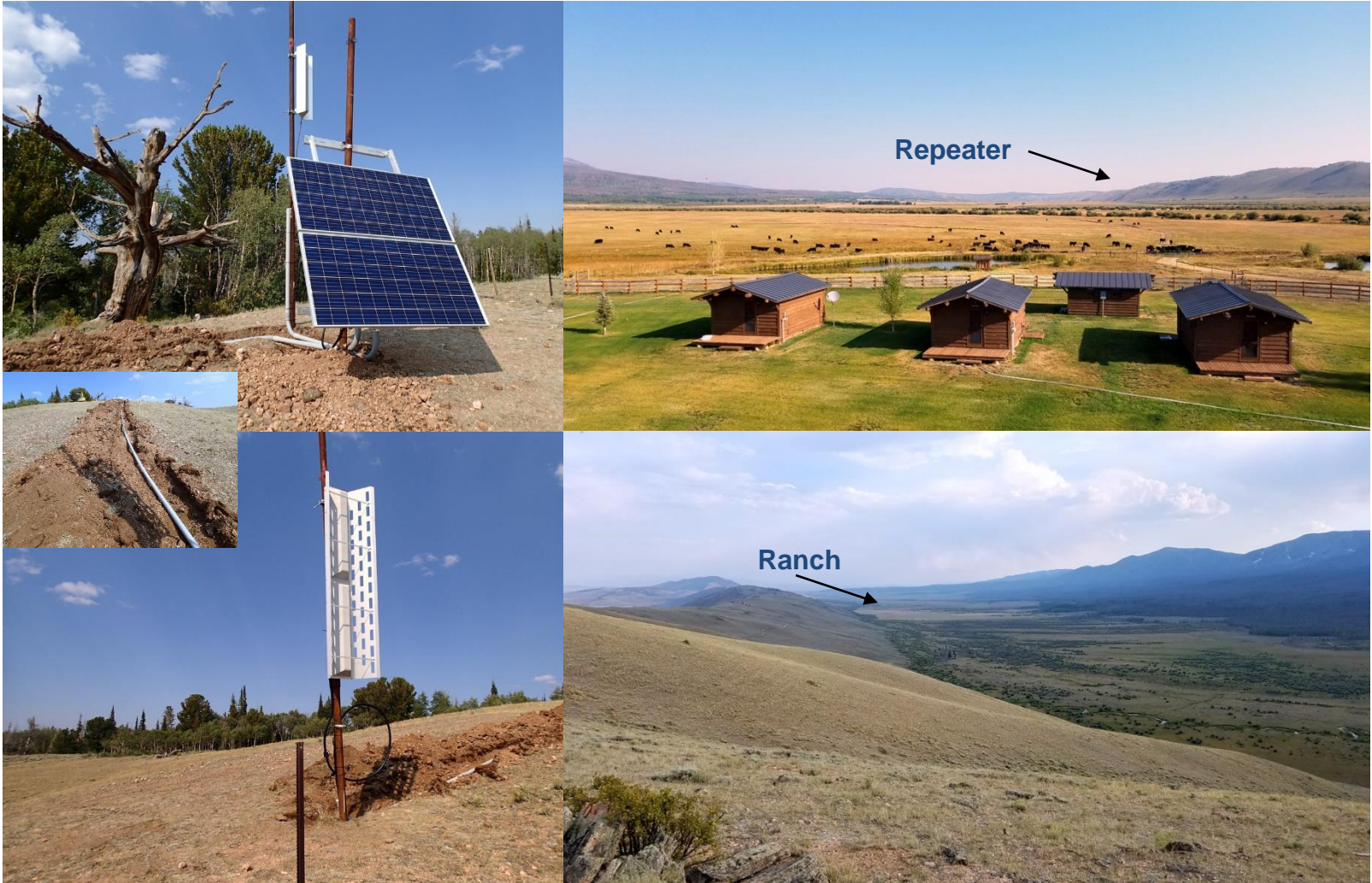
Case Study – Single Repeater Link



Example of RPT-9000 Repeater used to extend cellular coverage along valley

- Donor antenna at 5m above ground captures cell signal from tower 28 Km away
- Solar Panel & Battery array providing 24 VDC @ 50W to power repeater
- No tower erected on top of hill; horizontal separation between antennas
- Use of 7/8" Heliax cable installed in 2.5" PVC pipe for protection
- Area Fill antenna at 4 m height facing south, ranch coverage shaded area in blue

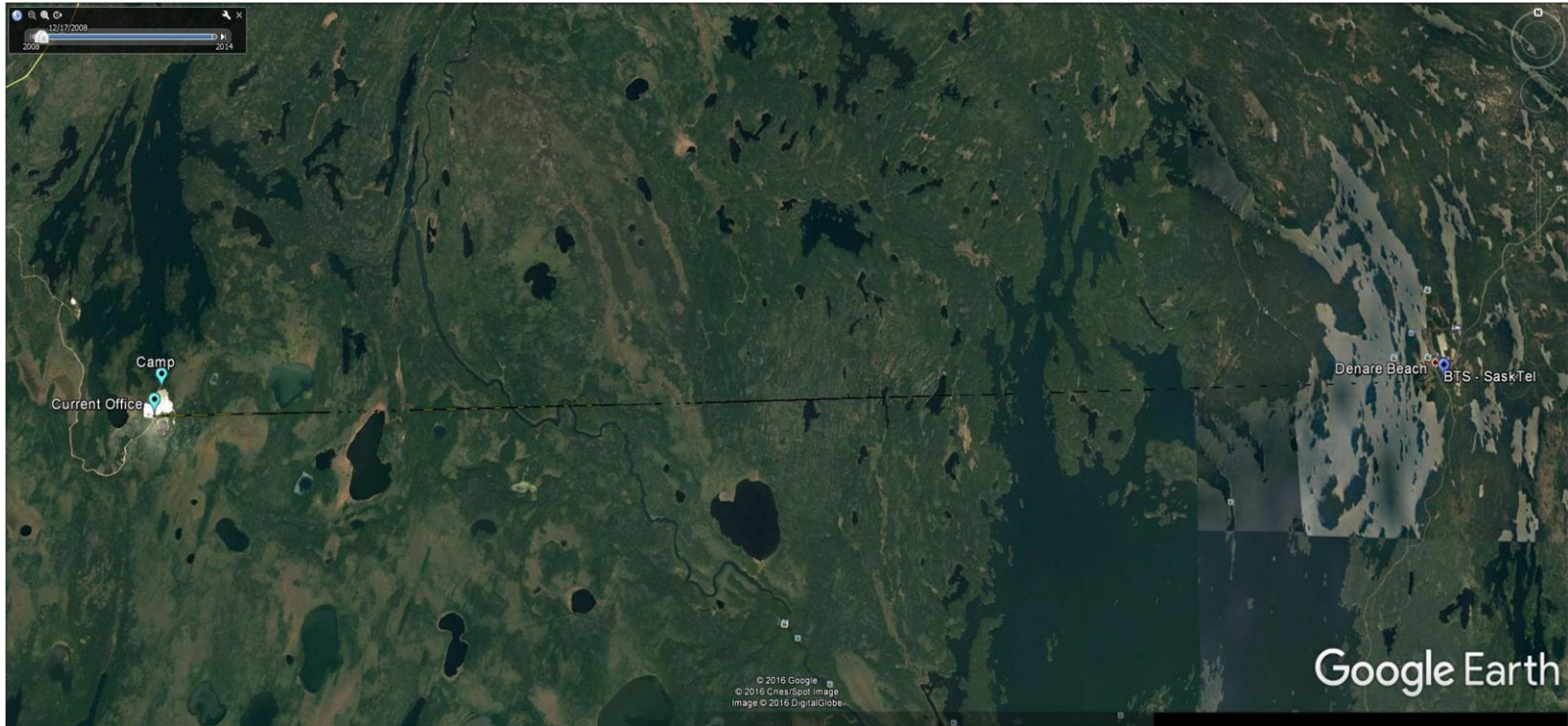
Case Study – Single Repeater Link



Case Study – Single Repeater Link

- Western Canada Sand Mining Plant 47 Km from nearest cell tower
- Remote area - no coverage at ground level
- Need for cell service to facilitate better communications in Office Trailers, Maintenance Shop and common areas
- Company mandate to improve morale so workers are able to stay in touch with their families during off hours.

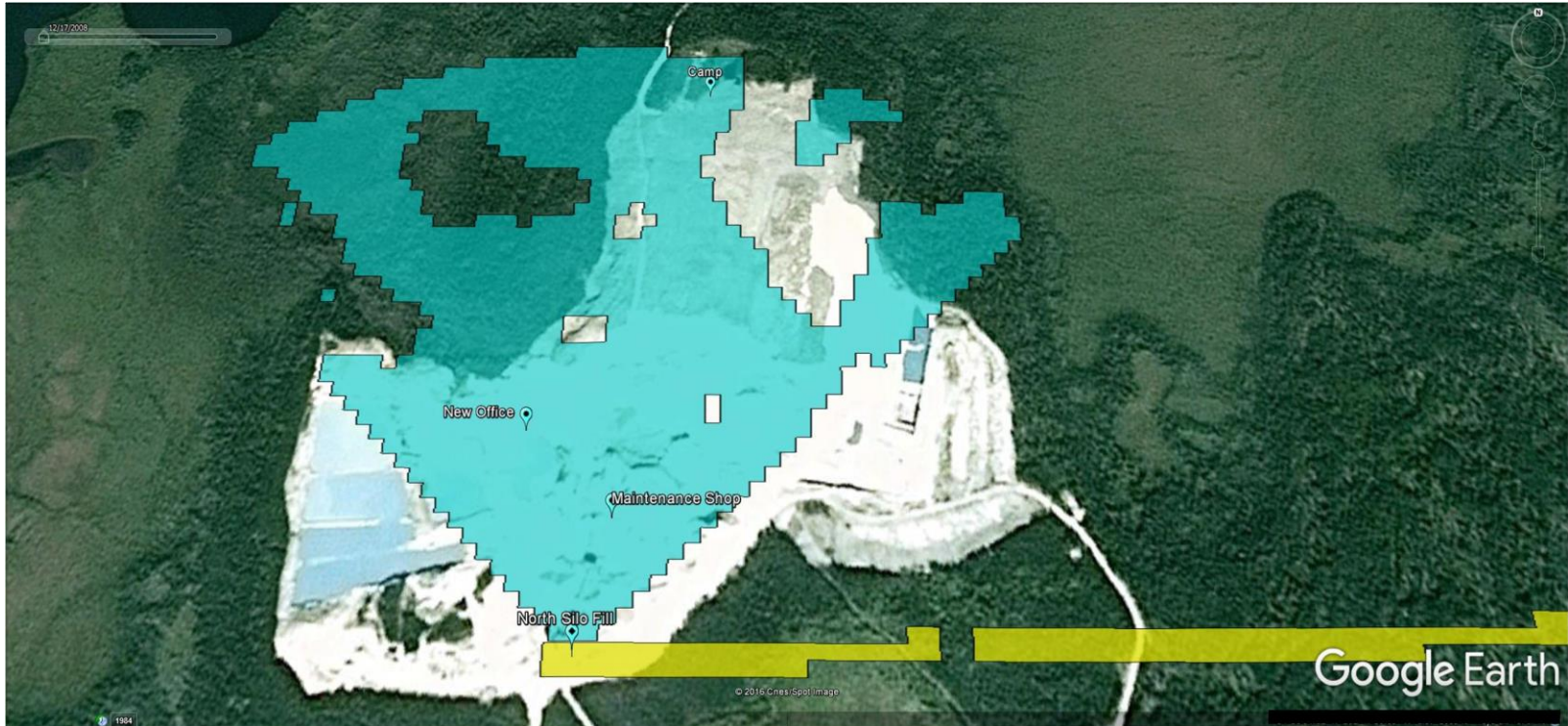
Case Study – Single Repeater Link



Example of Single Repeater Link providing coverage to Office Trailers and Camp

- 850 MHz Cell Tower is located 47 Km to the east of the Mining site
- No cell coverage at ground level due to tree coverage and hills in between
- Line of site on top of silos at 30 m above ground level

Case Study – Single Repeater Link



Example of RPT-9000 Repeater used to extend cellular coverage

- Donor antenna at 30 m above ground captures cell signal from BTS Tower
- Repeater installed at mid point between both antennas, use of 7/8" Heliax cables
- Area Fill antenna at 15 m height facing north, shaded area in blue
- Office Trailers, Maintenance Shop and Camp locations have coverage at ground level

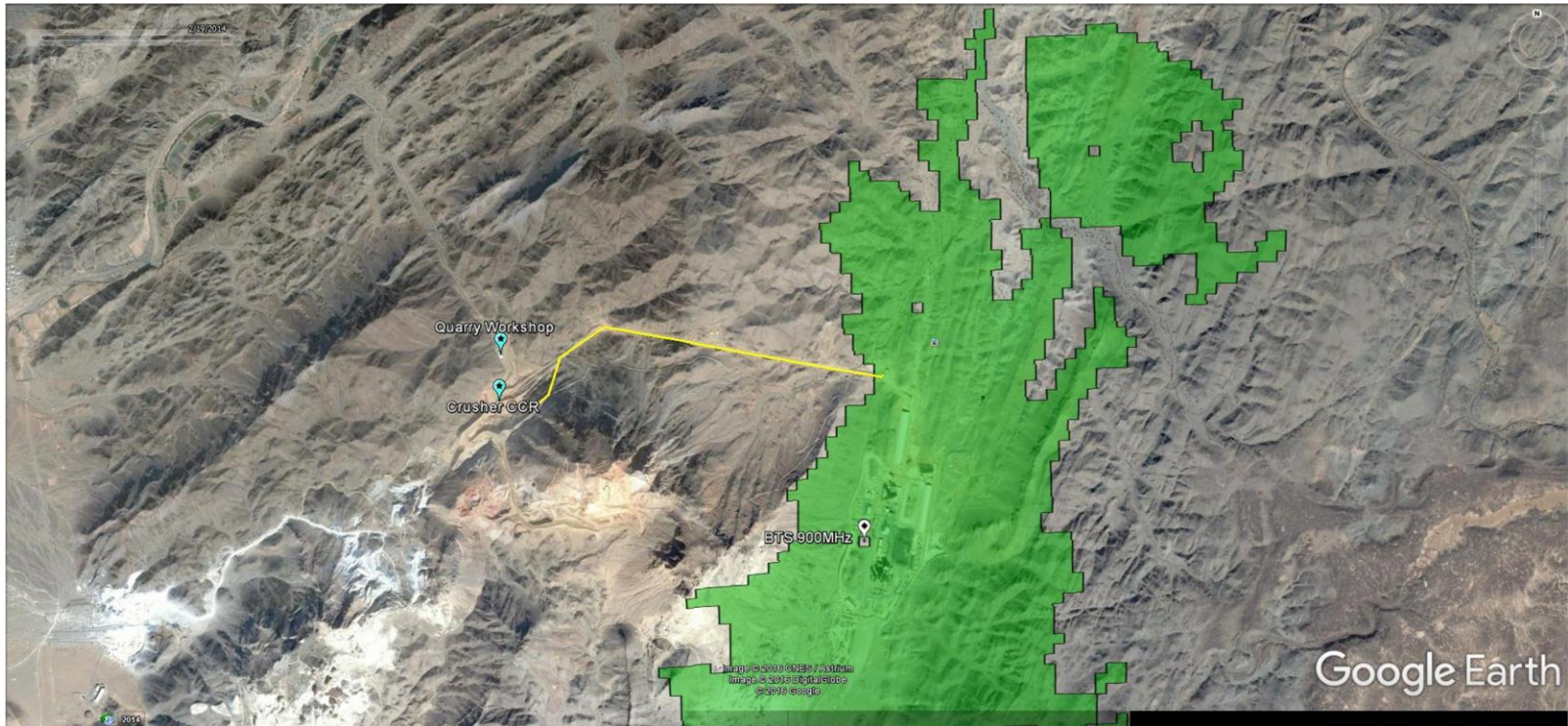
Case Study – Single Repeater Link



Case Study – Hybrid Repeater Link

- Middle East Cement Plant with close proximity to cell tower
- No coverage along 4 Km road or on other side of large hill
- GSM 900 signal available at start of road
- Use of Master/Slave Hybrid Fibre Repeater to extend signal to far side of hill near Crusher and Quarry Workshop buildings
- Additional Repeater used for signal along road

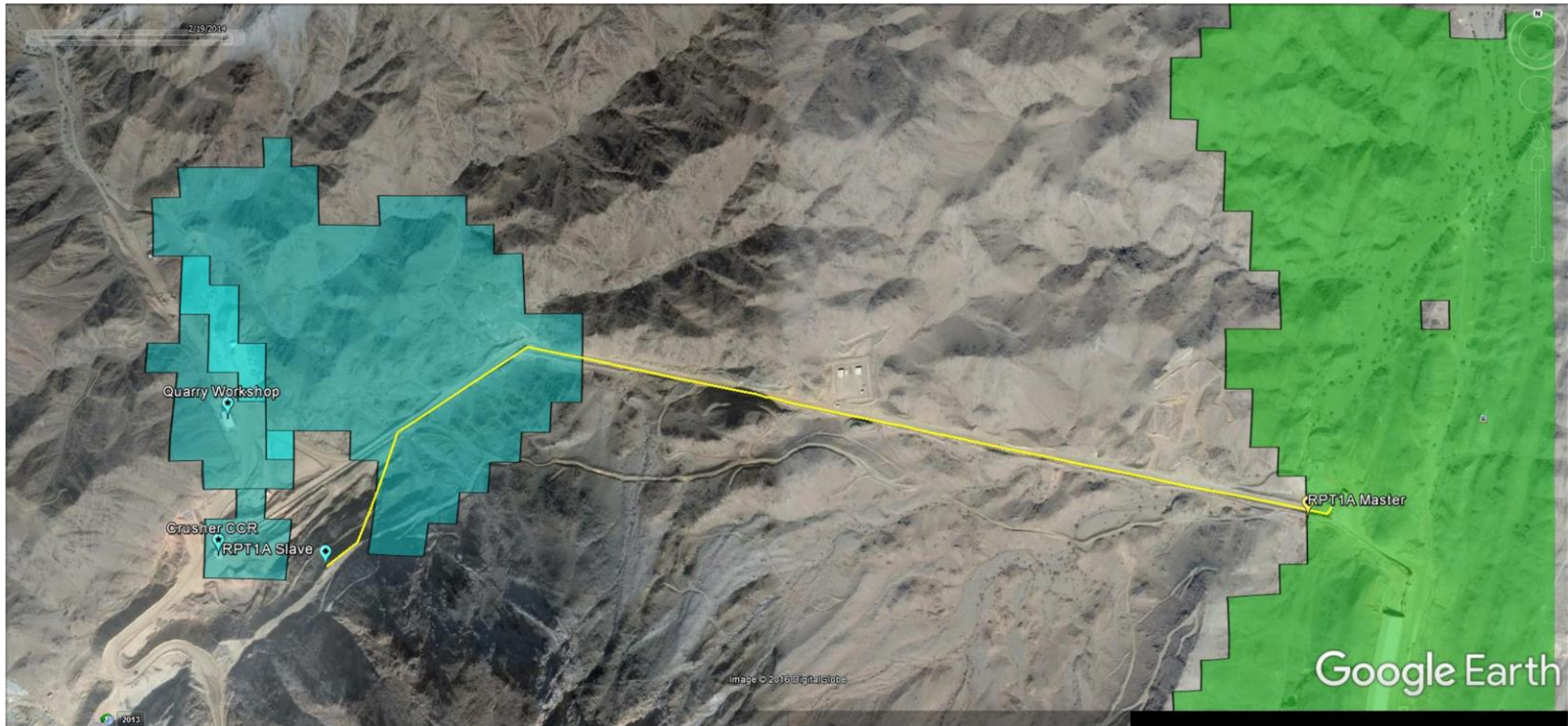
Case Study – Hybrid Repeater Link



Example of GSM 900 BTS at Main Cement Plant location

- Current coverage from 30 m tower at a distance of 4 Km shown in green
- Ridge prohibits cell signal from reaching Crusher and Quarry buildings shown in blue
- No coverage along road shown in yellow including Trailers and Explosive Stores area
- Single-mode fibre being run alongside road to extend data network

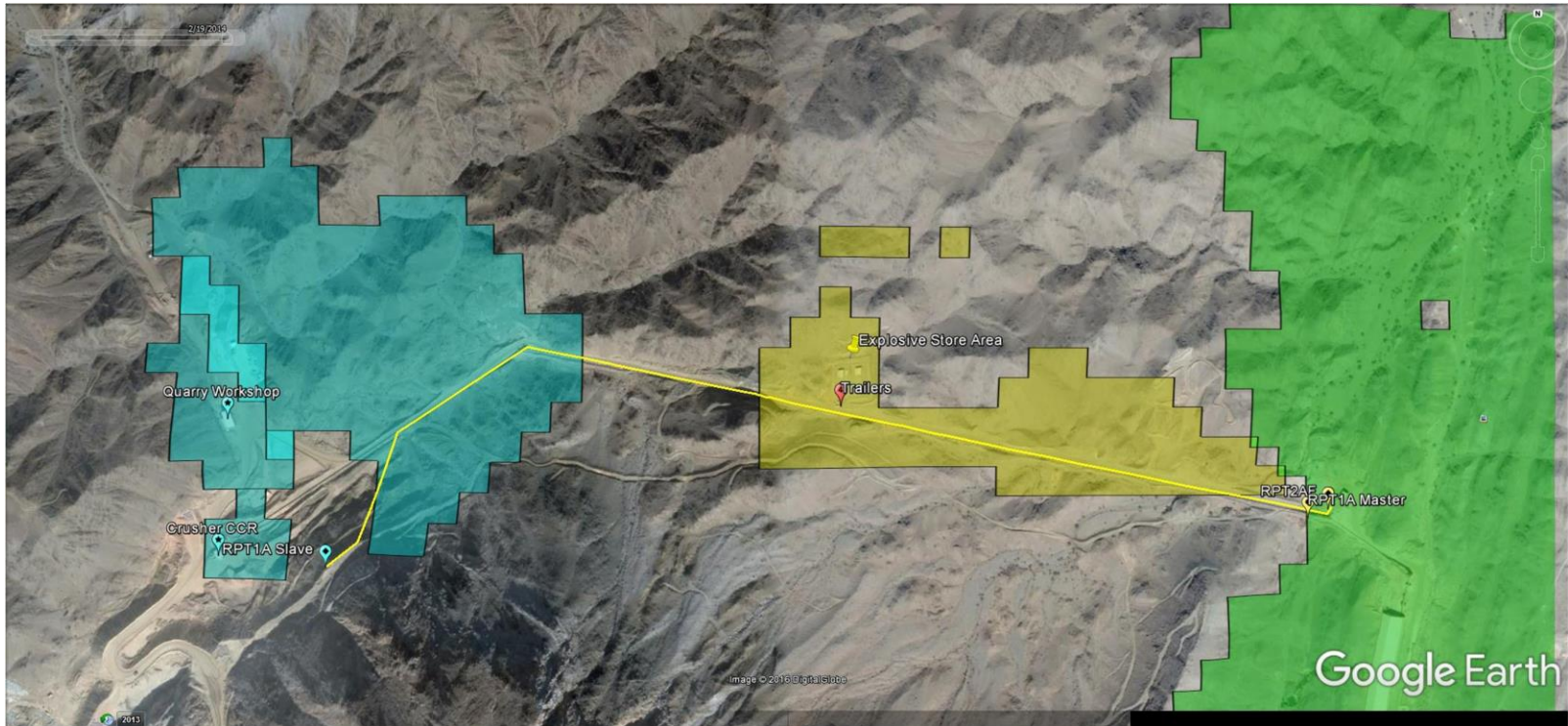
Case Study – Hybrid Repeater Link



Example of Master/Slave Fibre Hybrid Repeater used to extend cellular coverage

- Master unit at start of road connected to a single strand of single-mode fibre
- Slave unit at end of road on 12 m tower with antennas covering rear areas
- Crusher and Quarry buildings coverage from far left to straight ahead shown in blue
- Back side of service road off to the right and around the corner also shown in blue

Case Study – Hybrid Repeater Link



Additional RF Repeater used to extend cellular coverage along road

- RPT2 unit installed on top of powerhouse building at start of road
- Used 5 dBi low gain yagi antenna for donor signal from BTS
- Coverage from 33° area fill panel antenna shown in yellow
- Cell signal now covers the road up the hill, trailers and explosive store area

Case Study – Hybrid Repeater Link



Case Study – Single Repeater Link

- Western Africa Game Reserve over 50 Km from nearest cell tower
- No coverage at Farmhouse and Lodge due to being in a valley with no Line of Site
- Standard High Speed Internet not available
- Satellite Internet option slow and costly
- GSM 900 and 1800 signal available on hill
- Extended LTE signal to provide voice and data

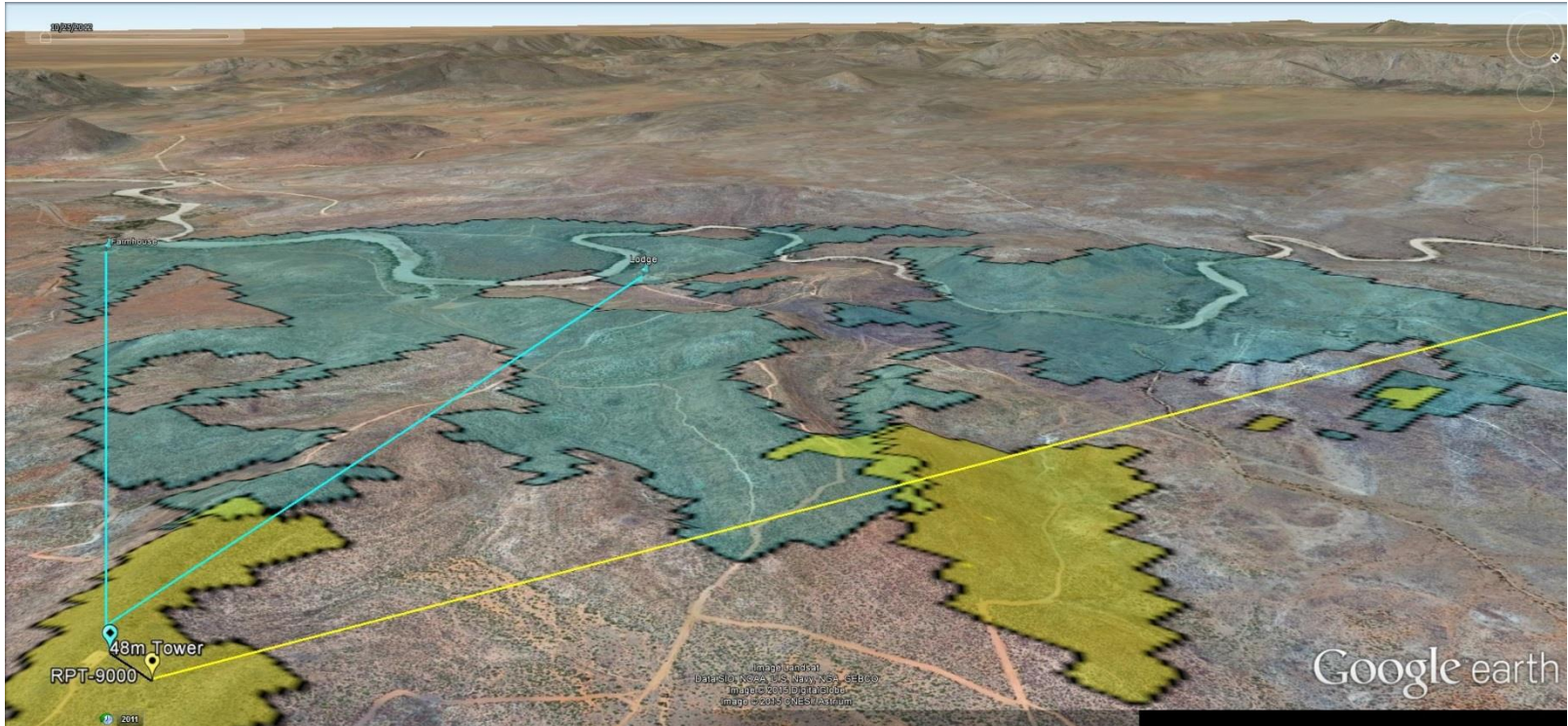
Case Study – Single Repeater Link



Example of 56 km Single Repeater Link proving coverage to Lodge and Farmhouse

- BTS Tower at upper left at 50 m above ground level
- Yellow shaded area provides signal coverage toward RPT tower
- Donor antenna at 10 m above ground level

Case Study – Single Repeater Link



Example of Single Repeater Link providing coverage to Lodge and Farmhouse

- RPT Tower at bottom left has line of site to Farmhouse and Lodge
- Blue shaded area provides signal coverage to 5 Km area
- Area fill antenna is at 48 m above ground level

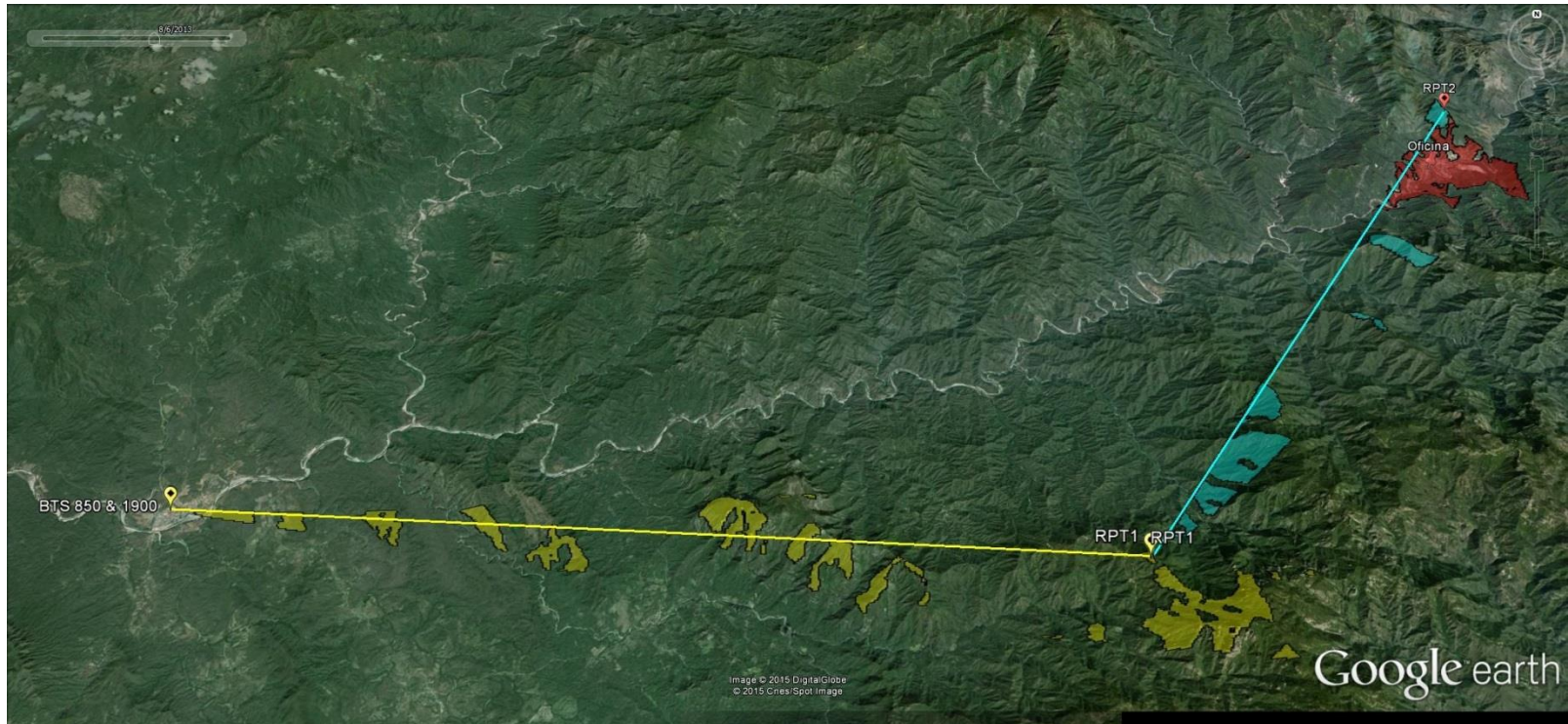
Case Study – Single Repeater Link



Case Study – Dual Repeater Link

- Central Mexico mining operation over 60 Km from nearest cell tower
- No coverage at main office and ATMs due to being in a valley with no Line of Site
- Critical to have ATM connectivity for cash withdrawal in order to avoid work stoppage
- 850 and 1900 MHz signal available on hill
- Both frequencies extended for redundancy

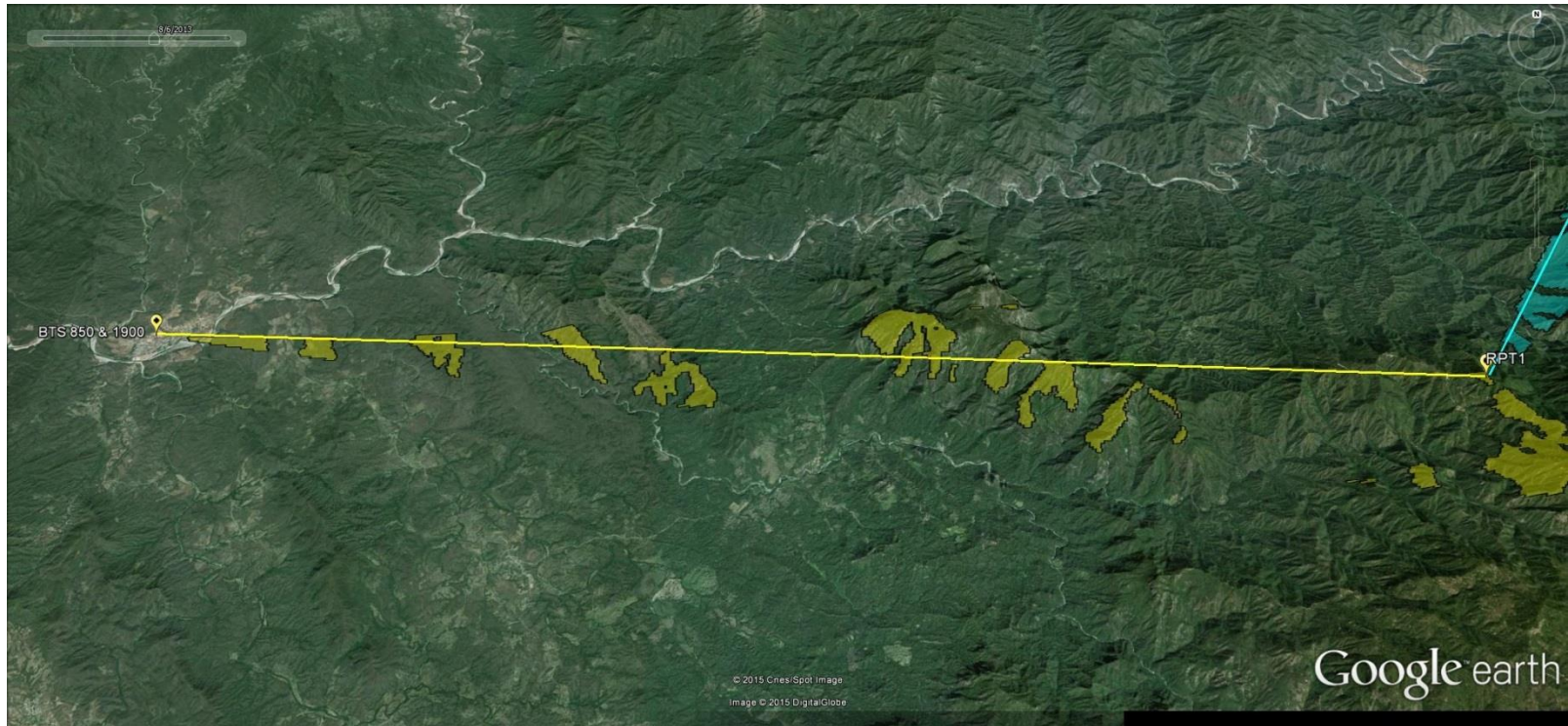
Case Study – Dual Repeater Link



Example of 65 Km Dual Repeater Link proving coverage to main office and ATMs

- BTS yellow shaded area provides signal coverage toward RPT1
- RPT1 blue shaded area provides signal coverage toward RPT2
- RPT2 red shaded area provides signal coverage into valley

Case Study – Dual Repeater Link



Example of first Repeater Link proving coverage to RPT1 location

- BTS Tower at left is 52 m above ground level
- Yellow shaded area provides signal toward RPT1 location at 35 Km
- Donor antenna at 10 m above ground level

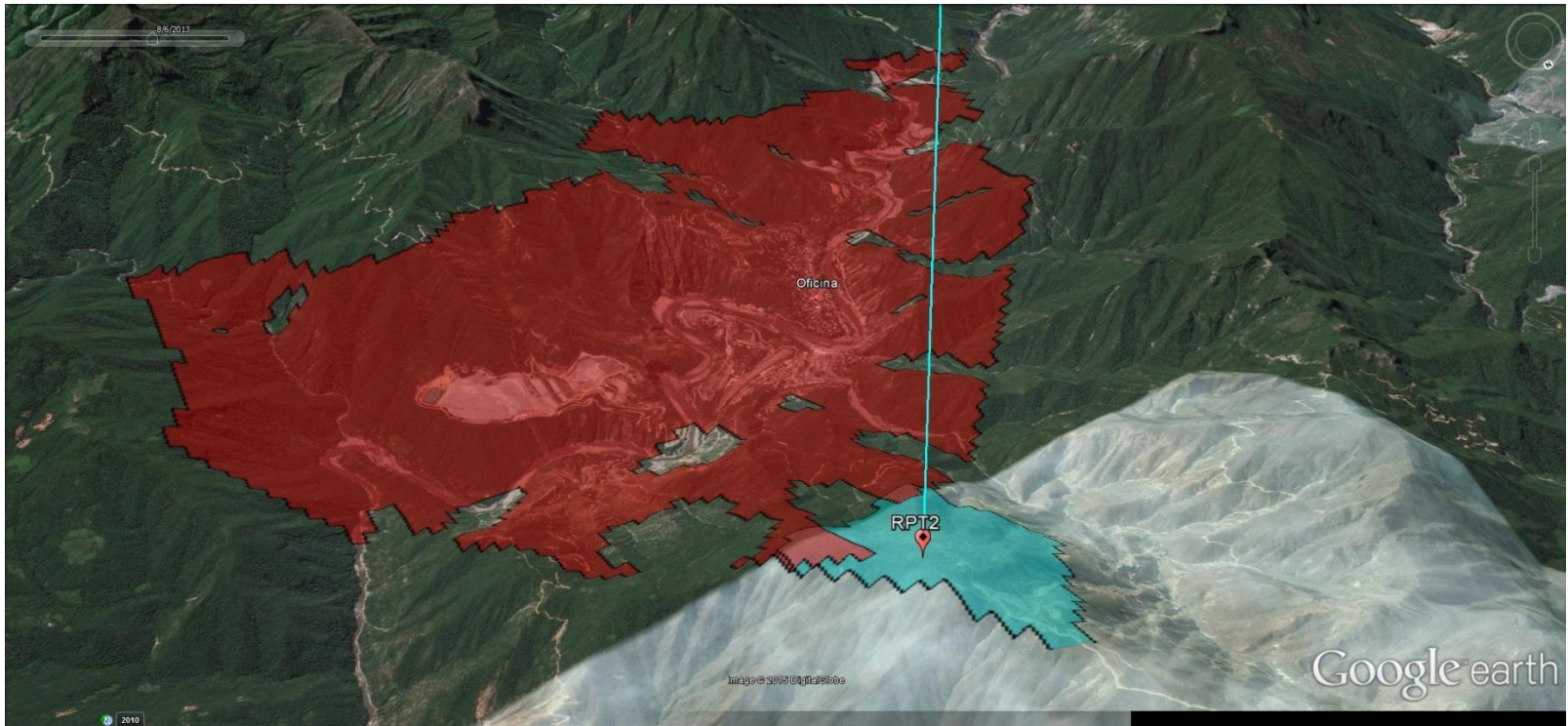
Case Study – Dual Repeater Link



Example of second Repeater Link proving coverage to RPT2 location

- RPT1 at lower left has line of site to RPT2 location
- Blue shaded area provides signal toward RPT2 at 30 Km
- Area fill antenna is at 10 m above ground level

Case Study – Dual Repeater Link



Example of second repeater proving coverage down into valley

- RPT2 Tower has line of site to office, ATMs and surrounding area
- Red shaded area provides signal coverage to 6 Km
- Area fill antenna is at 60 m above ground level

What we do

Thank you for your interest in XPANDAcell.

We help people who need cell service in underserved area.

Please contact us today so that we may assist with the design and implementation of your cell coverage project.

Gary Glasgall

Regional Director



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