

LEELANAU PENINSULA
ECONOMIC FOUNDATION

Leelanau Internet Futures Team Rural Broadband Planning Overview and Recommendations

Presented by:
DCS
Technology
Design

Background



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The Leelanau Peninsula Economic Foundation (LPEF) was founded in March 2014

Represented of the various Leelanau County Chambers of Commerce and other key stakeholders

Became 501 (c) (3) non-profit organization in October 2014

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Background

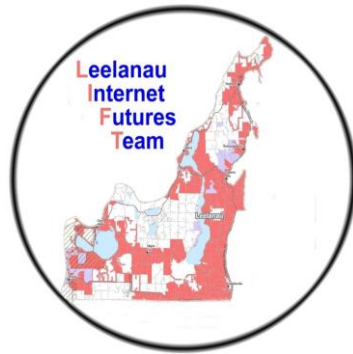


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A 2016 survey concluded that the lack of available high-speed Internet service was a critical barrier to business success and growth

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Background



A 2016 survey concluded that the lack of available high-speed Internet service was a critical barrier to business success and growth

The Leelanau Internet Futures Team (LIFT) was established and tasked with developing an action plan to provide high-speed Internet access throughout County.

Background



In May of 2021, in cooperation with LIFT, the Leelanau County Board of Commissioners engaged with DCS Technology Design to conduct a county wide Asset Survey and Study of all Broadband services, cabled and wireless

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Background



In 2021, in cooperation with LIFT, the Leelanau County Board of Commissioners engaged with DCS Technology Design to conduct a county wide Asset Survey and Study of all Broadband services, cabled and wireless

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Background



2020 - Covid created an awareness of the Broadband deficiency that few realized

November 2020 FCC announced up to \$16B to be awarded for the Rural Digital Opportunity Fund (RDOF)

RDOF was plagued with problems due to the FCC Form 477 reporting system it was based on

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Background

Presented to the Board on September 23rd, 2021



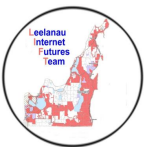
November 2021, DCS Technology Design started work with the LIFT committee to develop a high-level plan to get Broadband Internet access to all of Leelanau County by the end of 2022

This is the summary of that planning effort

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Our Mission

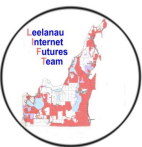
Develop a county-wide plan for expansion and implementation of high-speed broadband services to all residents, farms and businesses currently not served by broadband access.



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Our Challenge

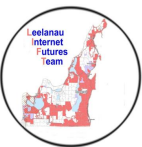
- Leelanau County has ~22,700 occupied parcels with 5045, or about 22% of the county with little to no access to Broadband Internet services
- Due to sudden societal changes in how we teach, work and obtain healthcare, there is an urgent need to get usable Broadband services to all residents and businesses within the county
- High speed internet technologies that can evolve with the growing requirements of households and businesses are time consuming and costly to implement, but critical to the future of the county's continued development
- Short term steps need to be taken to make sure all homes, farms and businesses can get online within the next 12 months



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Objectives

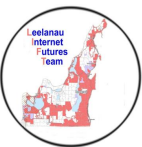
- To assure service availability to the 5045 unserved parcels with no less than 35/5 data rates by December 31, 2022
- Acknowledge emerging Broadband speed goals (100/100) for future funding and strive to position the county to achieve 100% of those goals by 2026
- Explore new tower locations and incent existing and new wireless providers to improve internet coverage while improving enhanced 911 Emergency service coverage
- Leverage existing and planned fiber and cable coverage areas to fill in the small gaps



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- Welcome new providers and technologies to create a more robust and competitive market that promote and addresses affordability
- Develop a dynamic action plan for Leelanau County Commissioners, the county's information technology staff, local government officials, and Leelanau Internet Futures Team (LIFT) to achieve our long-term goals

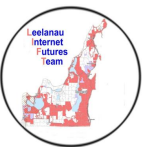
Objectives



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Process

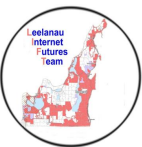
- Evaluate each individual townships unserved and underserved parcels and explore available options with existing and planned technologies, and how to leverage those technologies for both short- (2022) and long-term (2026) goals.
- Based on that evaluation, offer recommendations to the County Board of Commissioners for setting priorities and blueprint how to proceed eliminating the county's broadband deficiencies in the most efficient and financially viable manner.



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Priorities (General)

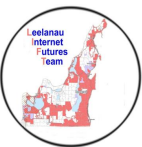
- Focus on the importance of today's virtual classroom requirements for K-12 and higher education, coordinate efforts with local school districts
- Recognize affordability concerns within the communities, identify programs and requirements addressing affordability, and include those discussions with current and future internet providers
- Educate the Public
 - Where to find information
 - What the State and Federal programs provide
 - Who are the providers, where they serve, and what they offer
 - What the objectives of the Board of Commissioners are as plans continue to develop and evolve
 - Develop public service announcement methods to keep the community informed



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Priorities (Specific)

- Target the most unserved – 60% of the County’s total unserved homes and businesses are in:
 - Leelanau Township – 1028 unserved (34% of the township)
 - Kasson Township – 776 unserved (65% of the township)
 - Empire Township – 659 unserved (33% of the township)
 - Solon Township – 575 unserved (49% of the township)
- Then
 - Suttons Bay Township – 545 unserved (22% of the township)
 - Centerville Township – 391 unserved (31% of the township)
 - Leland Township – 318 unserved (13% of the township)
 - Cleveland Township – 260 unserved (21% of the township)
- The remaining Townships:
 - Bingham Township – 196 unserved (10% of the township)
 - Elmwood – 167 unserved (5% of the township)
 - Glen Arbor Township – 126 (5% of the township)

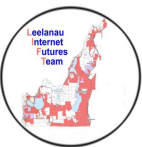


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The following actions shall be pursued to achieve a minimum of 35 Mb/s download and 5 Mb/s upload data rates (35/5) to all unserved parcels by December 31, 2022

Timeline (Short Term)

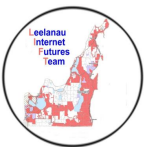
- Leverage new generation wireless technologies that can be deployed quickly to larger geographic areas
- Identify planned fiber (RDOF) areas that may be accelerated to fill gaps not serviceable other ways
- Identify small gaps that may be serviceable through extensions of existing Broadband Hybrid Fiber/Coax networks (HFC)



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All short-term actions shall be considerate of the long-term goal to achieve FTTH or HFC connectivity capable of 1 Gigabit by 1 Gigabit Symmetrical data rates by 2026. All new FTTH design shall be capable to scale to future 10 Gig and 40 Gig standards (and beyond)

Timeline (Long Term)

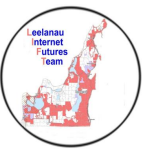
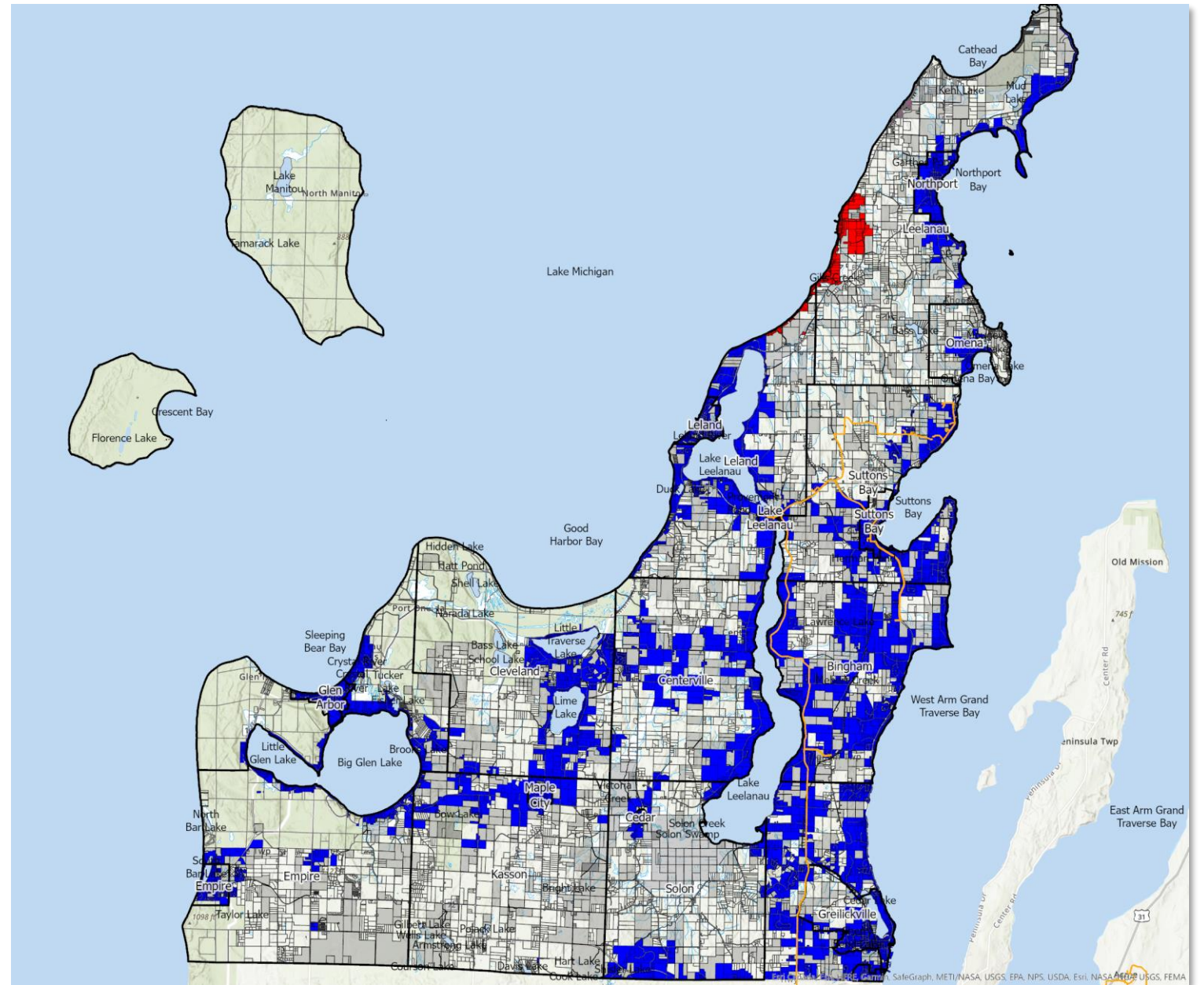


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Today

Current Cabled service areas

- Charter Communications
- Cherry Capital Communications
- Starlink

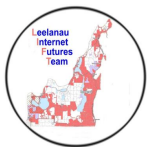
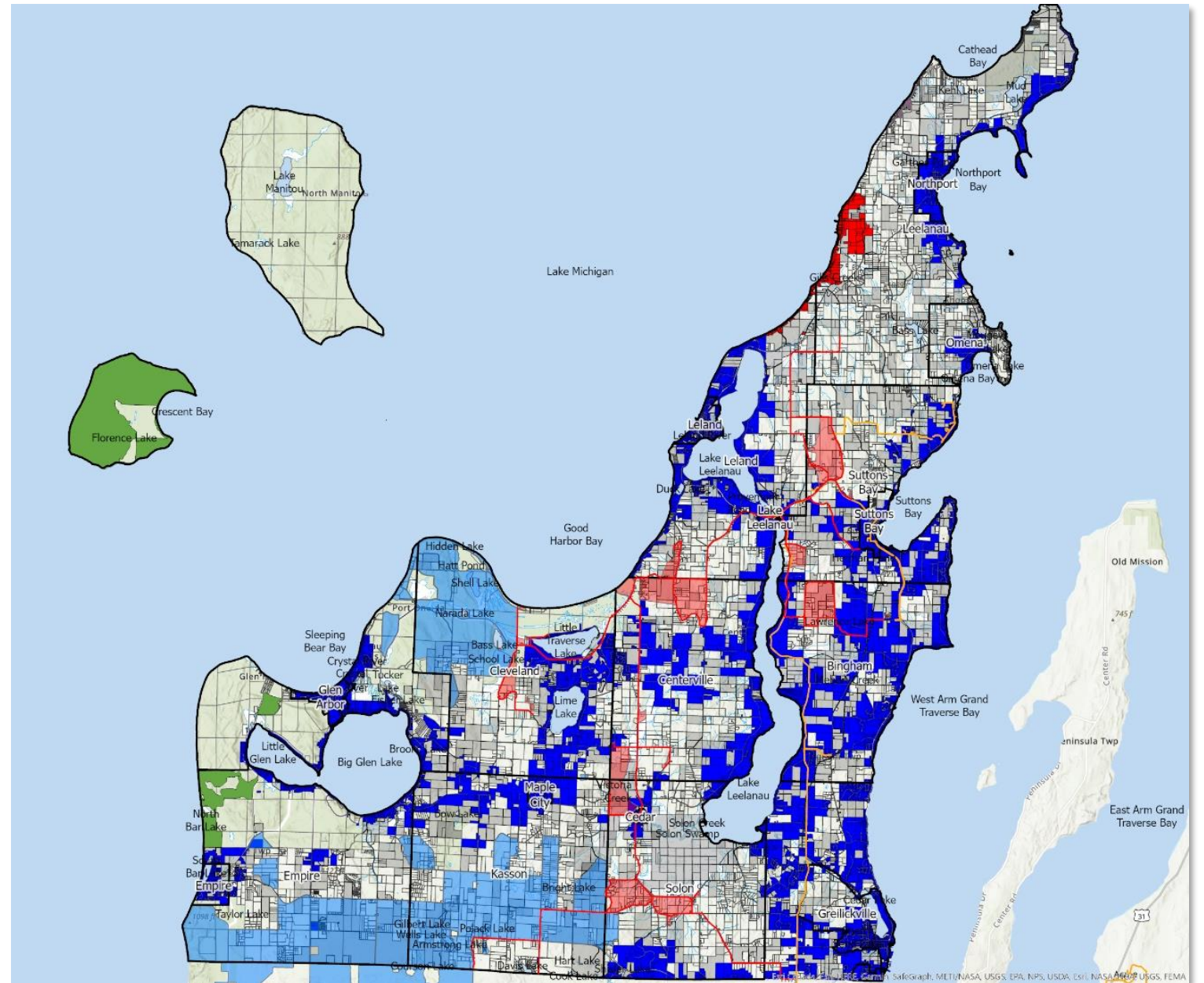


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Current Options

Rural Digital Opportunity Fund (RDOF)

- Charter Communications
- Cherry Capital Communications
- Starlink



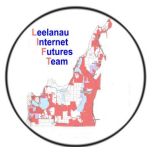
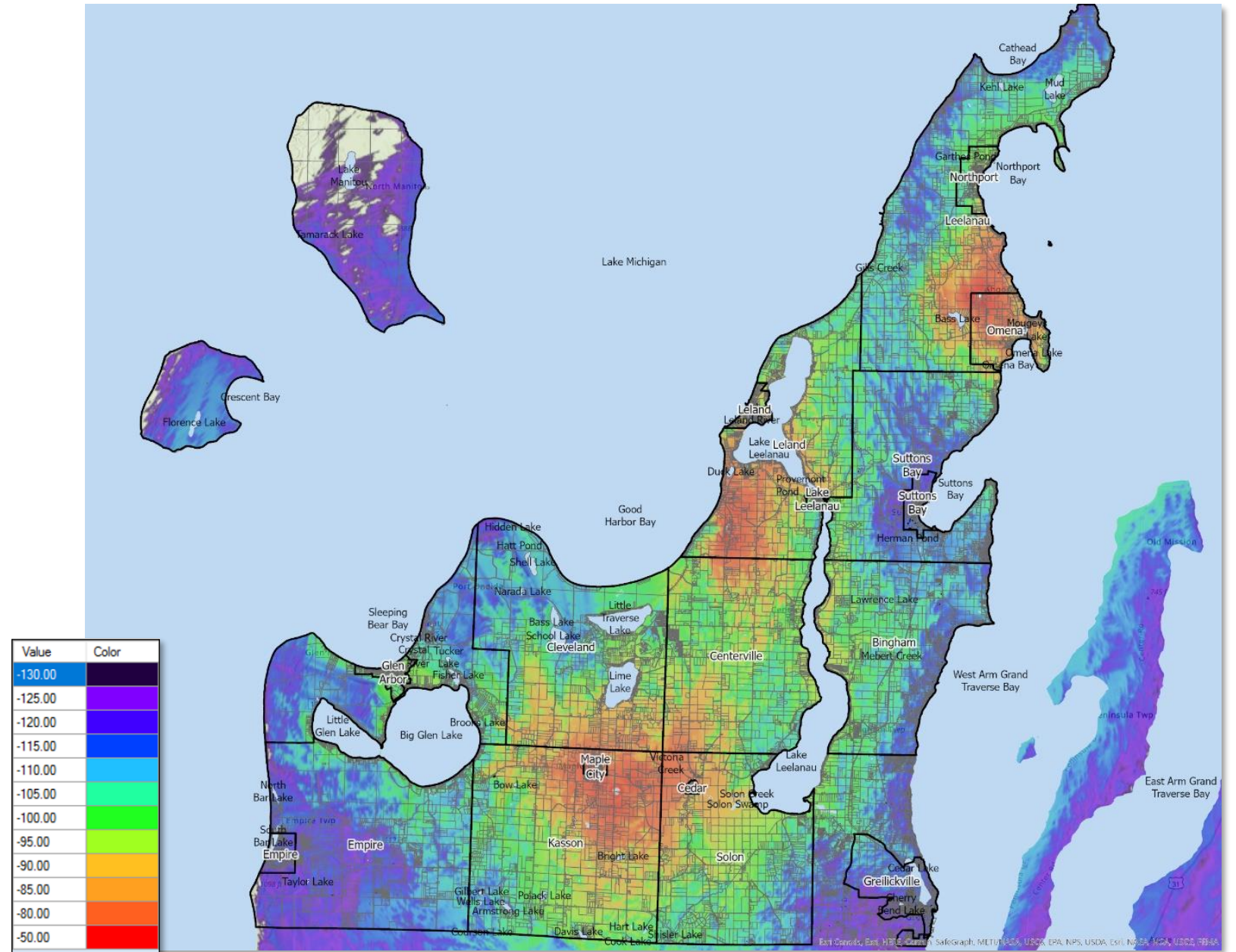
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Current Options

Agri-Valley Communications

- 5G technology
- Band 71
- $> -105\text{dB}$ should yield performance meeting short term goals

Important Note – This graphic is a computer model and may not represent actual performance of the installed system

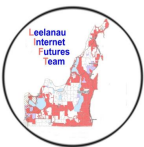
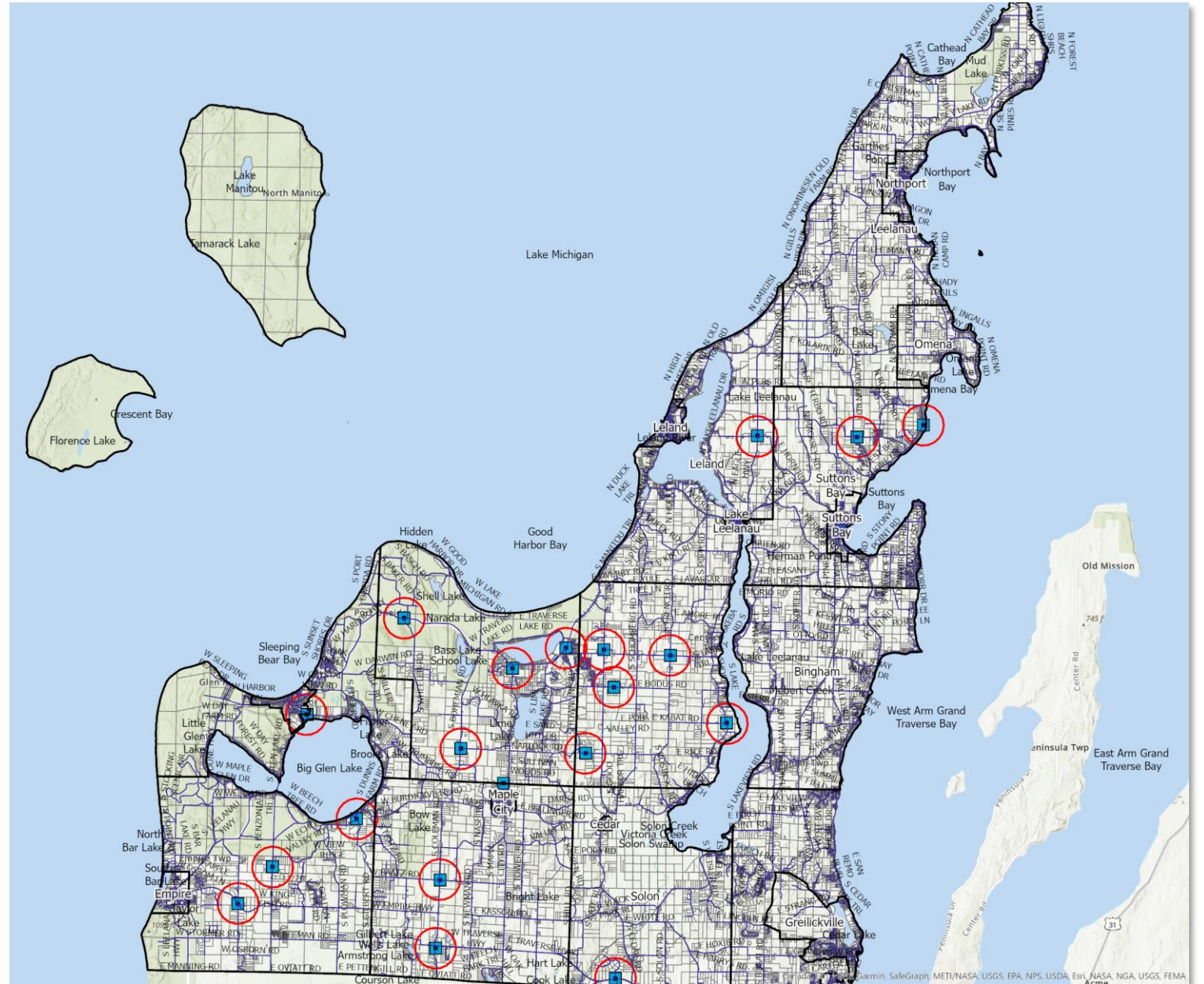


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Other Options

What we did not explore in depth

- Digital Subscriber Line (DSL)

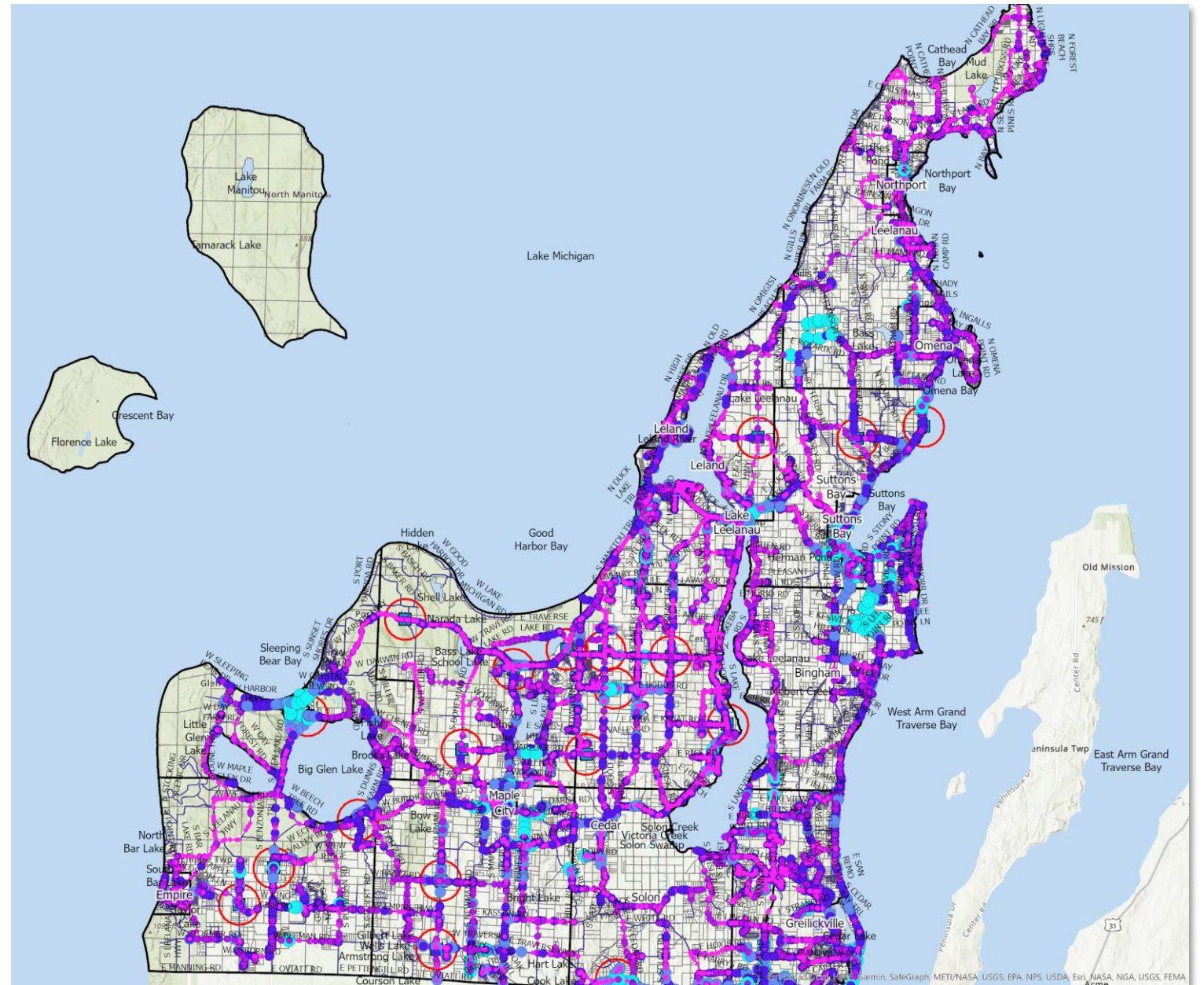


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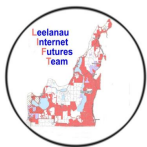
Other Options

What we did not explore in depth

- Digital Subscriber Line (DSL)
- Cellular



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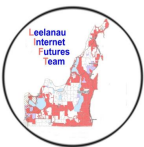
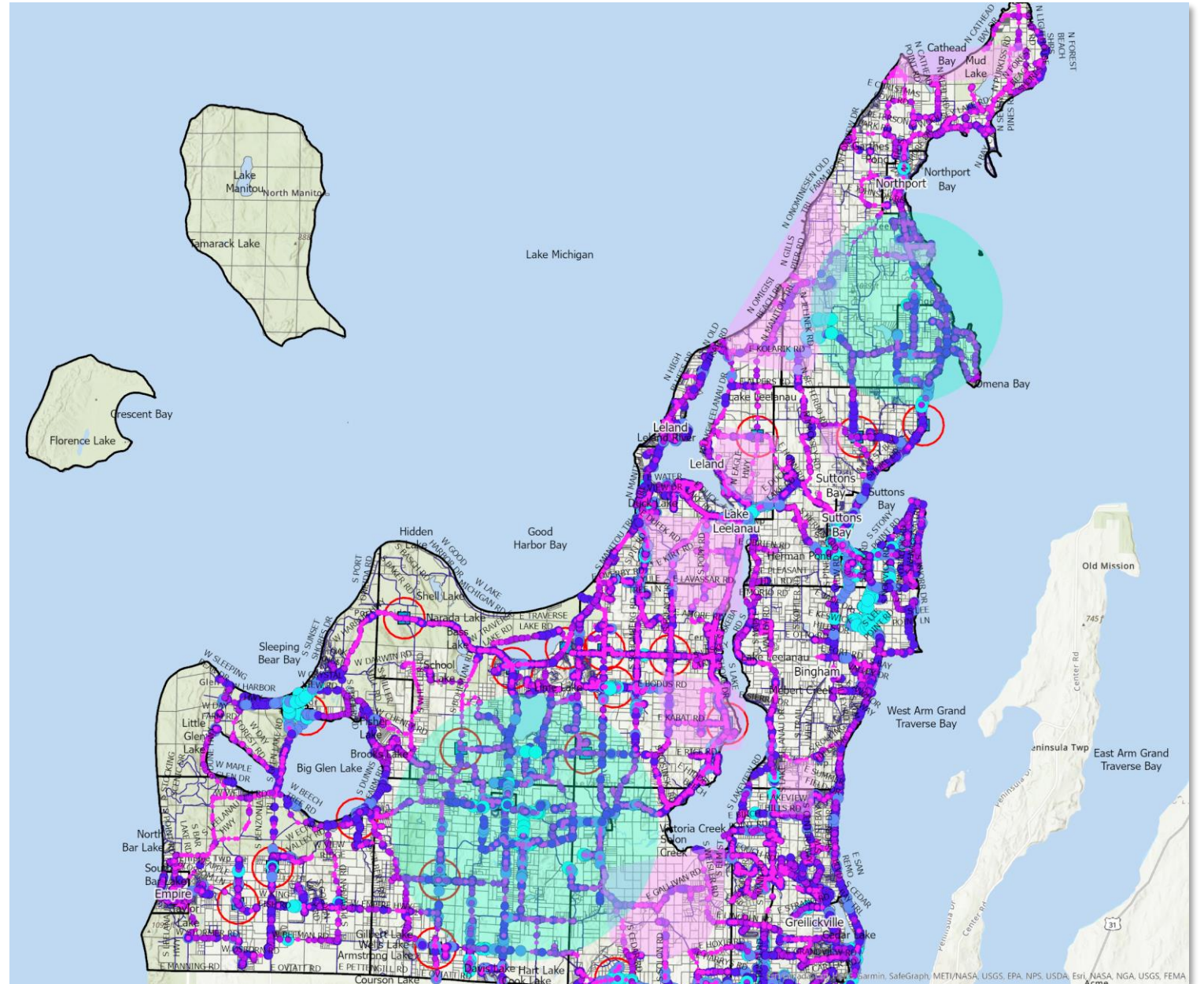


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Other Options

What we did not explore in depth

- Digital Subscriber Line (DSL)
- Cellular
- Unlicensed Wireless (WiFi) based technologies

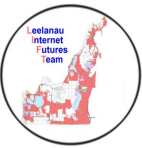


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Garmin, SafeGraph, METI/NASA, USGS, EPA, NPS, USDA, Esri, NASA, NGA, USGS, FEMA, ArcGIS

The Townships



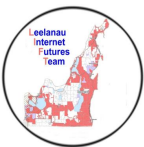
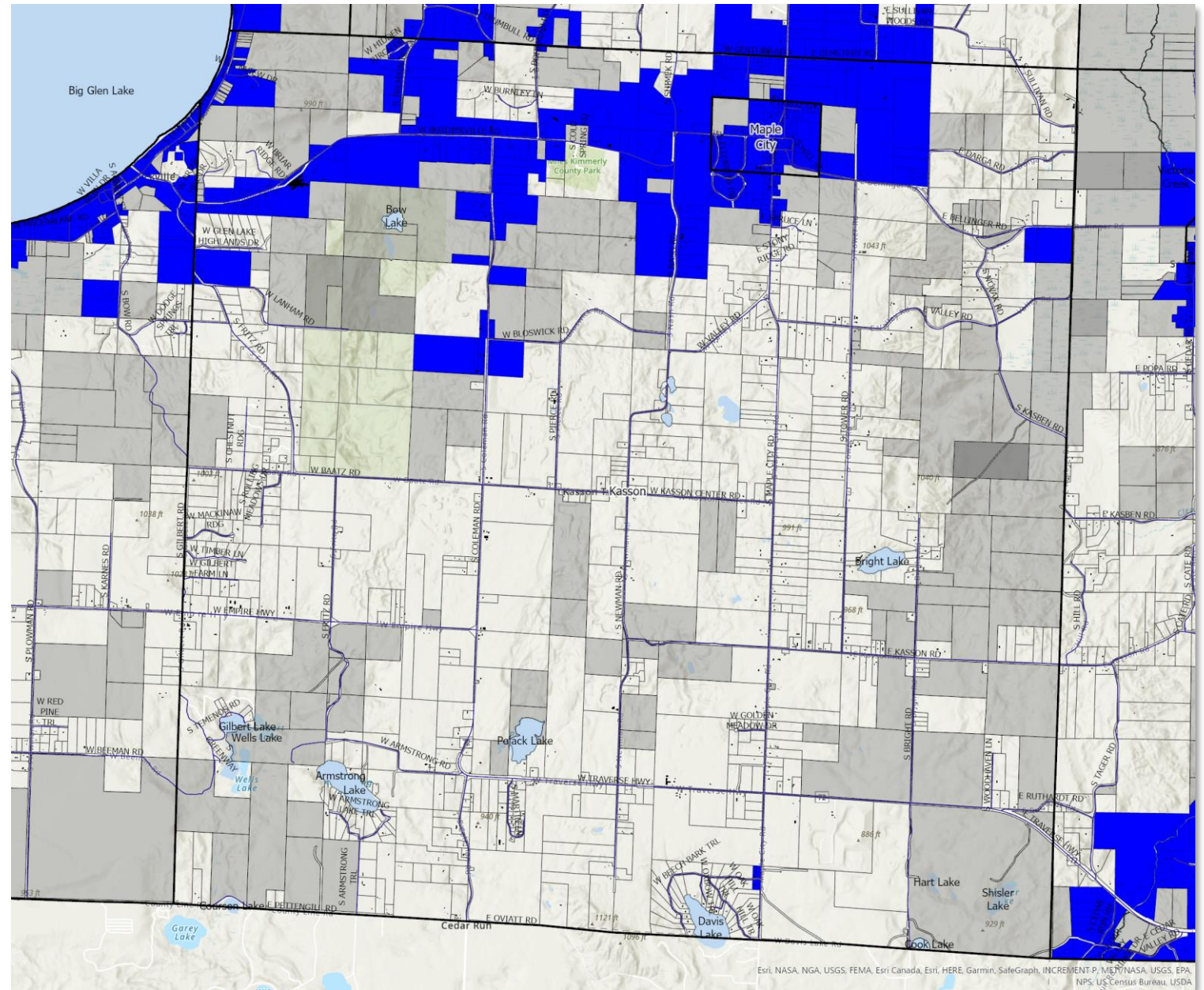
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Kasson Twp

Current Service Area

Parcels	1191
Served	415
Unserved	776

Over 65% (the highest percentage in the County) of the occupied parcels within Kasson Township are unserved by a cabled provider



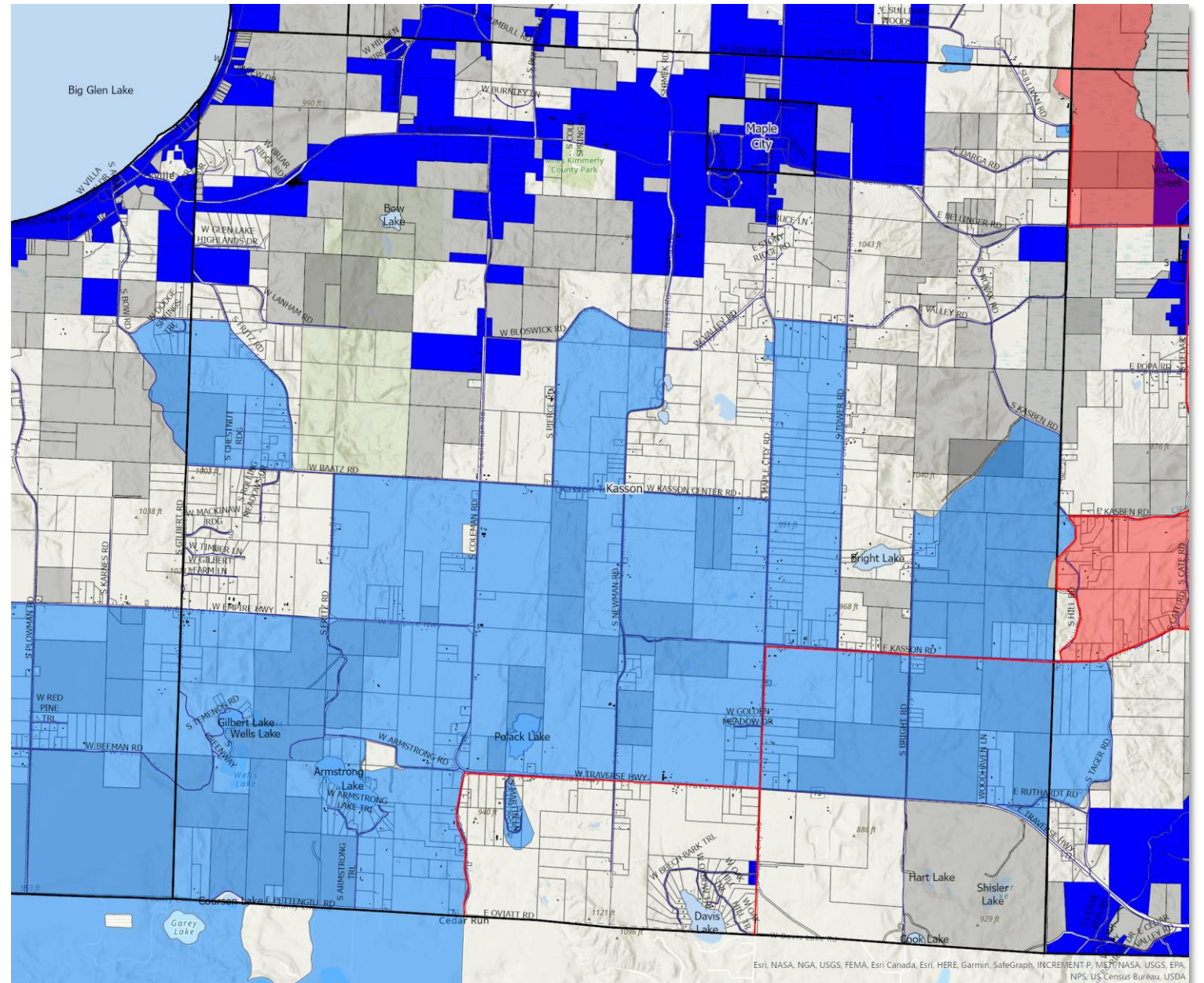
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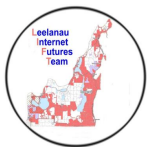
Kasson Twp

RDOF

Charter Communications has been awarded about 317 of the 776 unserved parcels from RDOF, although that is still less than half of the unserved areas. CCC shows two small areas within the Township borders, but those appear to be census blocks that are mostly within Solon Township, and don't have any actual structures within Kasson



Esri, NASA, NGA, USGS, FEMA, Esri Canada, Esri, HERE, Garmin, SafeGraph, INCREMENT P, META, NASA, USGS, EPA, NPS, US Census Bureau, USDA



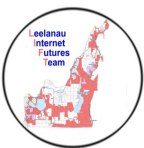
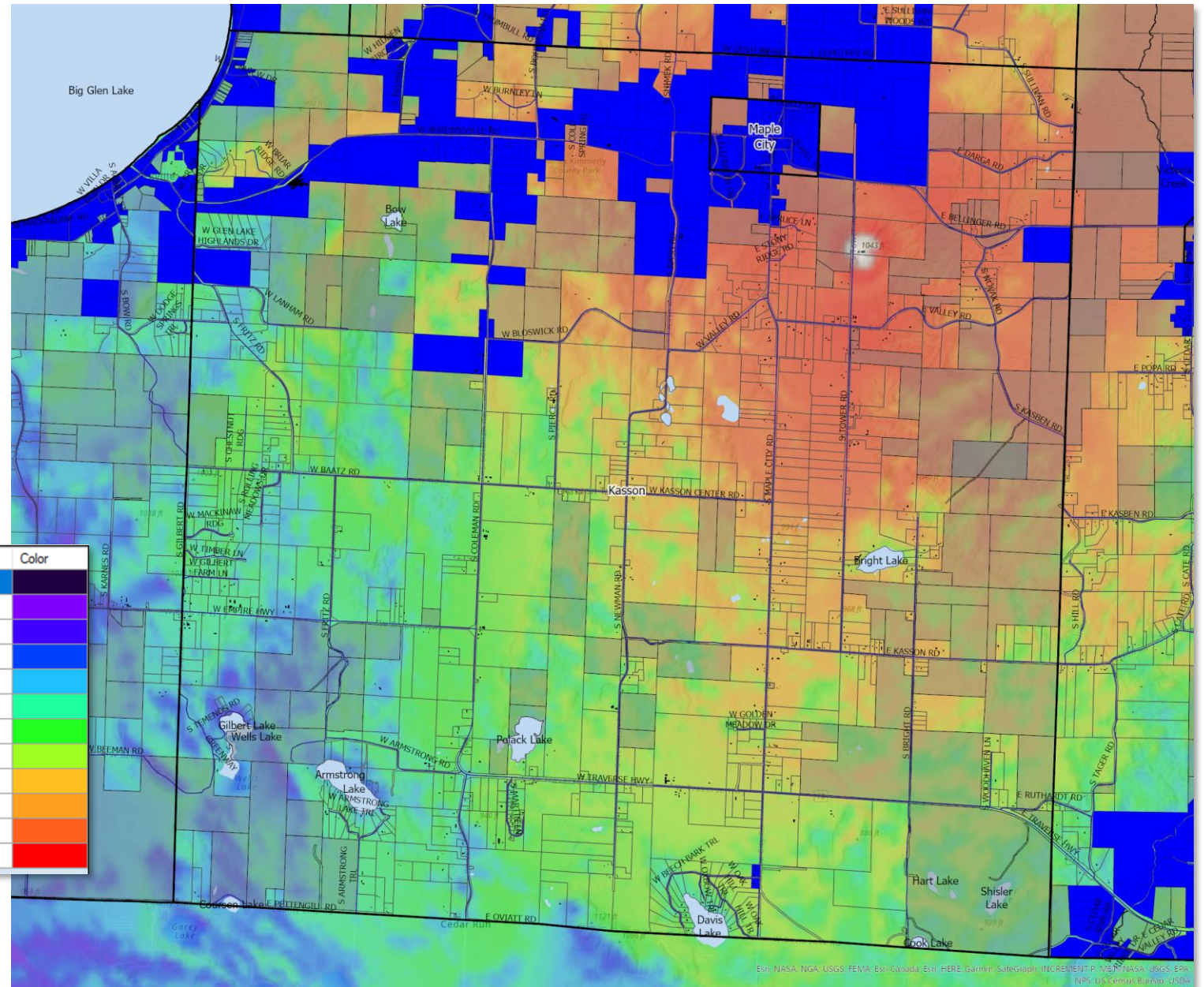
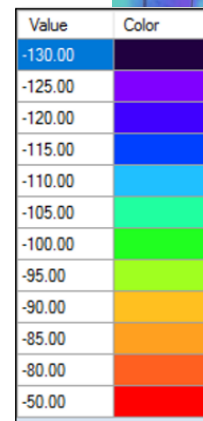
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Kasson Twp

Band 71

Maple City Tower will provide good coverage to most of the township

Southwestern corner and western edges will be marginal



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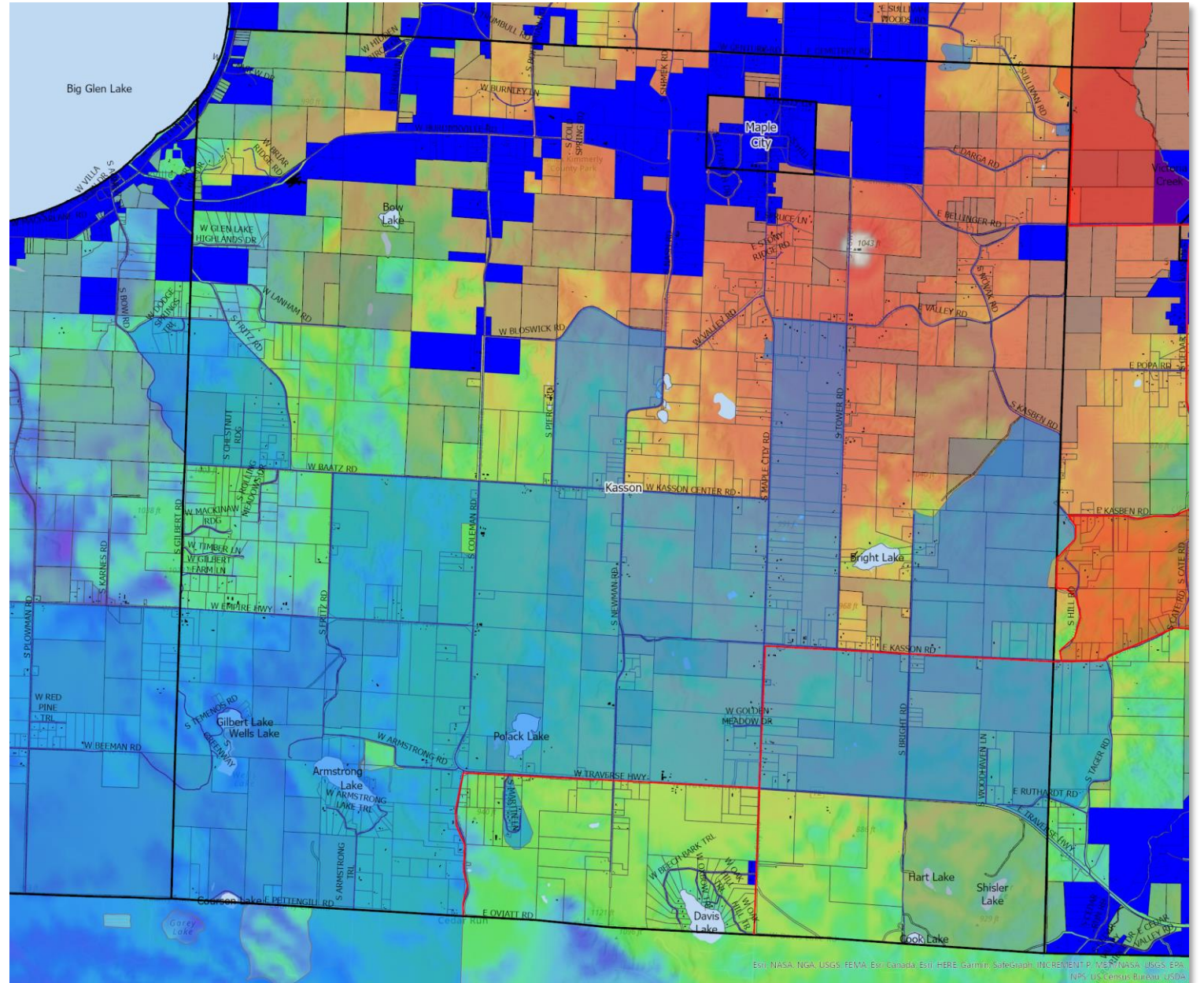
Esri, NASA, NGA, USGS, FEMA, Esri, Canada, Esri, HERE, Garmin, Swatchmap, iCLOUD, Mapbox, USGS, EPA, NPS, US Census, Bureau, USDA

Kasson Twp

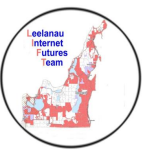
Summary

Short term, the 2022 plans for Band 71 and Agri-Valley will likely provide the option for above threshold Broadband Internet to a majority of the Township

Charter has reported that they have begun RDOF construction in the southern areas, further discussion with Charter needs to determine schedules and final service areas



Esri, NASA, NGA, USGS, FEMA, Esri, Canada, Esri, HERE, Garmin, Swatch, Microsoft, P, Veve, USA, USGS, EPA, NPS, US Census, Bureau, USDA



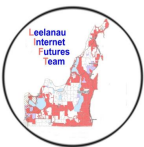
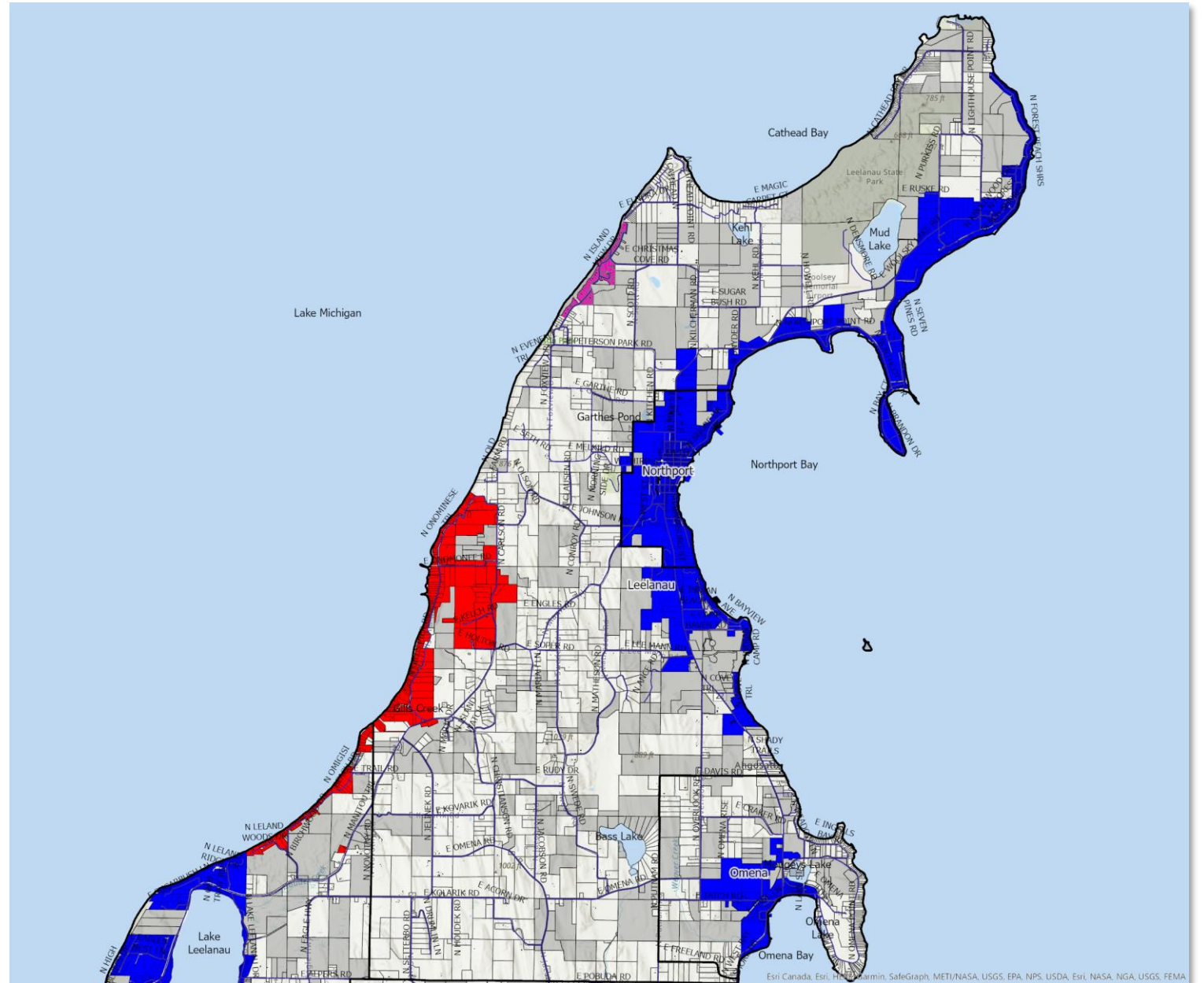
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Leelanau Twp

Current Service Areas

Parcels	3056
Charter	1674
CCC	254
186 (Limited)	81
Unserved	1047

Updated CCC as of 1/31/22



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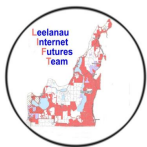
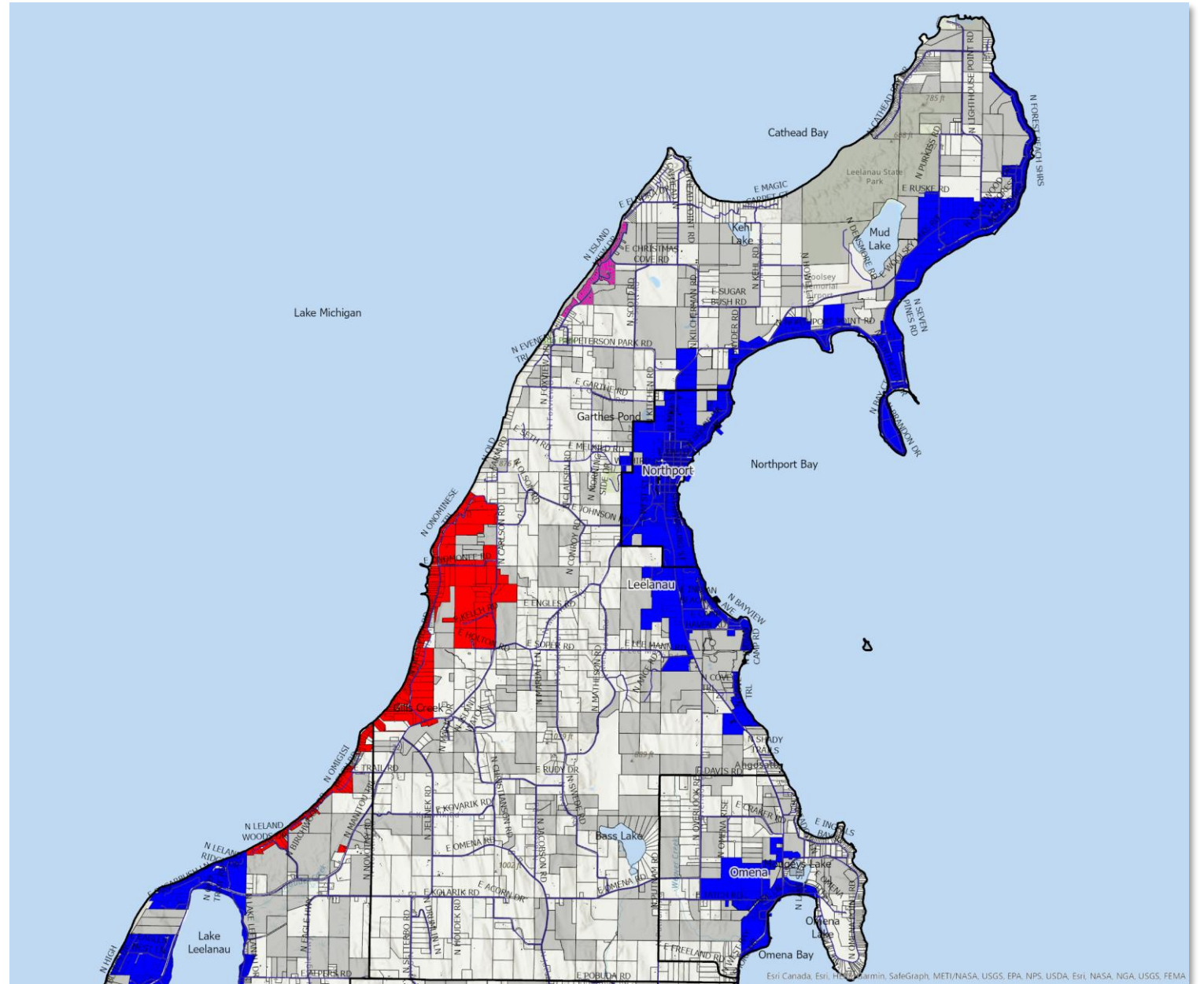
Esri, Canada, Esri, Garmin, SafeGraph, METI/NASA, USGS, EPA, NPS, USDA, Esri, NASA, NGA, USGS, FEMA

Leelanau Twp

RDOF

The highest unserved township by resident count but one of only two townships with no RDOF awarded areas

The other is Elmwood which has the second lowest percentage of unserved in the county



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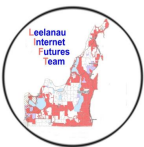
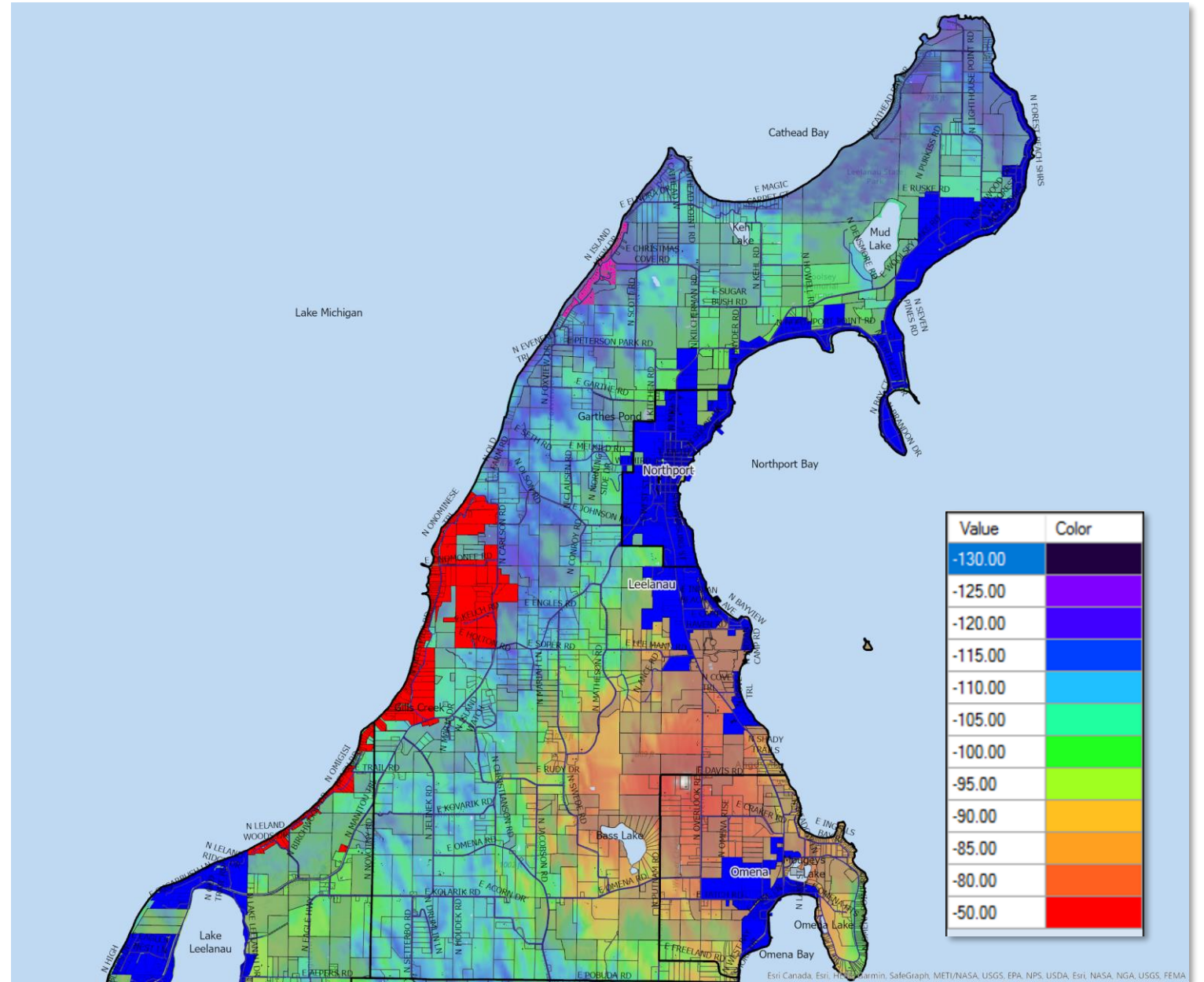
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Esri, Canada, Esri, Garmin, SafeGraph, METI/NASA, USGS, EPA, NPS, USDA, Esri, NASA, NGA, USGS, FEMA

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Band 71

Band 71 predictive model shows Excellent coverage around the Omena area with good levels indicated to just north of Northport

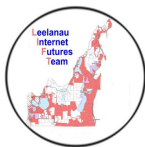
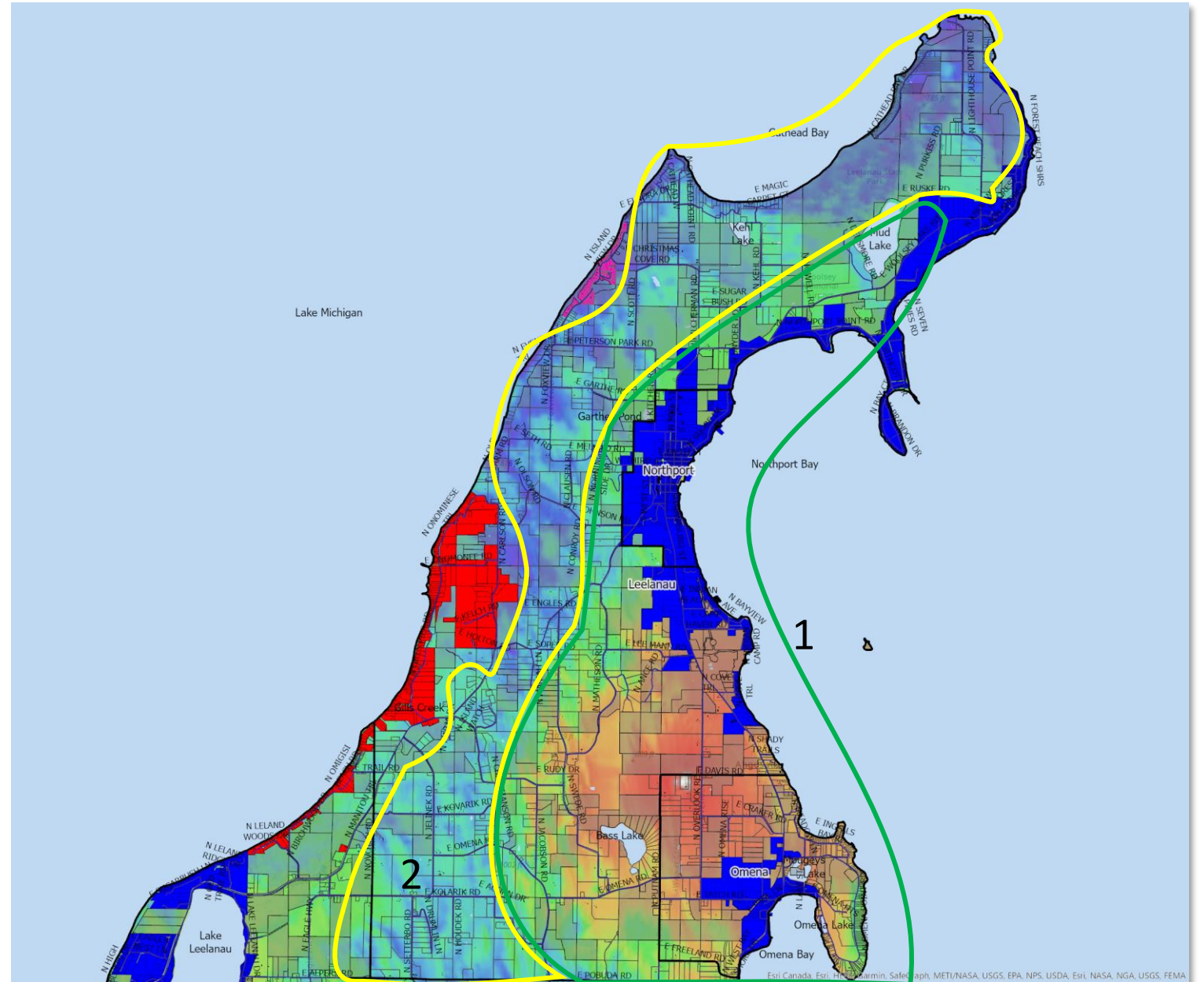


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Summary

The green bordered area (1) appears that it will be above threshold performance levels in 2022 with Agri-Valley's planned launch of Band 71 wireless services. The areas bordered in Yellow require further investigation to bring above threshold Broadband in 2022



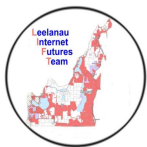
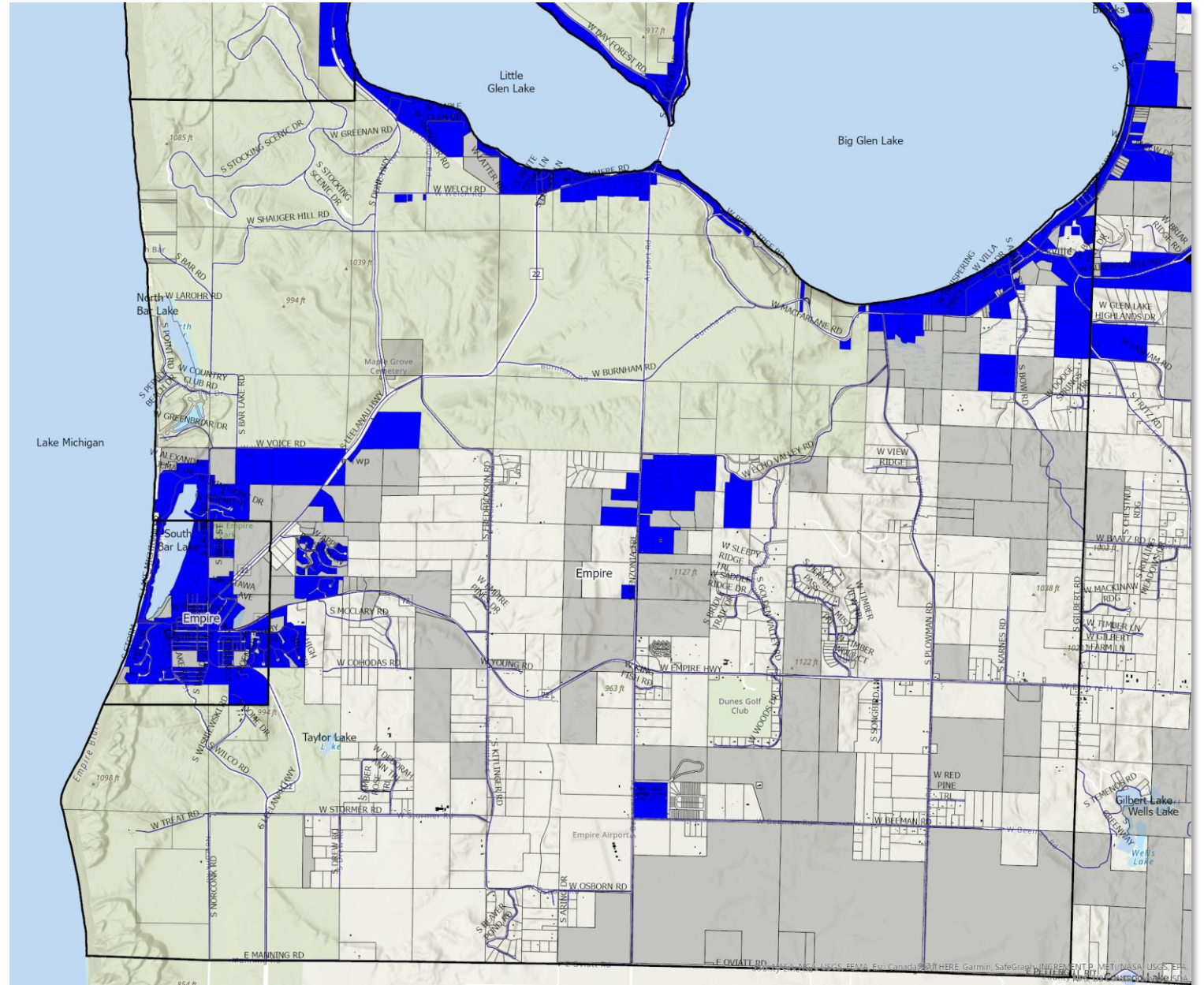
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Esri, Canada, Esri, Garmin, Safe Software, METI/NASA, USGS, EPA, NPS, USDA, Esri, NASA, NGA, USGS, FEMA

Empire Twp

Current Service Area

- Parcels 1993
- Served 1334
- Unserved 659



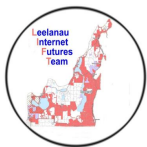
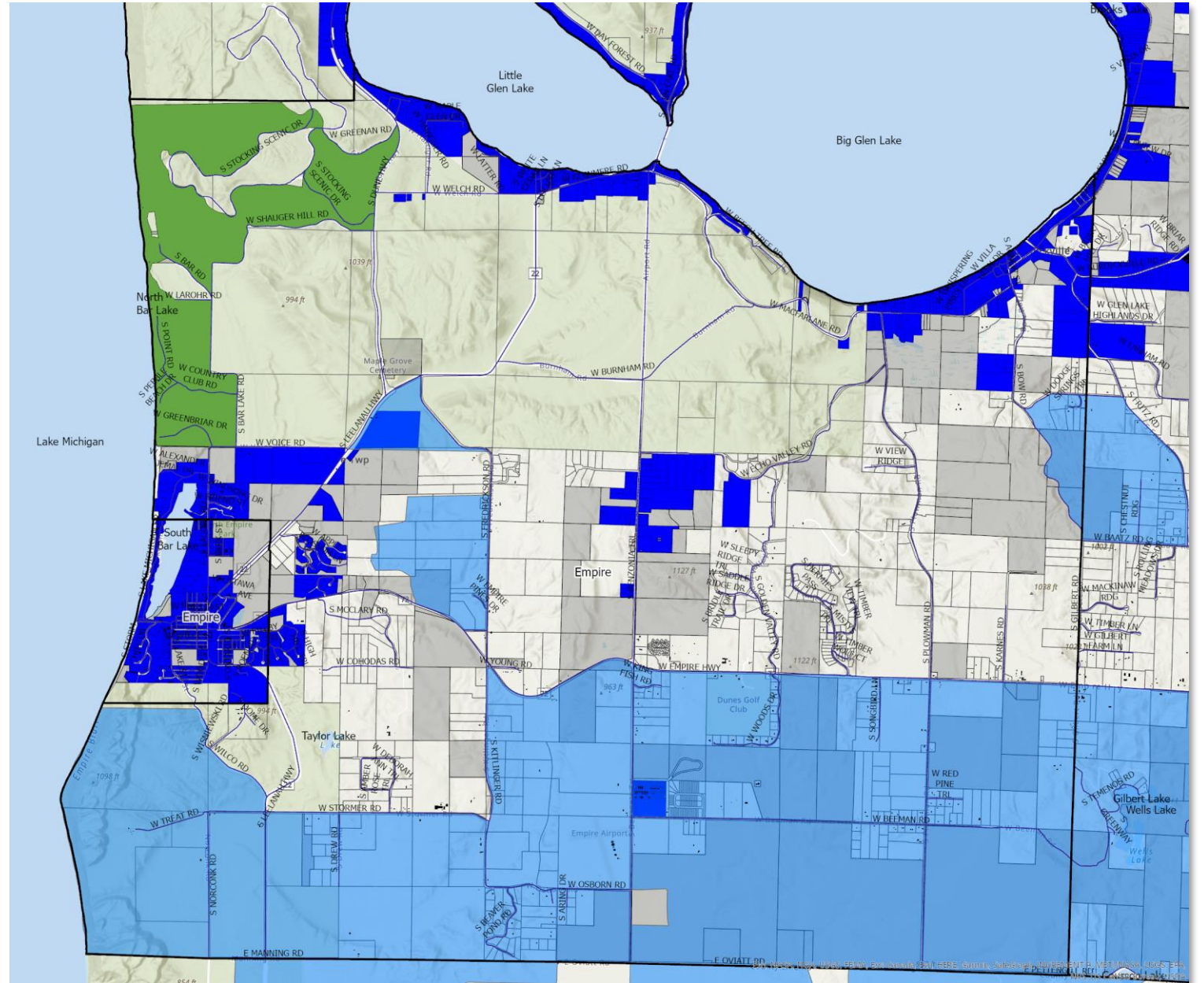
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Empire Twp

RDOF

Charter RDOF grant awards, which encompass about 439 of the 659 unserved parcels in Empire Township. This still leaves a large section across the center of the township unserved.

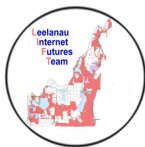
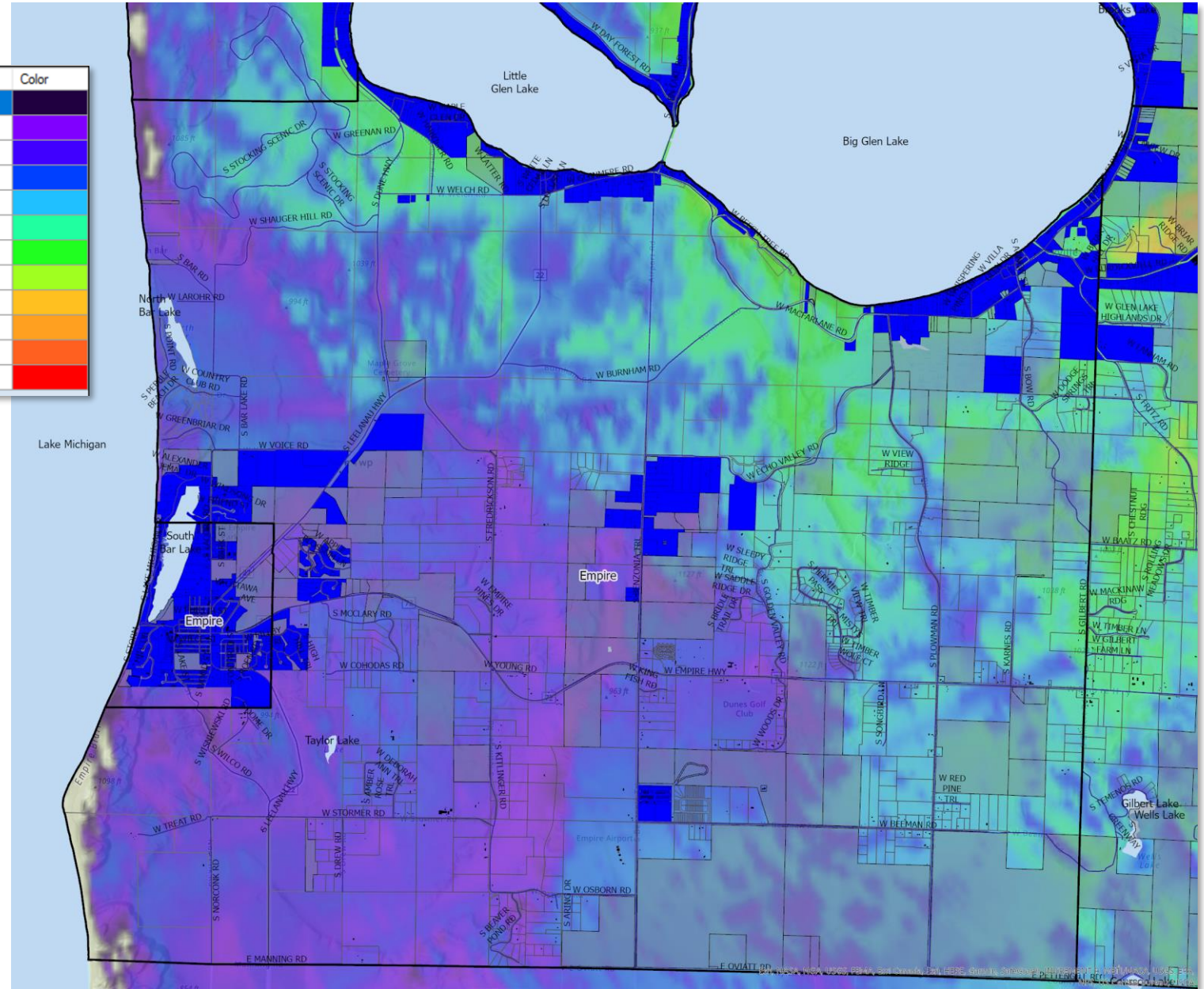
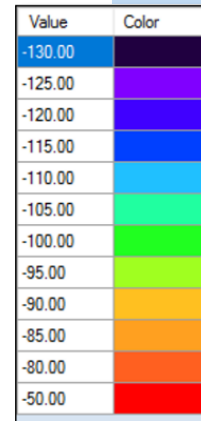


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Empire Twp

Band 71

Band 71 predictive model shows that the Northeast corner and some coverage along the South shores of Glen Lake are marginal in staying above -105



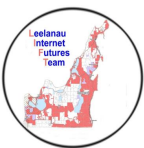
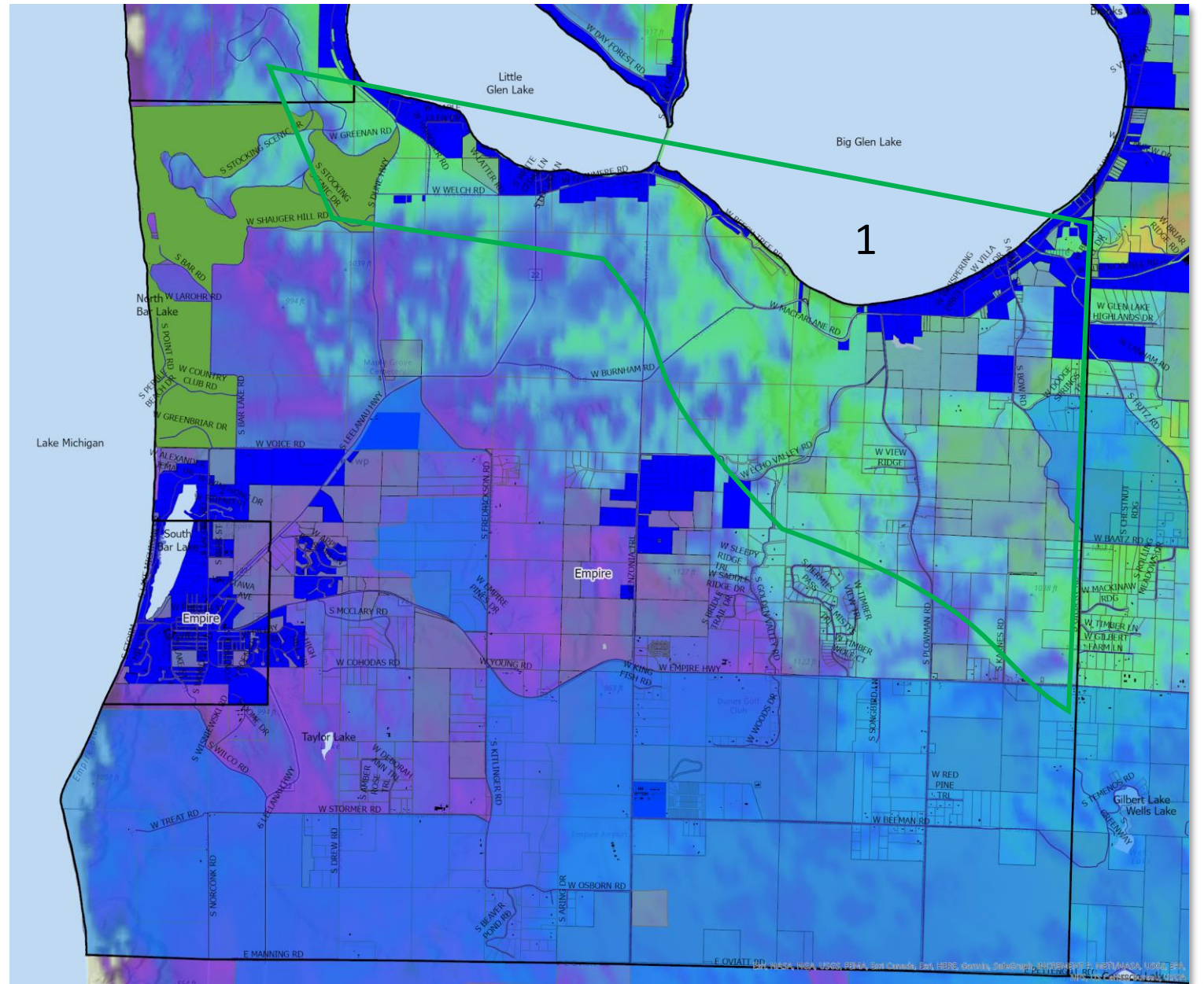
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Empire Twp

Summary

Only the green bordered area (1) are expected to see possible above threshold performance in 2022 with Band 71, additional research still needs to be done for Empire



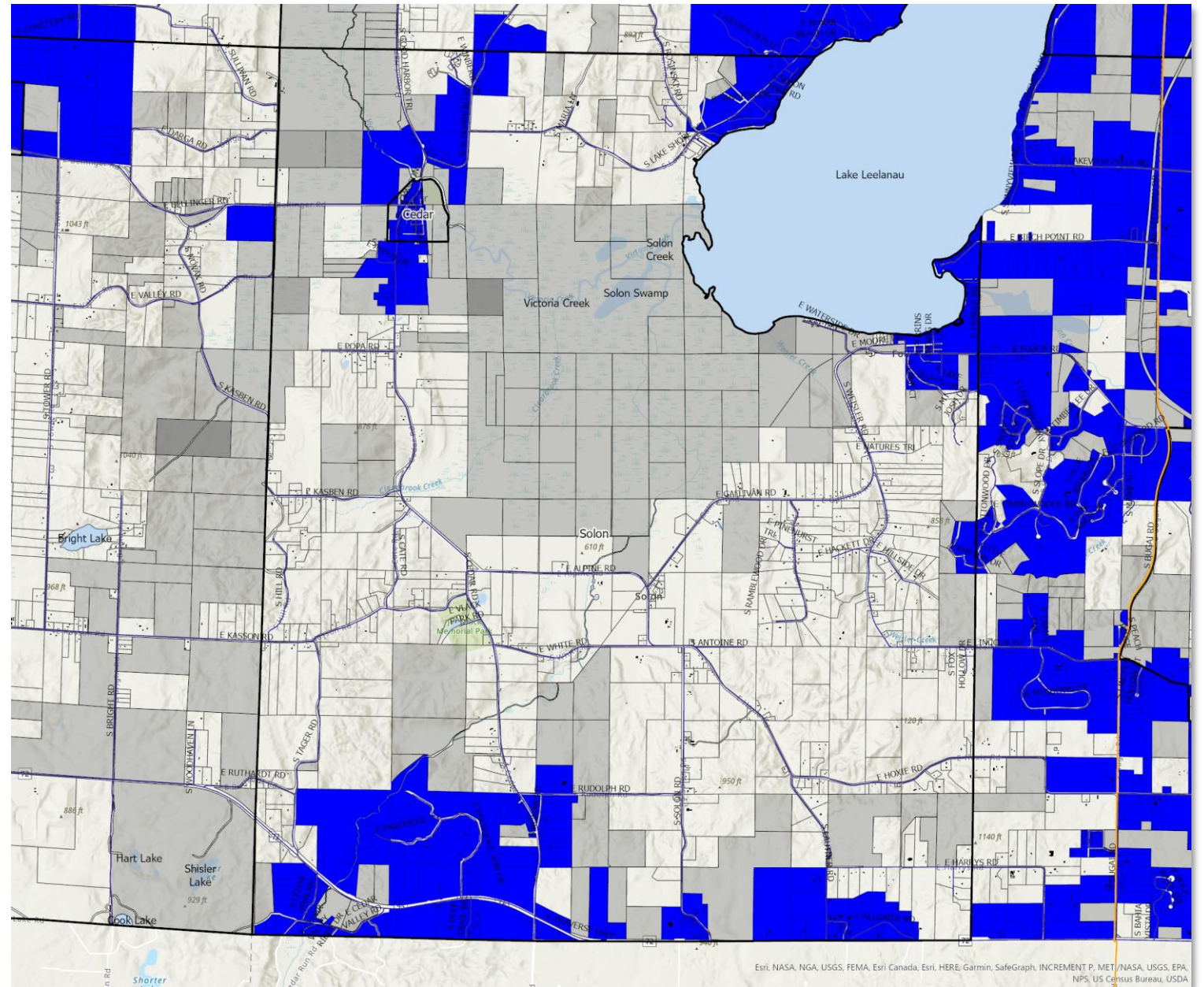
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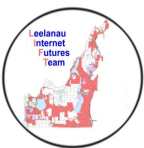
Solon Twp

Current Service Area

Parcels	1172
Served	597
Unserved	575



Esri, NASA, NGA, USGS, FEMA, Esri Canada, Esri, HERE, Garmin, SafeGraph, INCREMENT P, MET/NASA, USGS, EPA, NPS, US Census Bureau, USDA



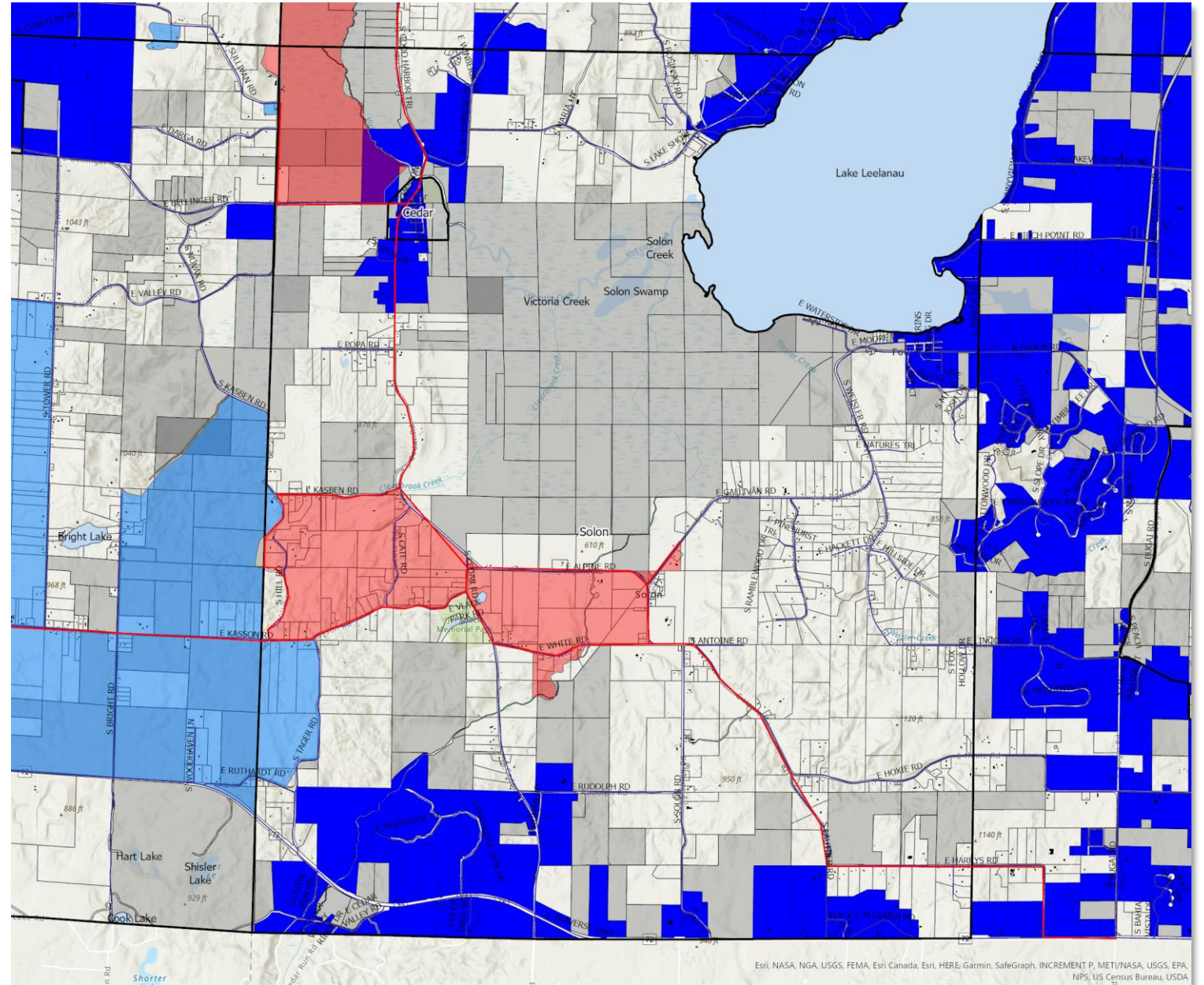
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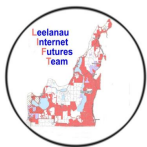
Solon Twp

RDOF

There are approximately 102 of the 575 unserved parcels awarded to CCC for RDOF funding, and approximately 8 parcels awarded to Charter, leaving well over 450 parcels with no plans for future fiber services



Esri, NASA, NGA, USGS, FEMA, Esri Canada, Esri, HERE, Garmin, SafeGraph, INCREMENT P, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA



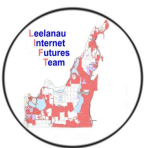
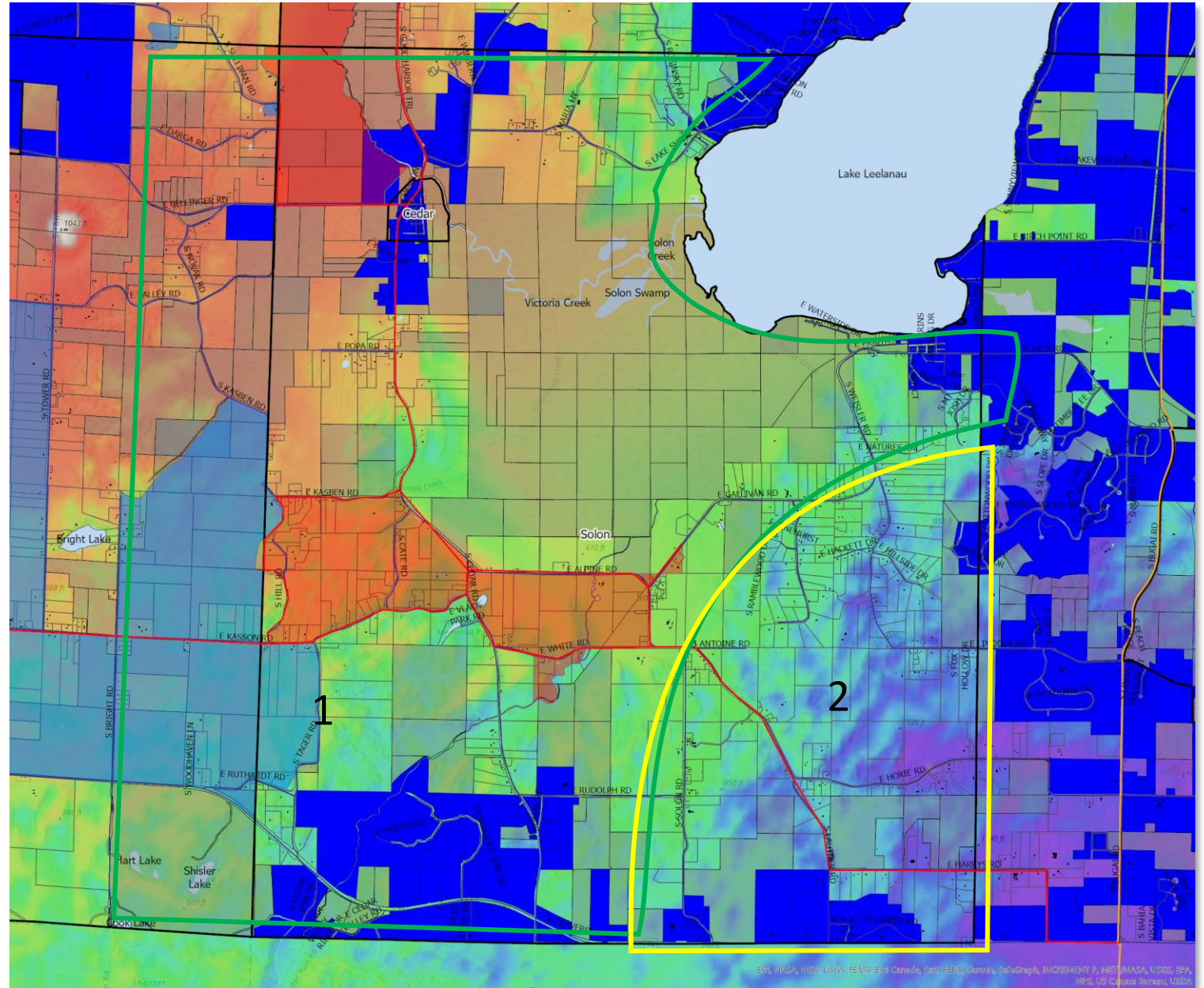
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Solon Twp

Summary

Area 1 shows good to excellent services with Band 71

Area 2 appears to be right at threshold, with some indication of below threshold areas for Band 71

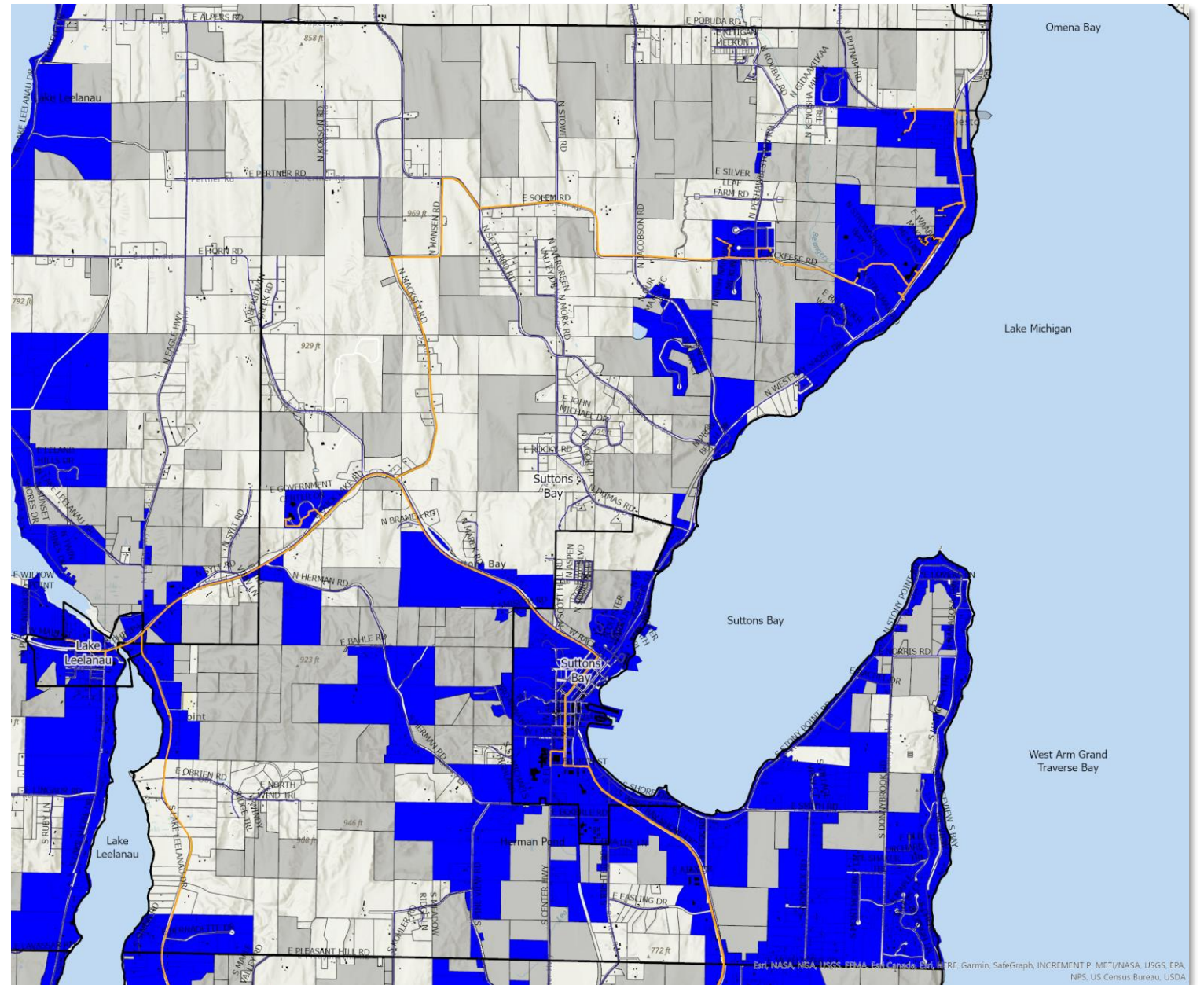


DCS
Technology
Design

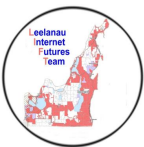
Suttons Bay Twp

Current Service Area

Suttons bay Parcels	2454
Served	1909
Unserved	545



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ECONOMIC FOUNDATION



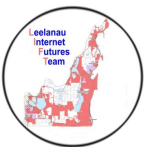
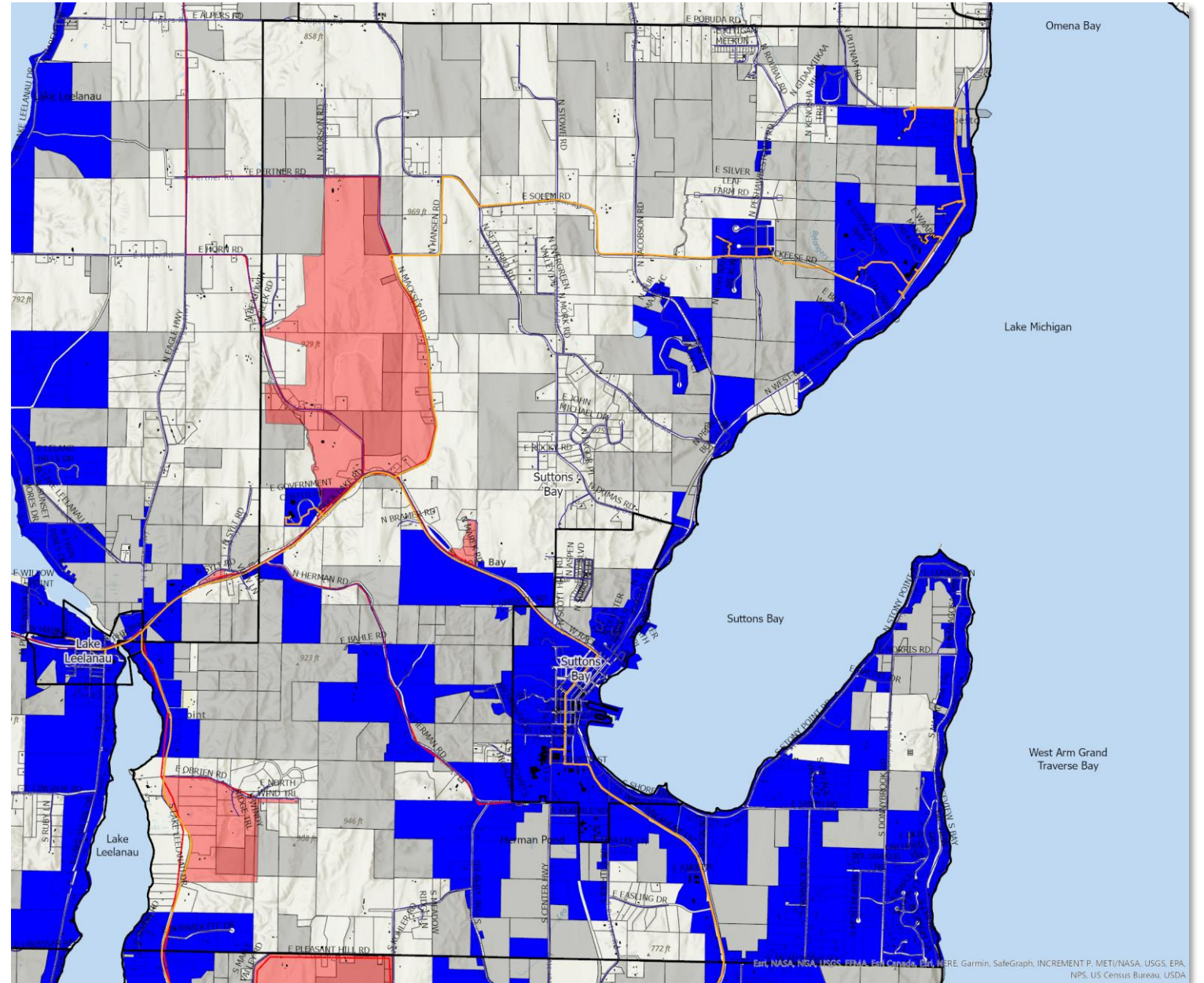
DCS
Technology
Design

Esri, NASA, NOAA, USGS, FEMA, Esri, Canada, Esri, HERE, Garmin, SafeGraph, INCREMENT P, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA

Suttons Bay Twp

RDOF

Approximately 51 out of 545 unserved parcels in Suttons Bay Township were awarded to CCC



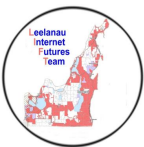
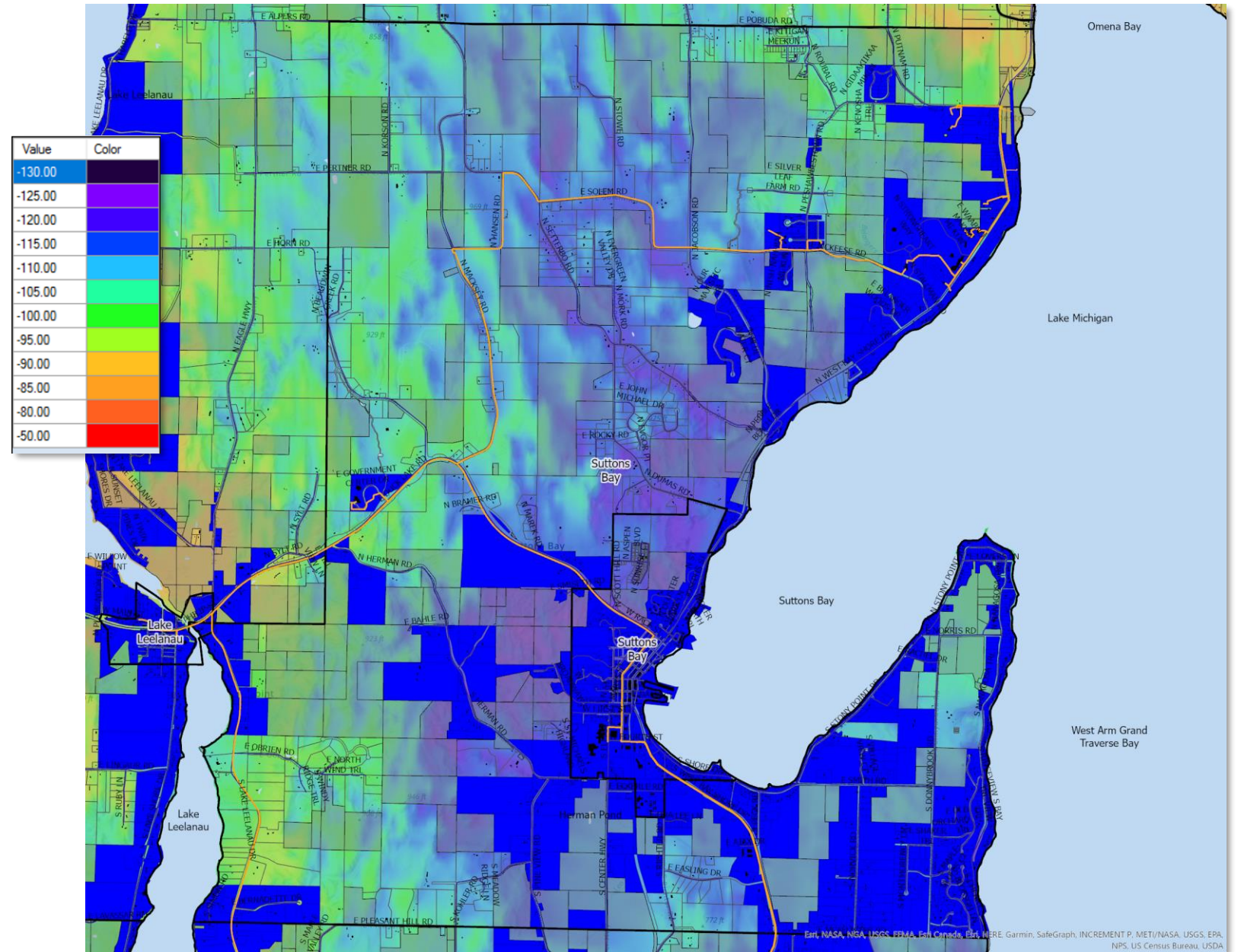
DCS
Technology
Design

Esri, NASA, NOAA, USGS, FEMA, Esri, Canada, Esri, HERE, Garmin, SafeGraph, INCREMENT P, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA

Suttons Bay Twp

Band 71

Band 71 does not reach Suttons Bay Township very well, except along the western boundary, and northeast corner



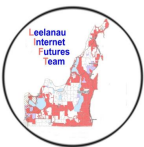
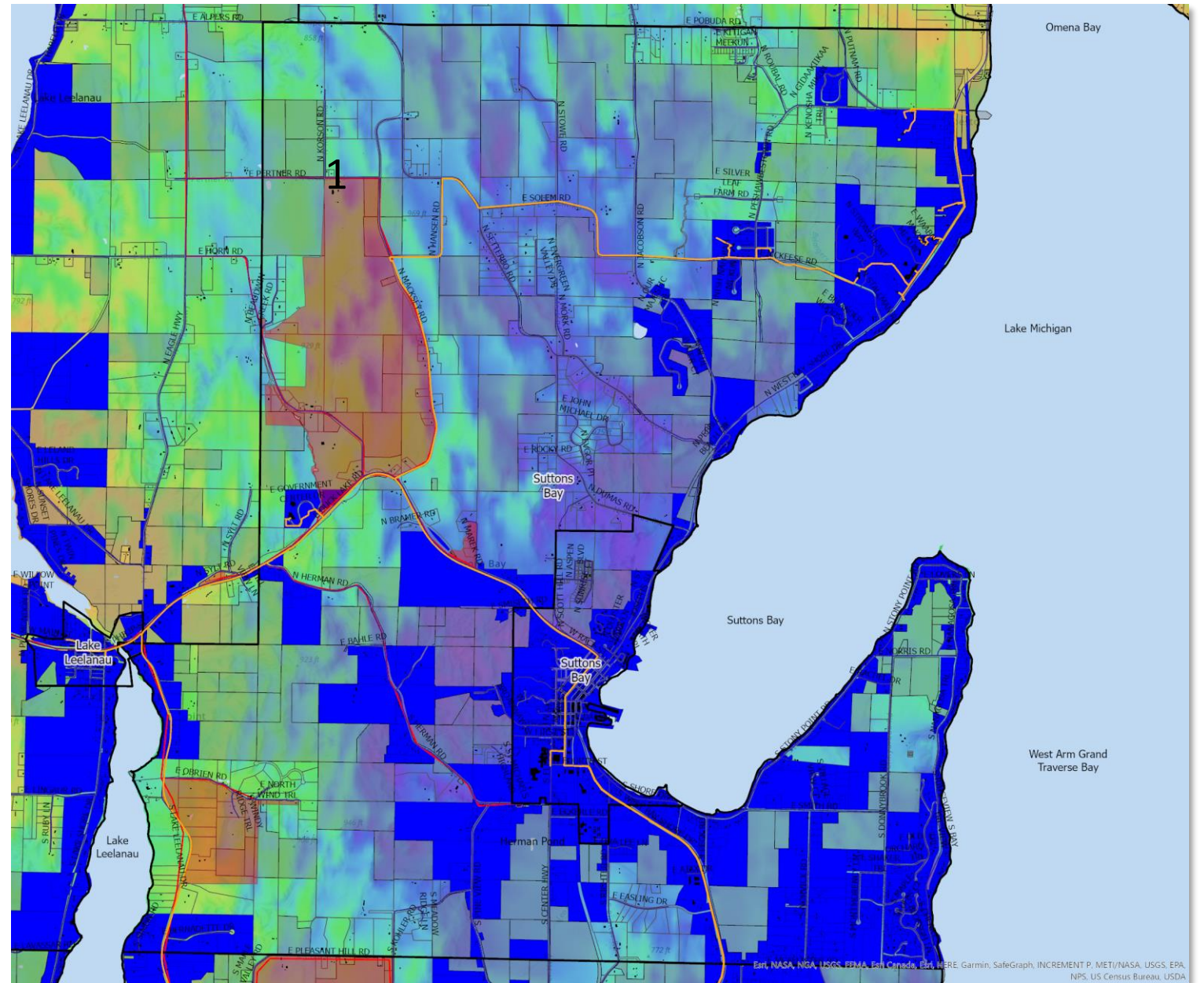
DCS
Technology
Design

Esri, NASA, NOAA, USGS, FEMA, Esri, Corredo, Esri, HERE, Garmin, SafeGraph, INCREMENT P, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA

Suttons Bay Twp

Summary

CCC has limited RDOF areas within the township, however most of Suttons Bay Township will require additional research for the short term.



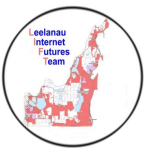
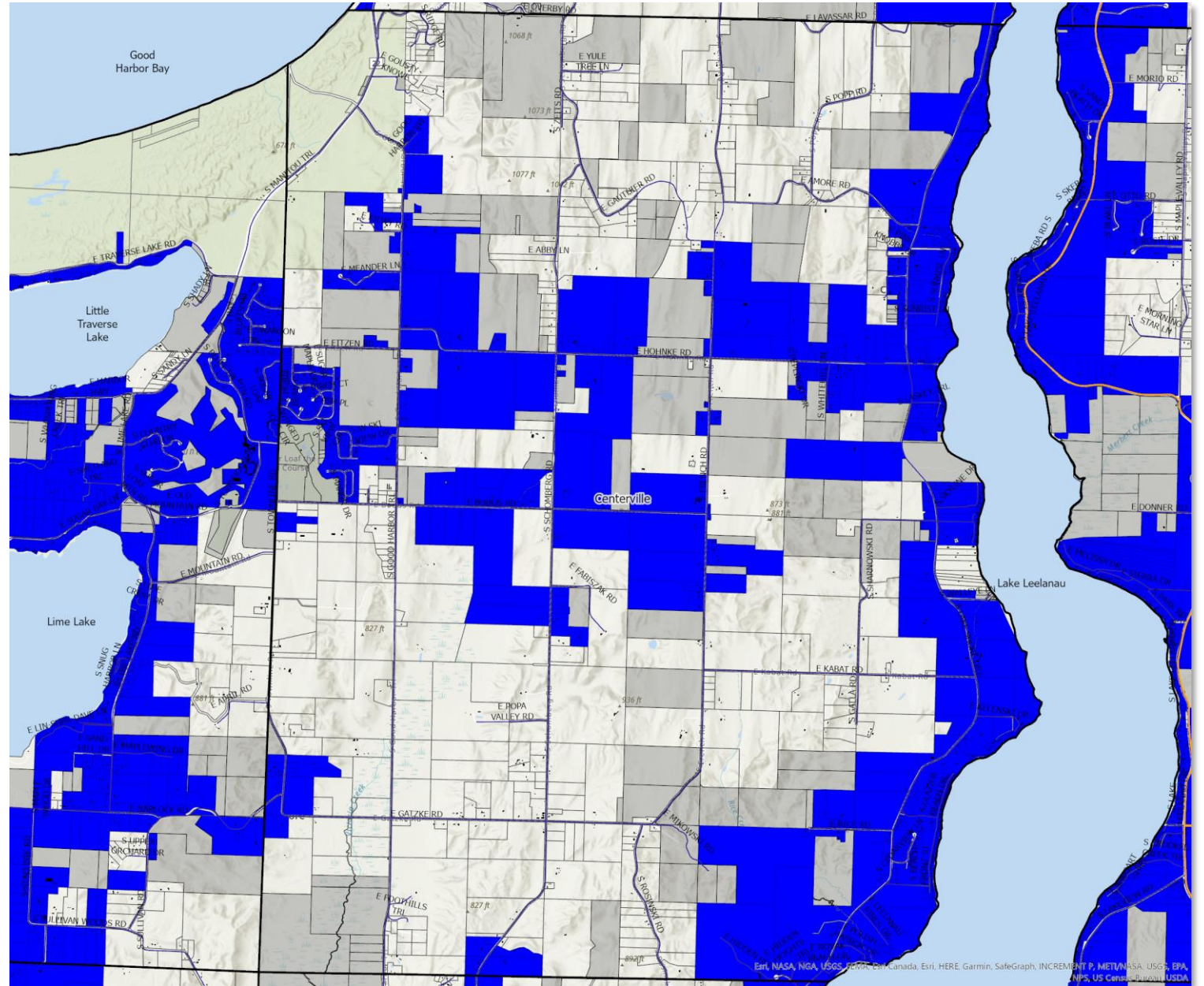
DCS
Technology
Design

Esri, NASA, NOAA, USGS, FEMA, Esri, Corredo, Esri, HERE, Garmin, SafeGraph, INCREMENT P, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA

Centerville Twp

Current Service Area

Parcels	1266
Served	875
Unserved	391

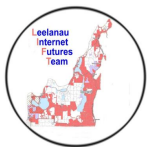
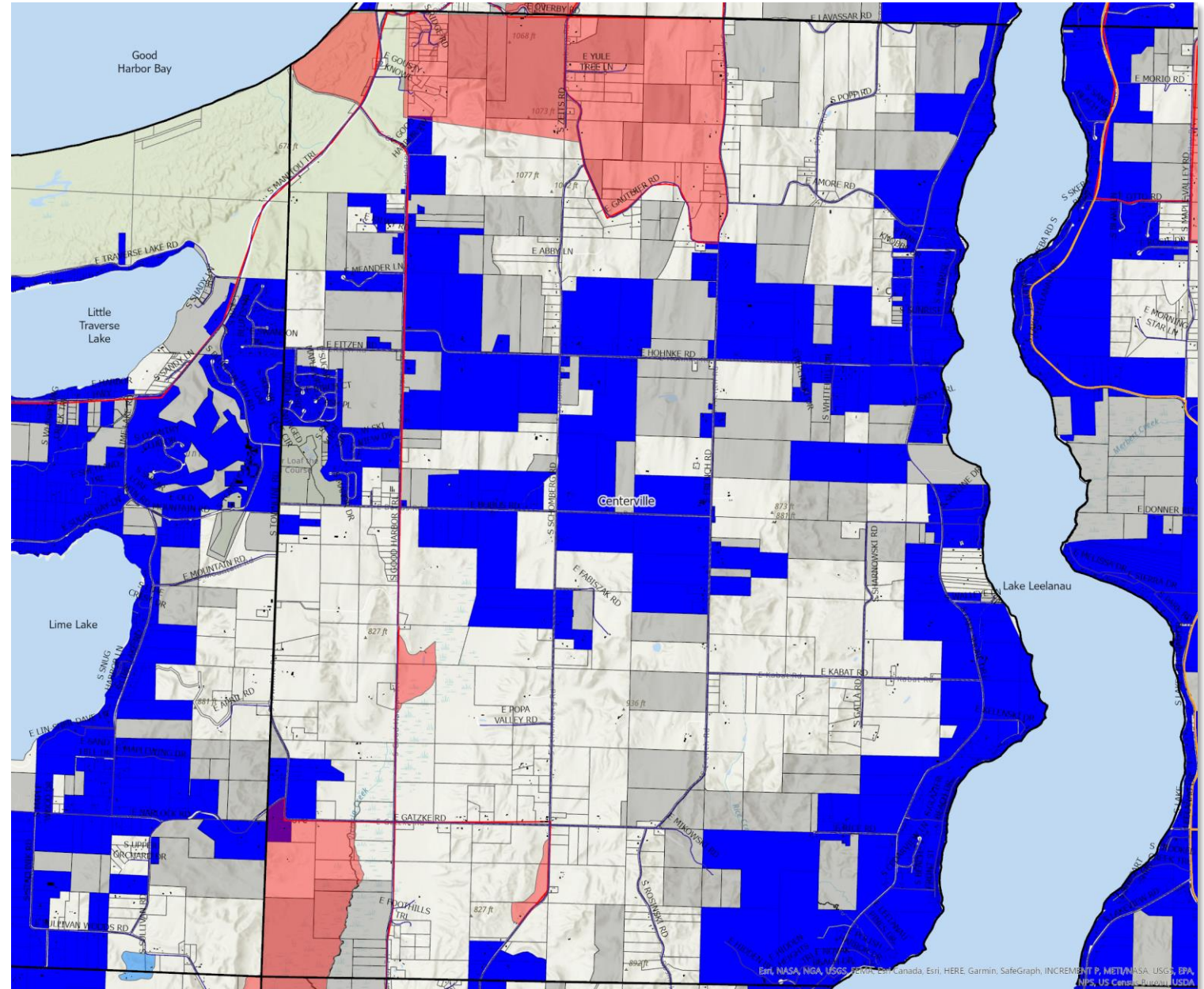


DCS
Technology
Design

Centerville Twp

RDOF

RDOF has awarded about 87 of the current 391 unserved parcels to CCC (in pink). The area south of E LaVassar Rd (and north into Leland Township) covers the majority of RDOF identified homes, and also provides a good base to extend service to all unserved parcels heading east on LaVassar, south on French Rd, and south of Schomberg rd. The RDOF area in the Southwest corner appears to only cover about 4 occupied parcels



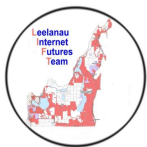
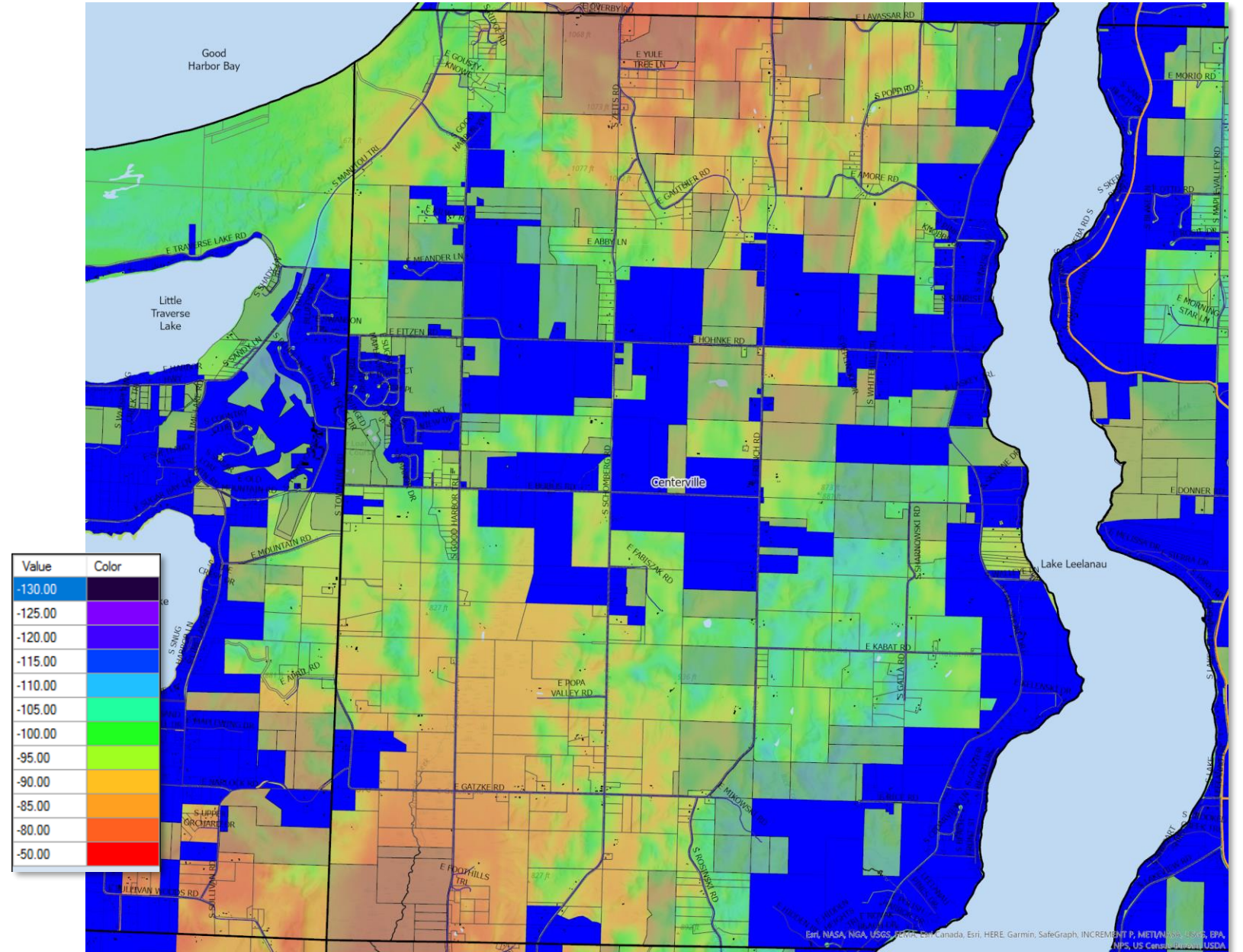
DCS
Technology
Design

Esri, NAD83, NGA, USGS, HERE, Esri, HERE, Garmin, SafeGraph, INCREMENT P, METUNASA, USGS, EPA, NPS, US Census Bureau, USDA

Centerville Twp

Band 71

Band 71 predictive model shows most of Centerville Township is predicted at above -105, providing good to excellent services levels for short term planning in 2022



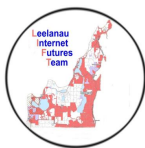
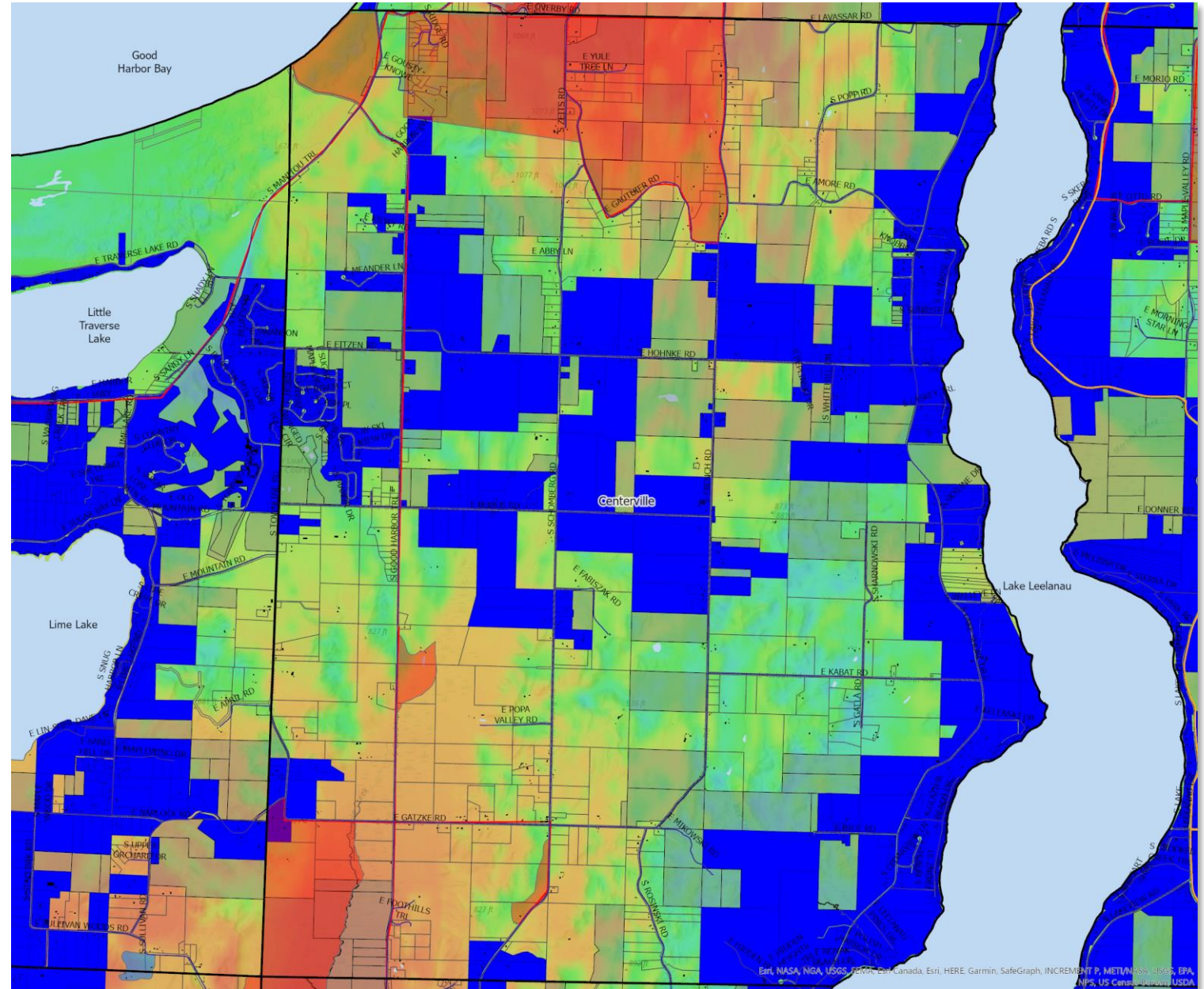
DCS
Technology
Design

Esri, NAD83, NGA, USGS, FEMA, Esri, HERE, Garmin, SafeGraph, INCREMENT P, METUNAS, USGS, EPA, NPS, US Census Bureau, USDA

Centerville Twp

Summary

The area around Kabat and S Galla Rds may fall below threshold levels for Band 71, but most of the township should be serviceable for 2022.



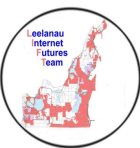
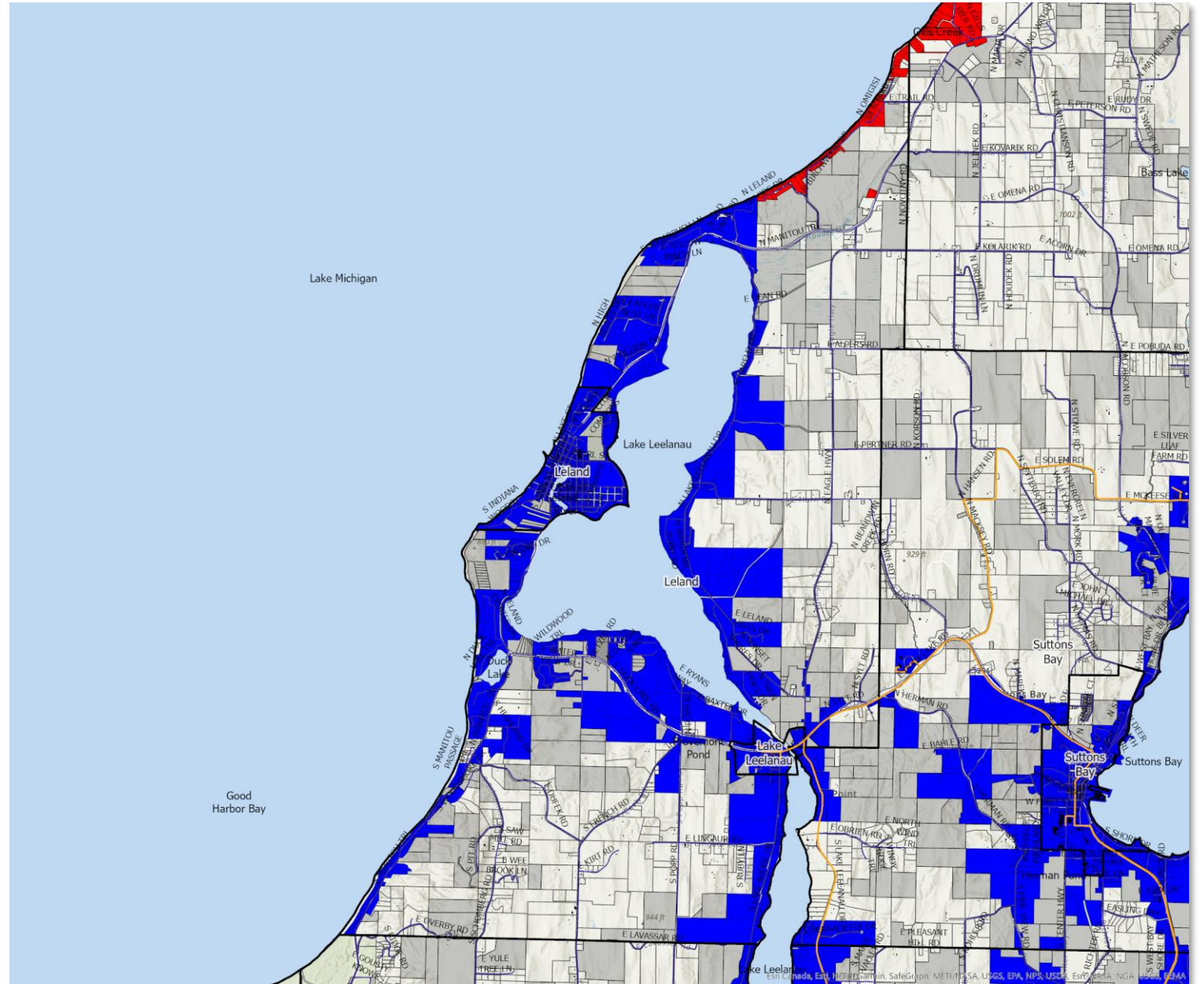
DCS
Technology
Design

Esri, NAD83, NGA, USGS, FEMA, Esri, Canada, Esri, HERE, Garmin, SafeGraph, INCREMENT P, METUSERS, USGS, EPA, NPS, US Census Bureau, USDA

Leland Twp

Current Service Area

Parcels	2474
Served	2020
Unserved	454

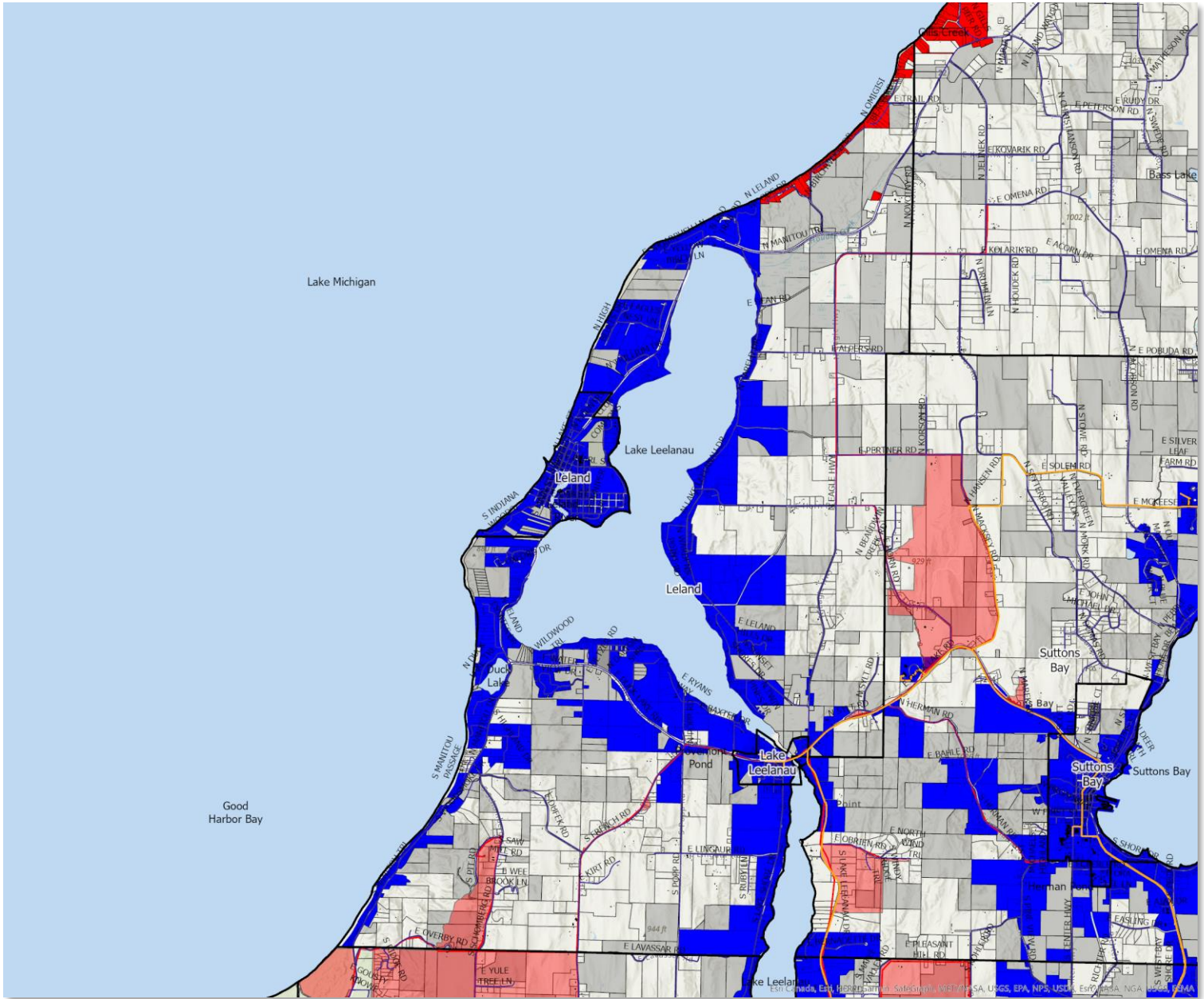


DCS
Technology
Design

Leland Twp

RDOF

CCC has a small area for RDOF in the southern part of the township

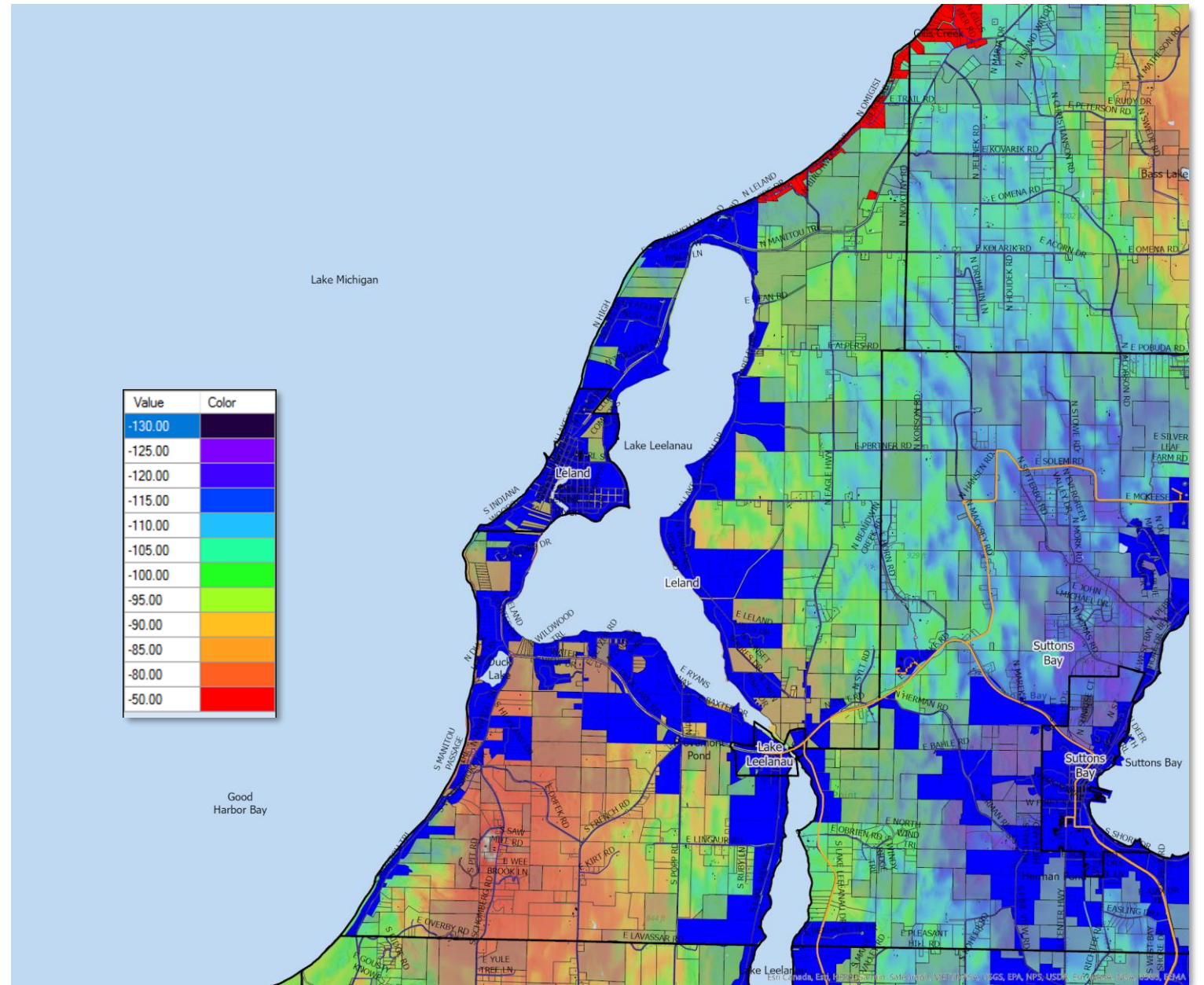


DCS
Technology
Design

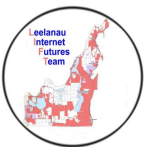
Leland Twp

Band 71

Band 71 reaches much of the southern part of the township, but shows minimal to below threshold in other parts



LEELANAU PENINSULA
ECONOMIC FOUNDATION



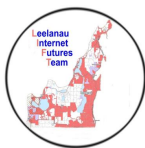
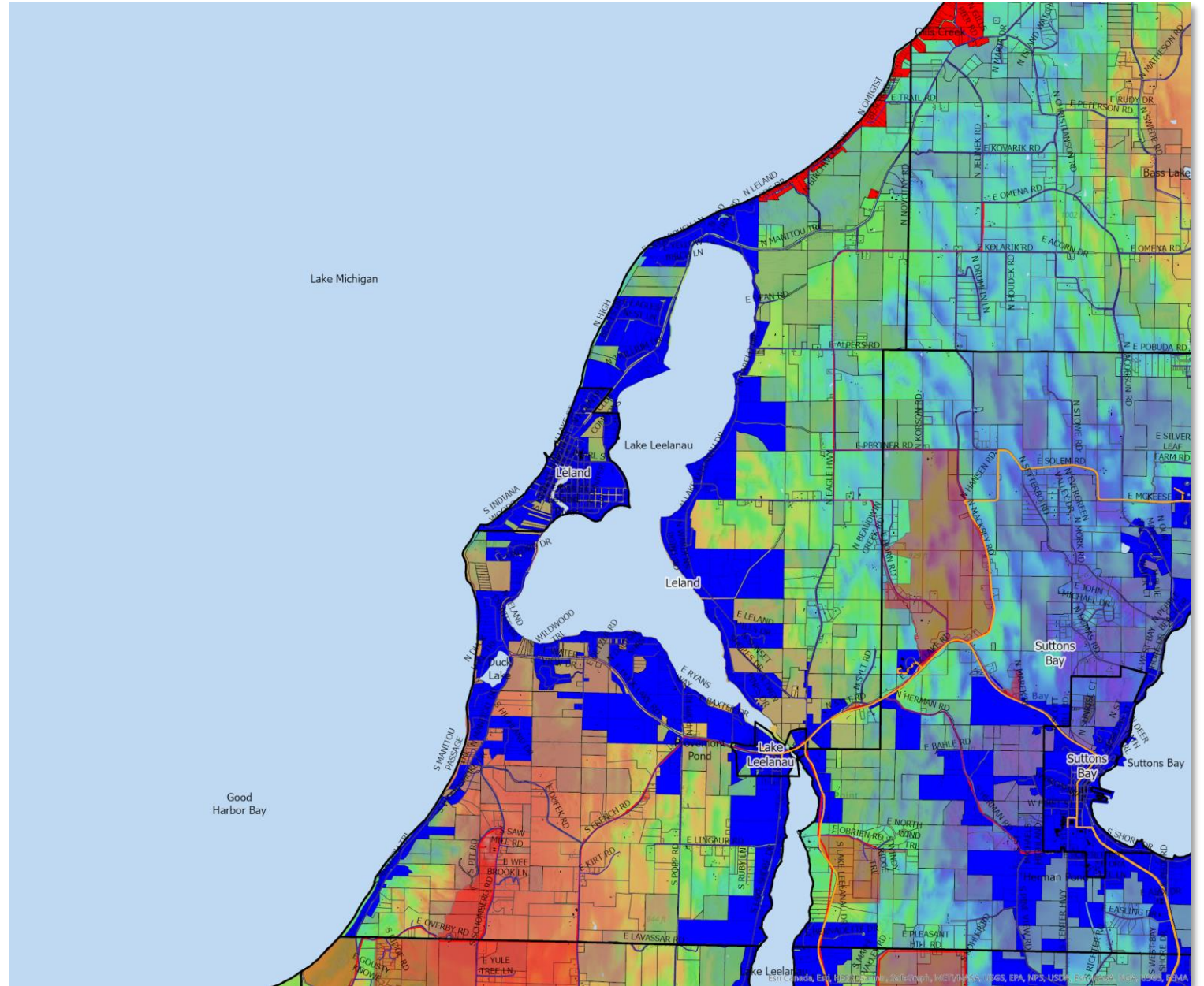
DCS
Technology
Design

Leland Twp

Summary

CCC has began fiber construction in the north part of the township, and most of the remaining township is well served by Charter

The south are should see good Band 71 coverage for 2022



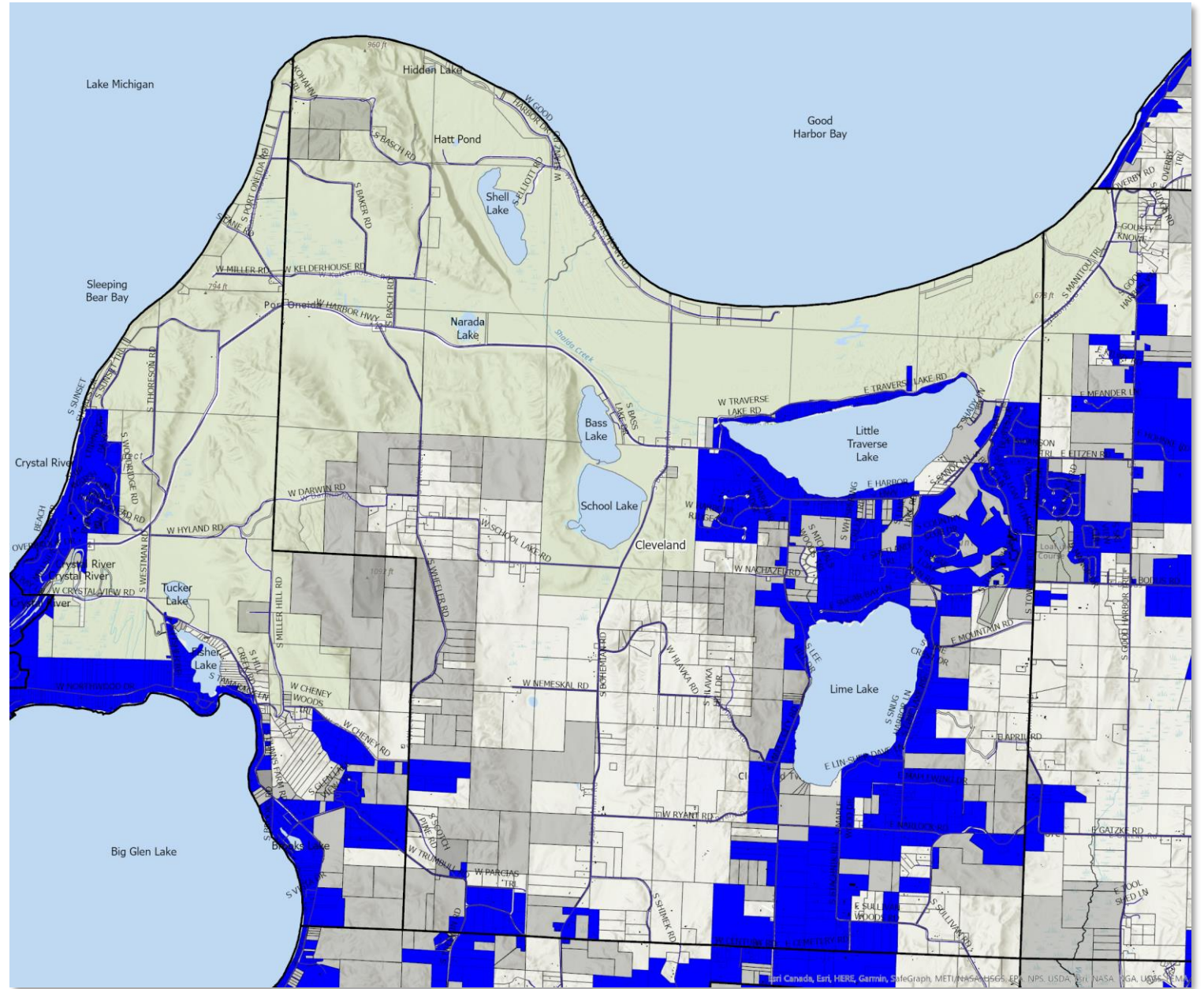
DCS
Technology
Design

LEELANAU PENINSULA
ECONOMIC FOUNDATION

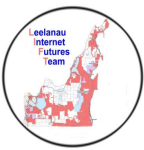
Cleveland Twp

Current Service Area

Parcels	1248
Served	988
Unserved	260



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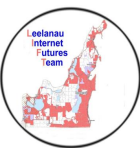
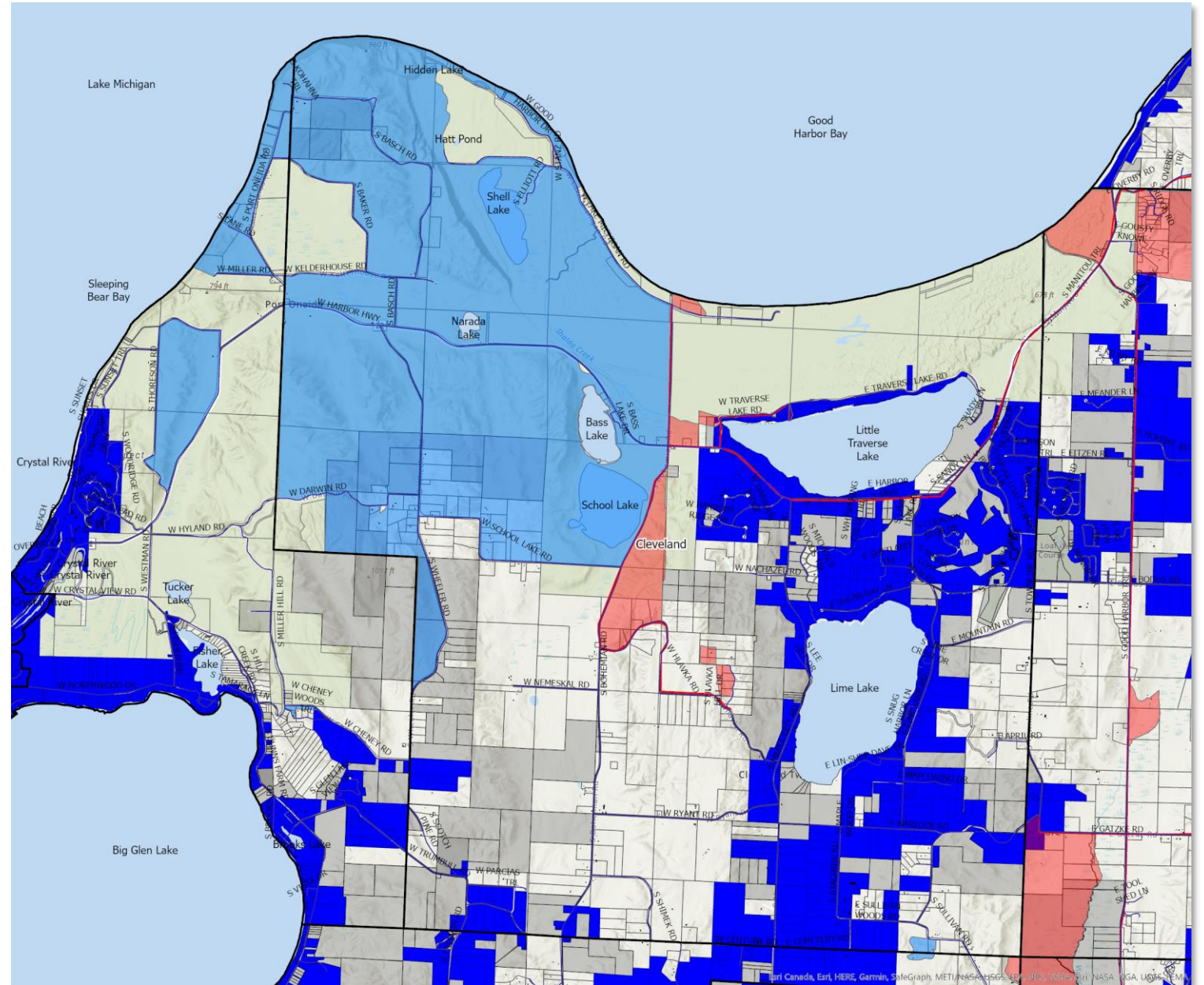


DCS
Technology
Design

Cleveland Twp

RDOF

Of the 260 unserved parcels (outside of US Park areas) CCC (pink area) has been granted about 13 parcels and Charter (light blue) was granted about 42

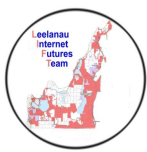
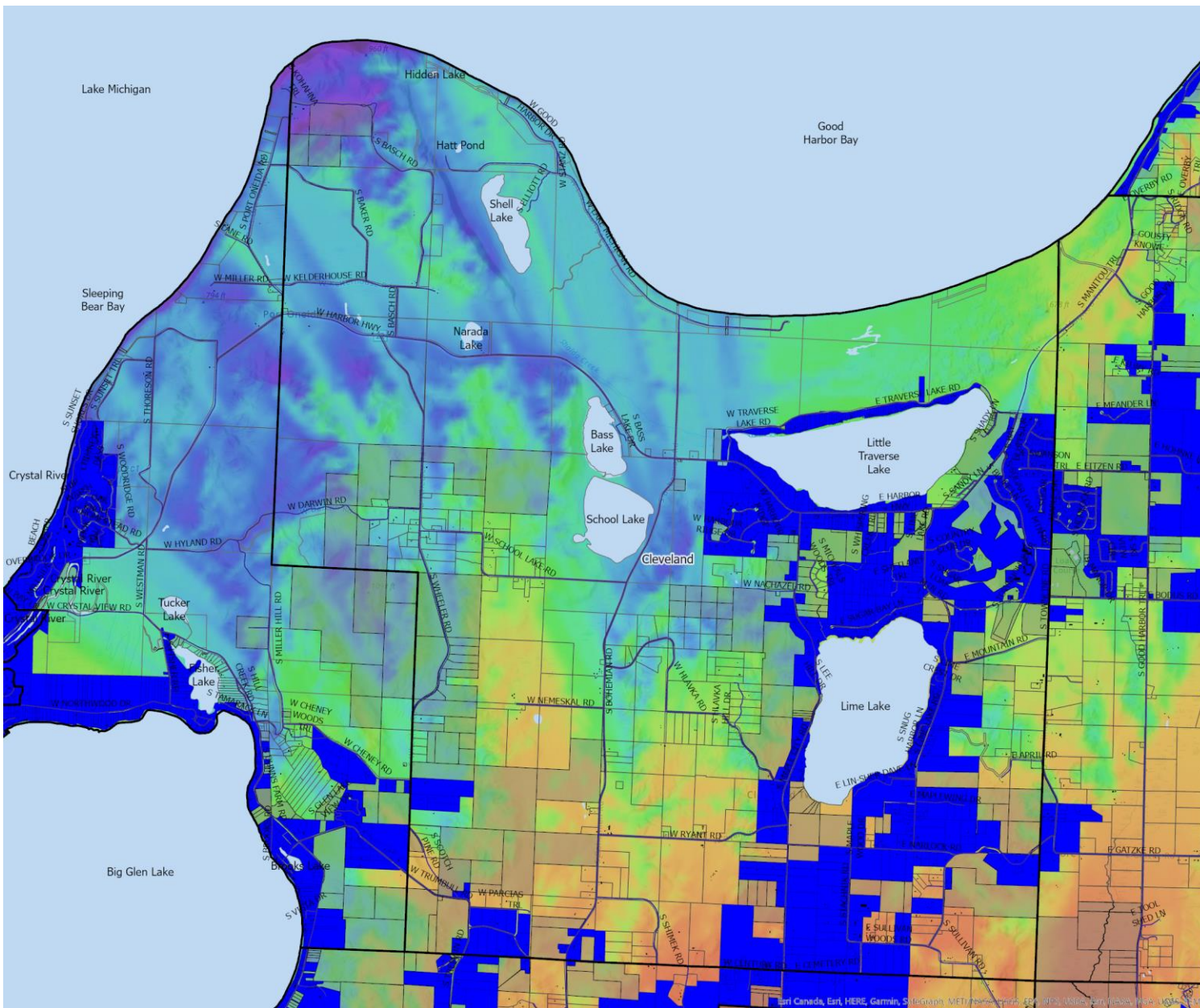


DCS
Technology
Design

Cleveland Twp

Band 71

Band 71 predictive model shows that most of the unserved areas of Cleveland Township (excluding US Park areas) will be above the -105 threshold, providing “good” service levels



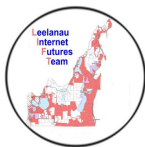
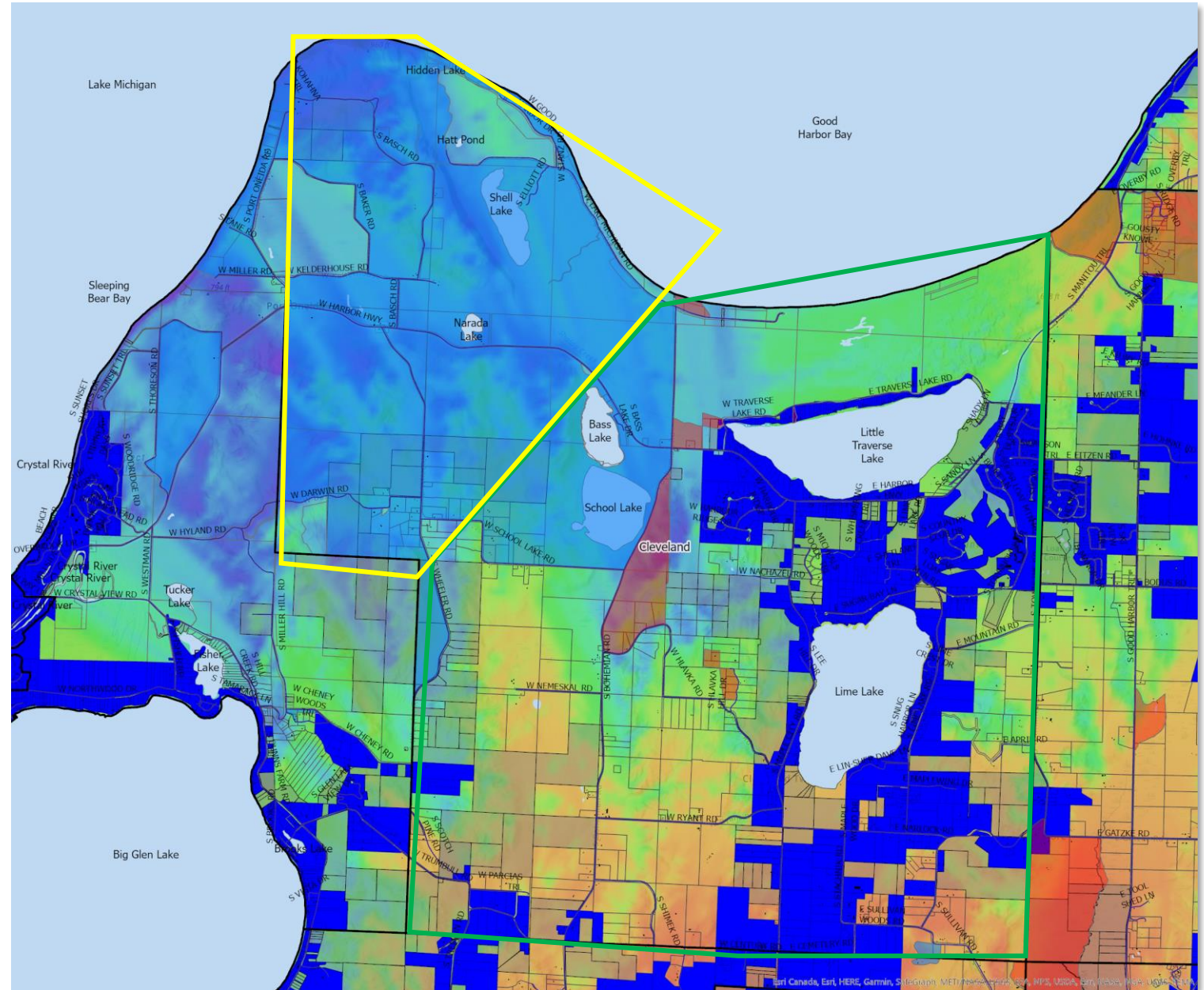
DCS
Technology
Design

Art, Canada, Esri, HERE, Garmin, Microsoft, MTF, OpenStreetMap, Geo, GIS, Intel, Juniper Networks, Nokia, Oracle, Swire, Verizon, Visteon, Waze, Whittlesey

Cleveland Twp

Summary

Green bordered areas are expected to see above threshold performance in 2022 with Agri-Valley's planned launch of Band 71 wireless services. The area bordered in Yellow is exclusively US Park Service land, and may require further investigation to bring above threshold Broadband in 2022



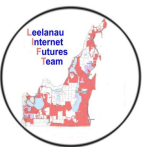
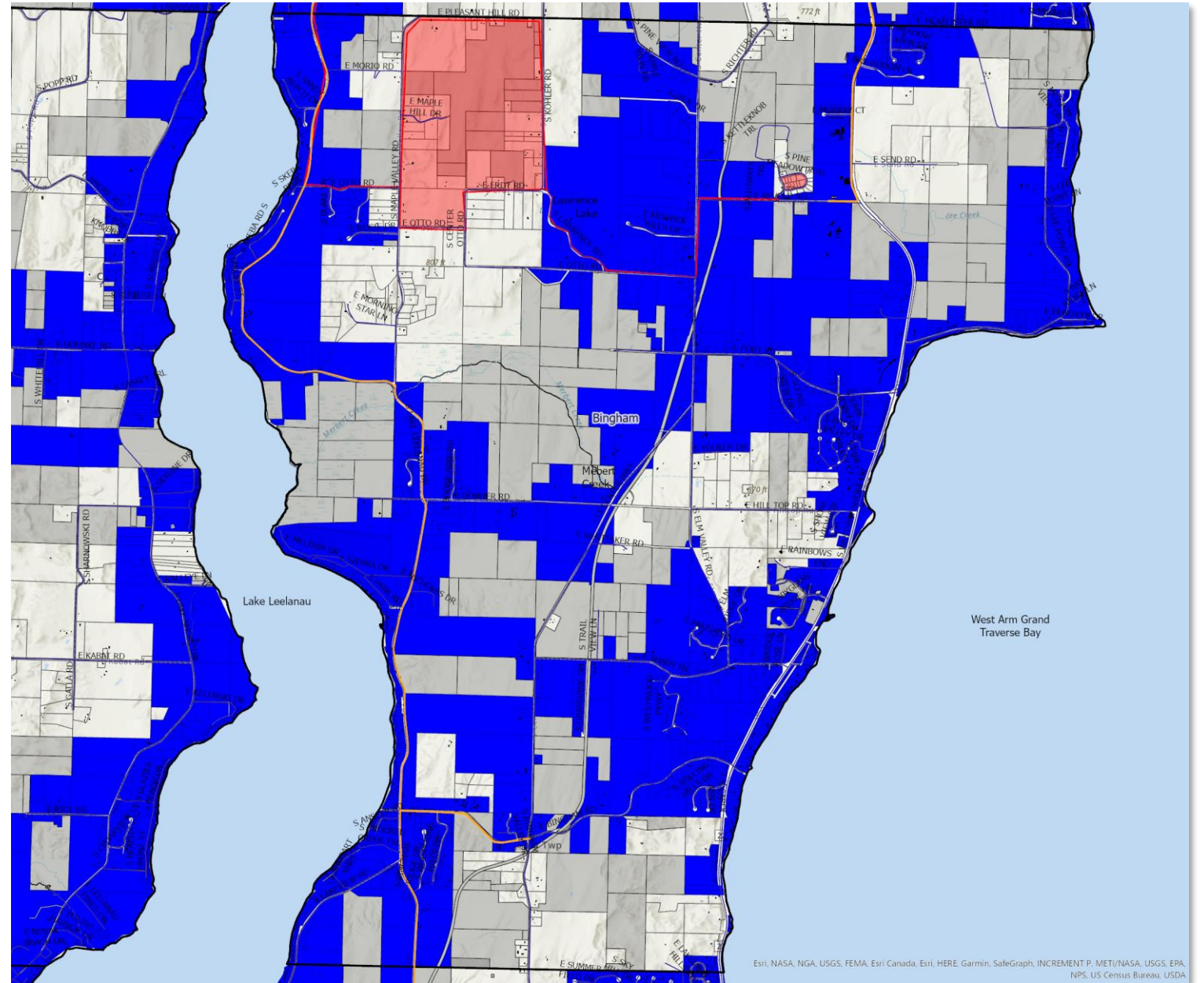
DCS
Technology
Design

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Bingham Twp

RDOF

There are about 42 (out of 196 unserved) parcels across two areas in Bingham Township that were awarded to CCC for RDOF funding.



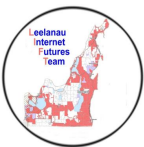
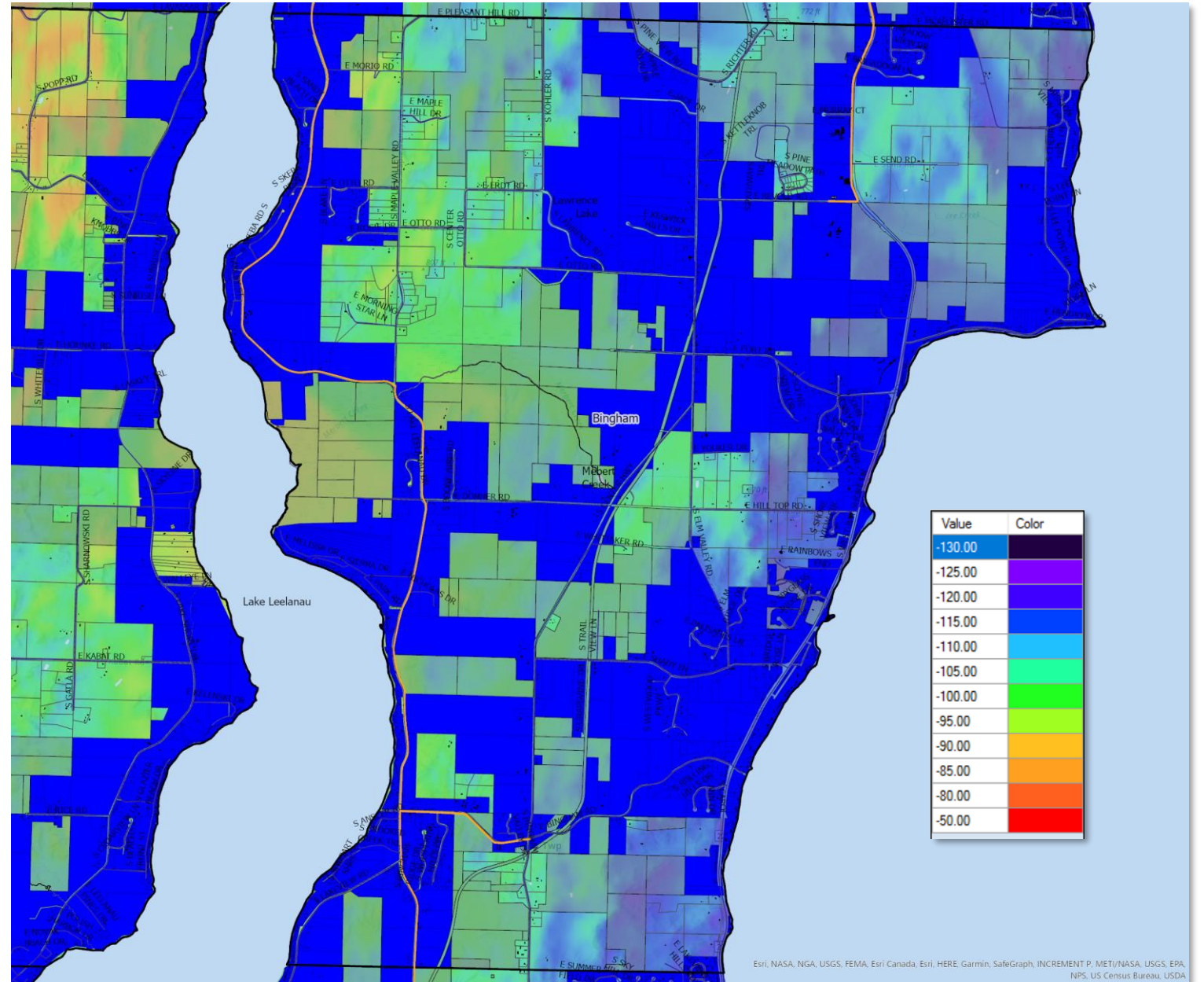
DCS
Technology
Design

Esri, NASA, NGA, USGS, FEMA, Esri Canada, Esri, HERE, Garmin, SafeGraph, INCREMENT P, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA

Bingham Twp

Band 71

Band 71 predictive model shows that the Northwest and Western areas of Bingham Township are predicted at between -95 and -105, which would be considered “good”

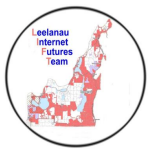
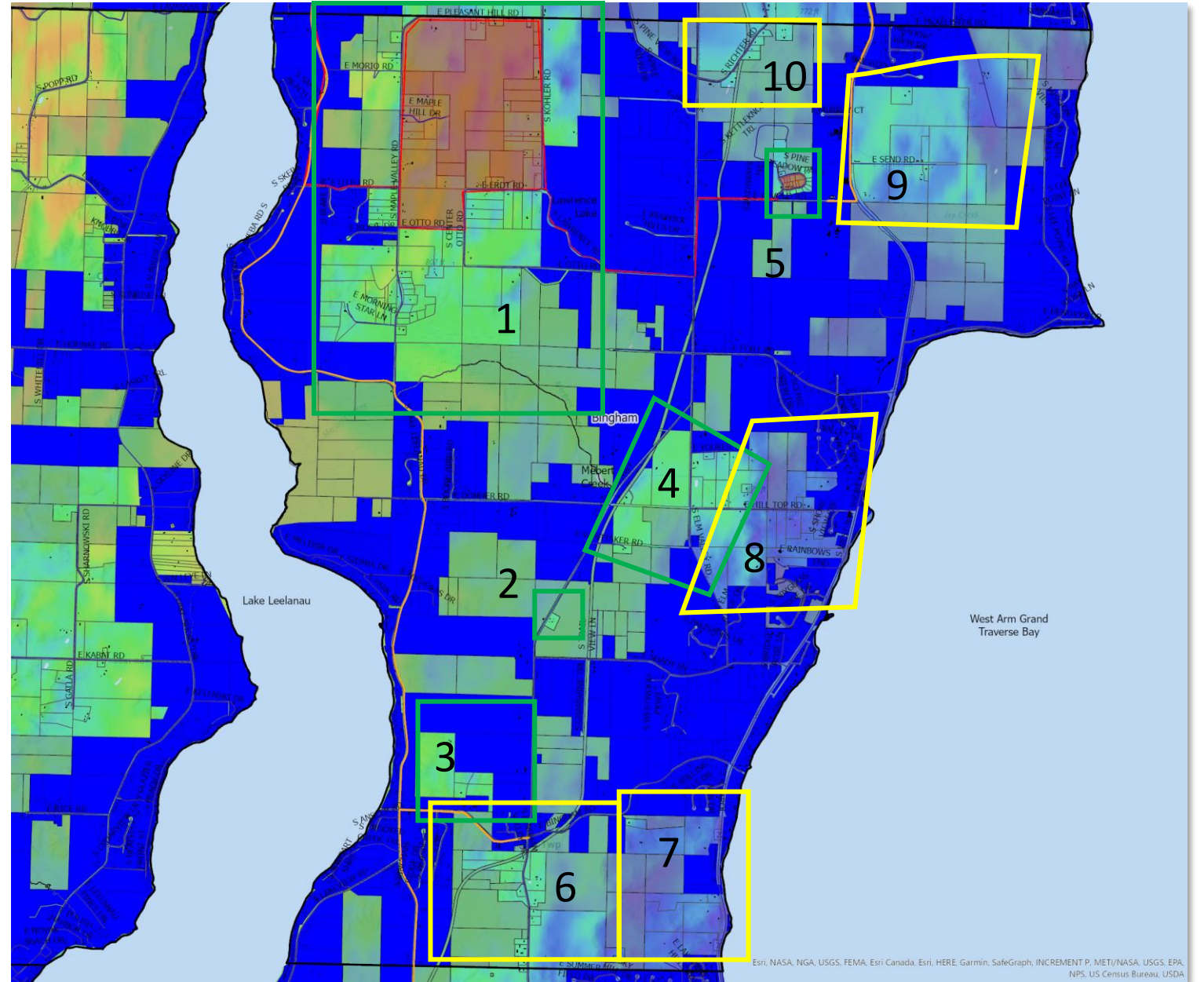


DCS
Technology
Design

Bingham Twp

Summary

Area bordered in green are all above good thresholds for Band 71. Areas in yellow will require additional research

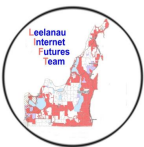
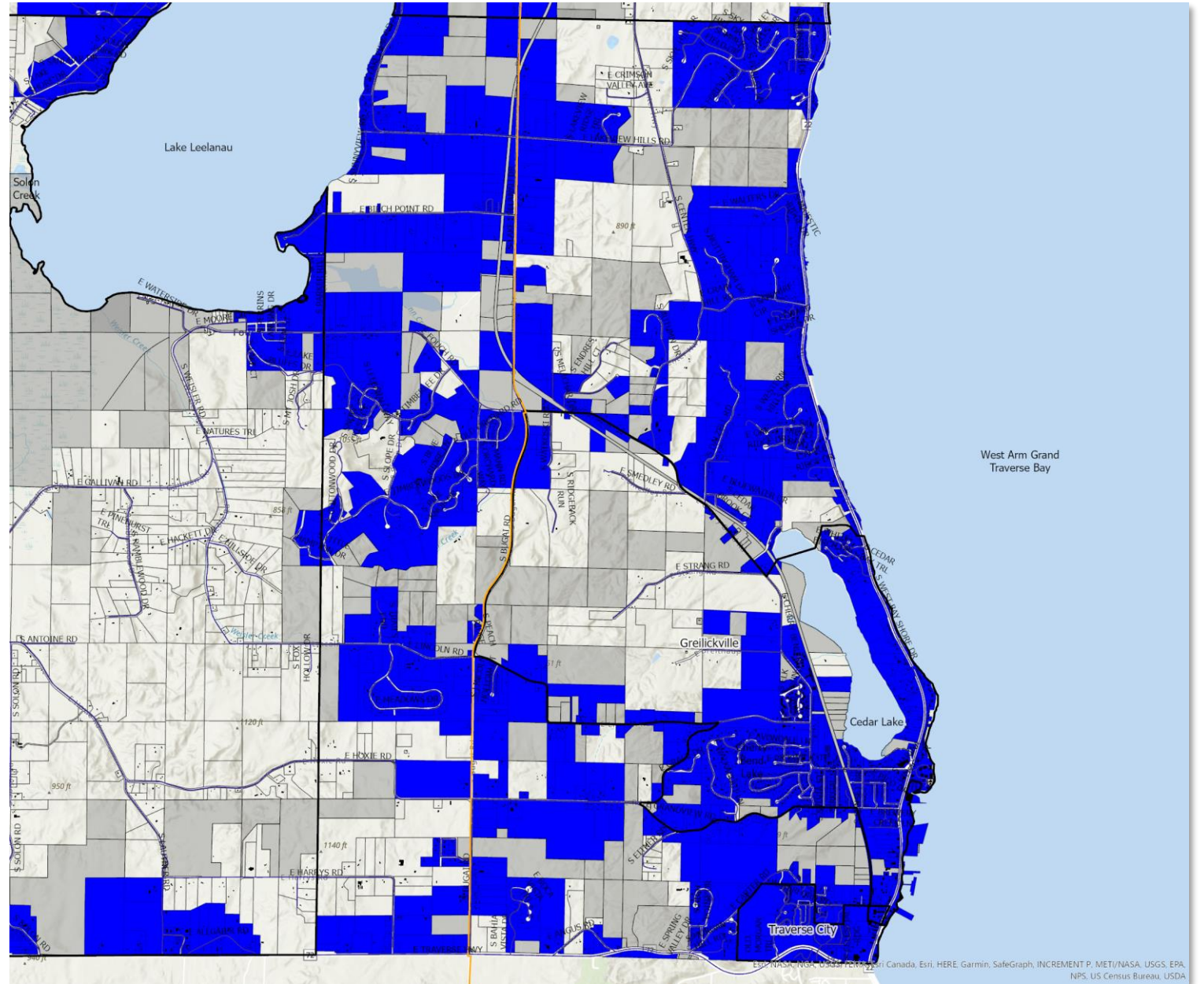


DCS
Technology
Design

Elmwood Twp

Current Service Area

Parcels	3114
Served	2947
Unserved	167



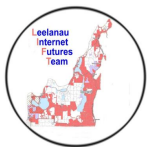
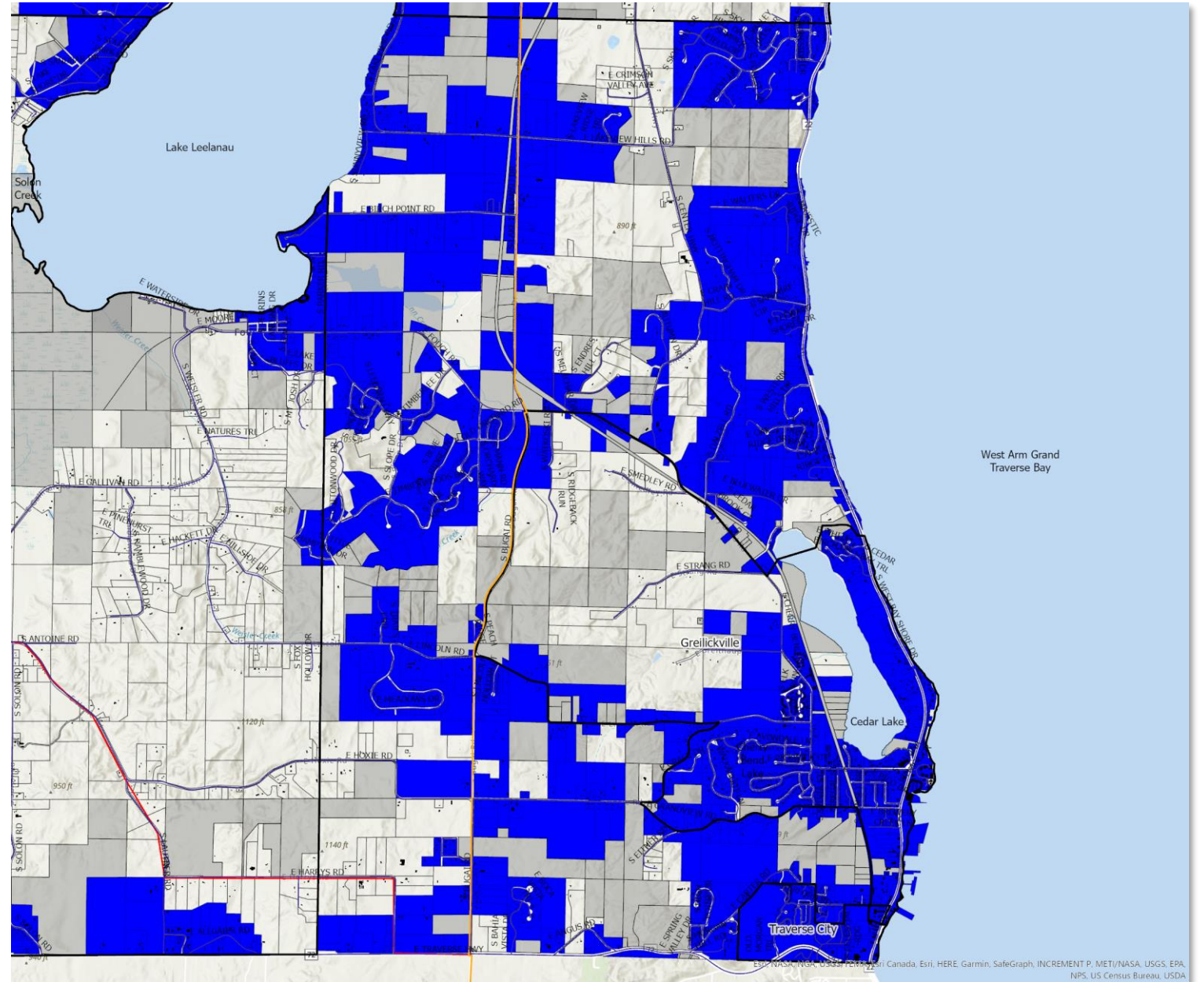
DCS
Technology
Design

ESRI, NASA, INGA, USGS, Esri, HERE, Garmin, SafeGraph, INCREMENT P, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA

Elmwood Twp

RDOF

Elmwood township has the lowest percentage of unserved parcels, and no areas awarded for RDOF construction

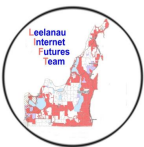
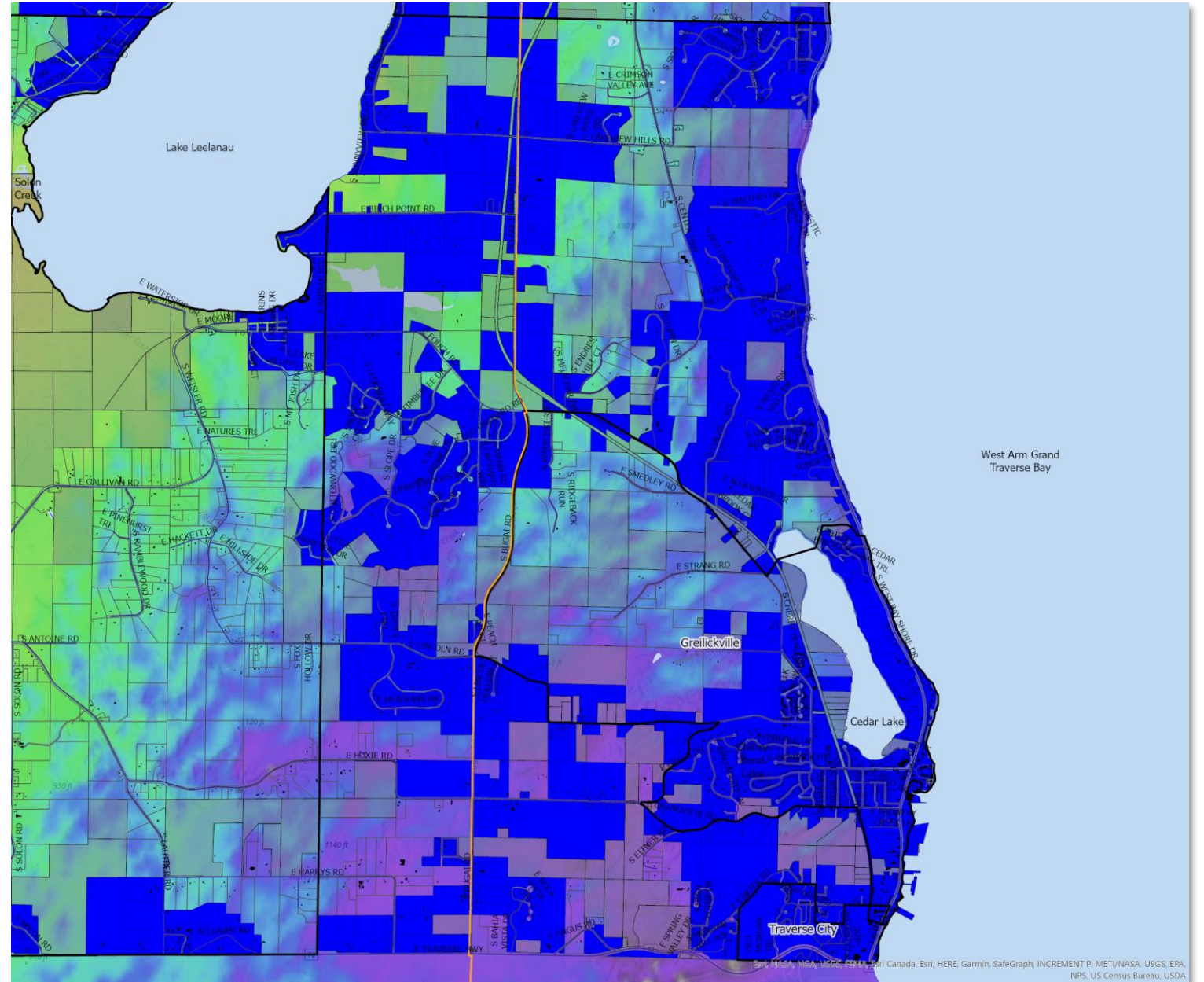


DCS
Technology
Design

Elmwood Twp

Band 71

Band 71 predictive model shows that some of the currently unserved parcels in the Northwestern parts of the township may see above threshold services in 2022. However, everything south of Fouch Rd drops quickly into marginal service levels.

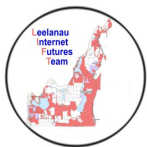
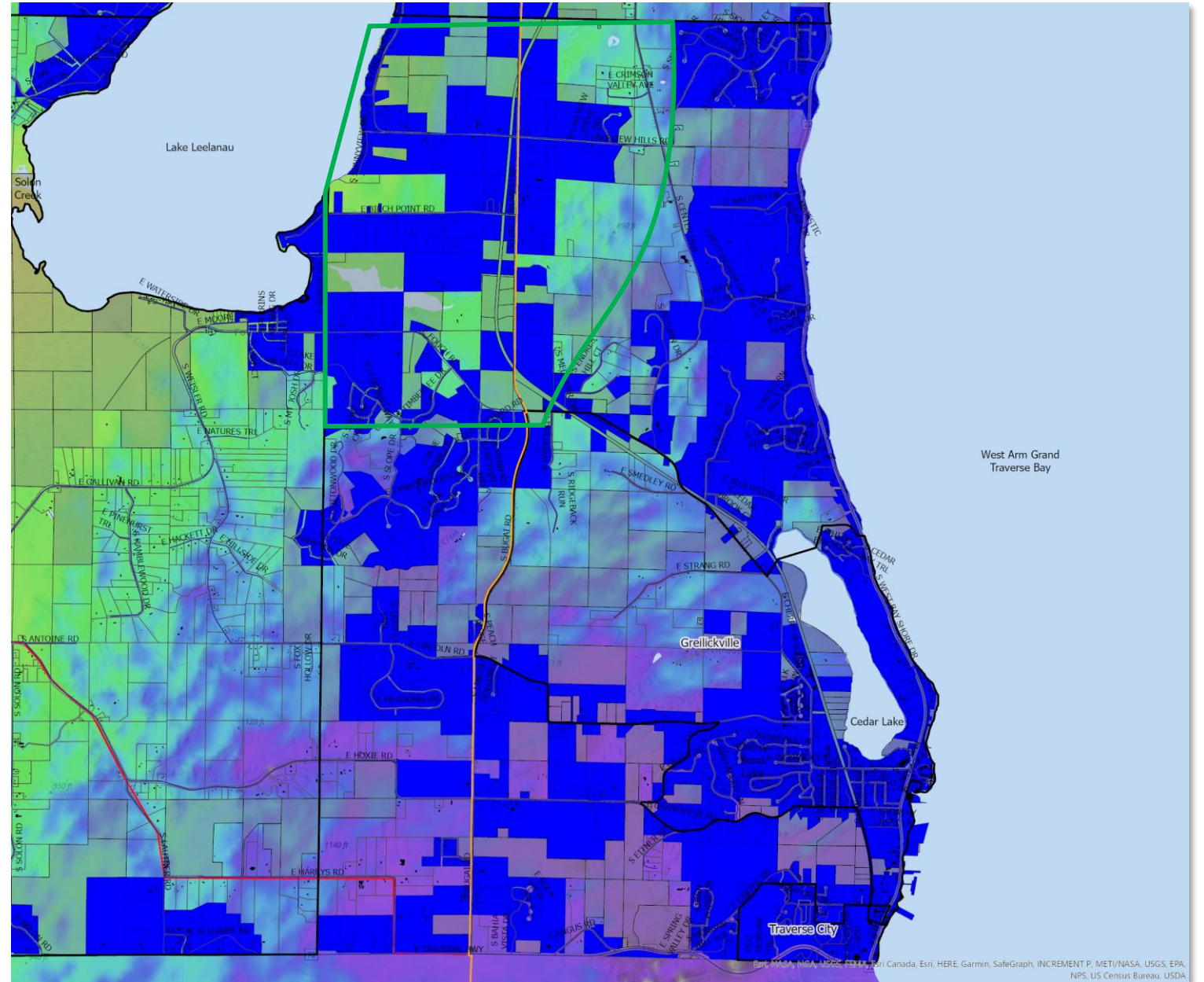


DCS
Technology
Design

Elmwood Twp

Summary

The green bordered area is expected to see above threshold performance in 2022 with the launch of Band 71 wireless services. The remaining unserved areas of Elmwood Township may have better access to LTE or 5G Cellular services in 2022, but additional investigation may be needed

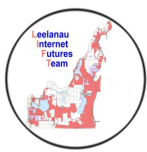
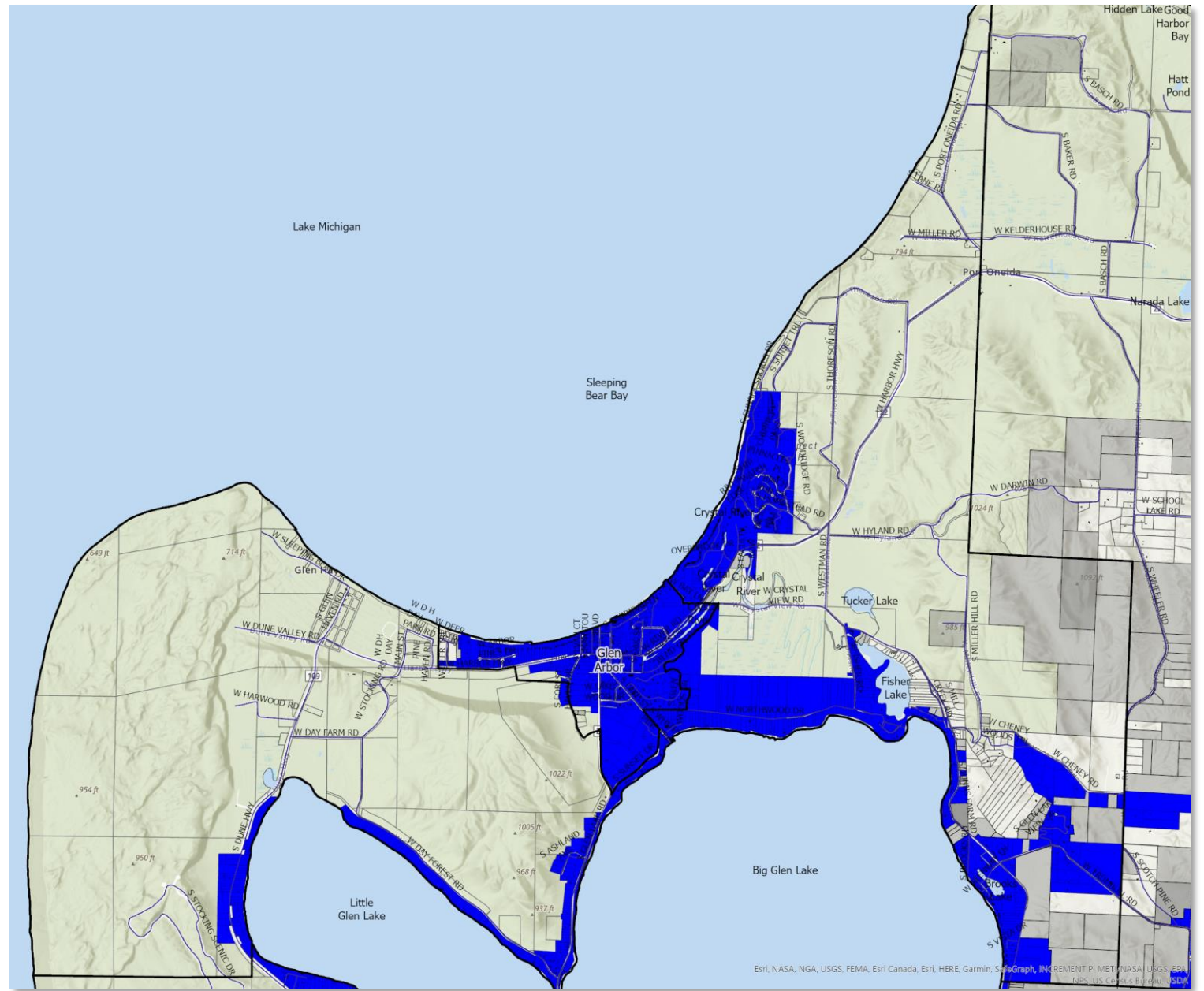


DCS
Technology
Design

Glen Arbor Twp

Current Service Area

Parcels	2456
Served	2330
Unserved	126



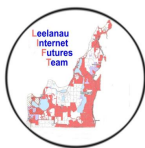
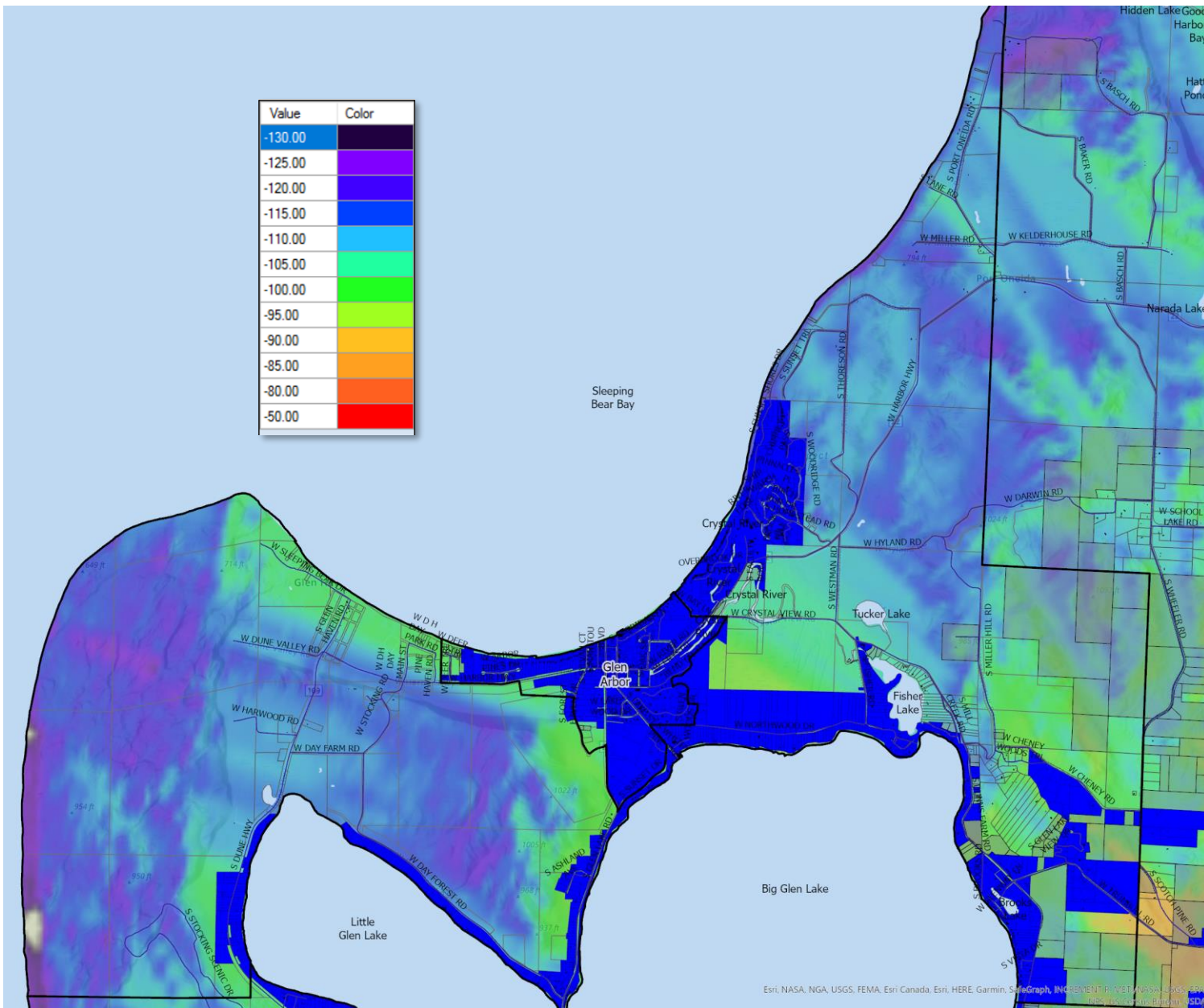
DCS
Technology
 Design

Esri, NASA, NGA, USGS, FEMA, Esri Canada, Esri, HERE, Garmin, Swisstopo, INCREMENT P, METI, NASA, USGS, Esri, ABC, US Coast Guard, © 2014

Glen Arbor Twp

Band 71

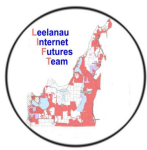
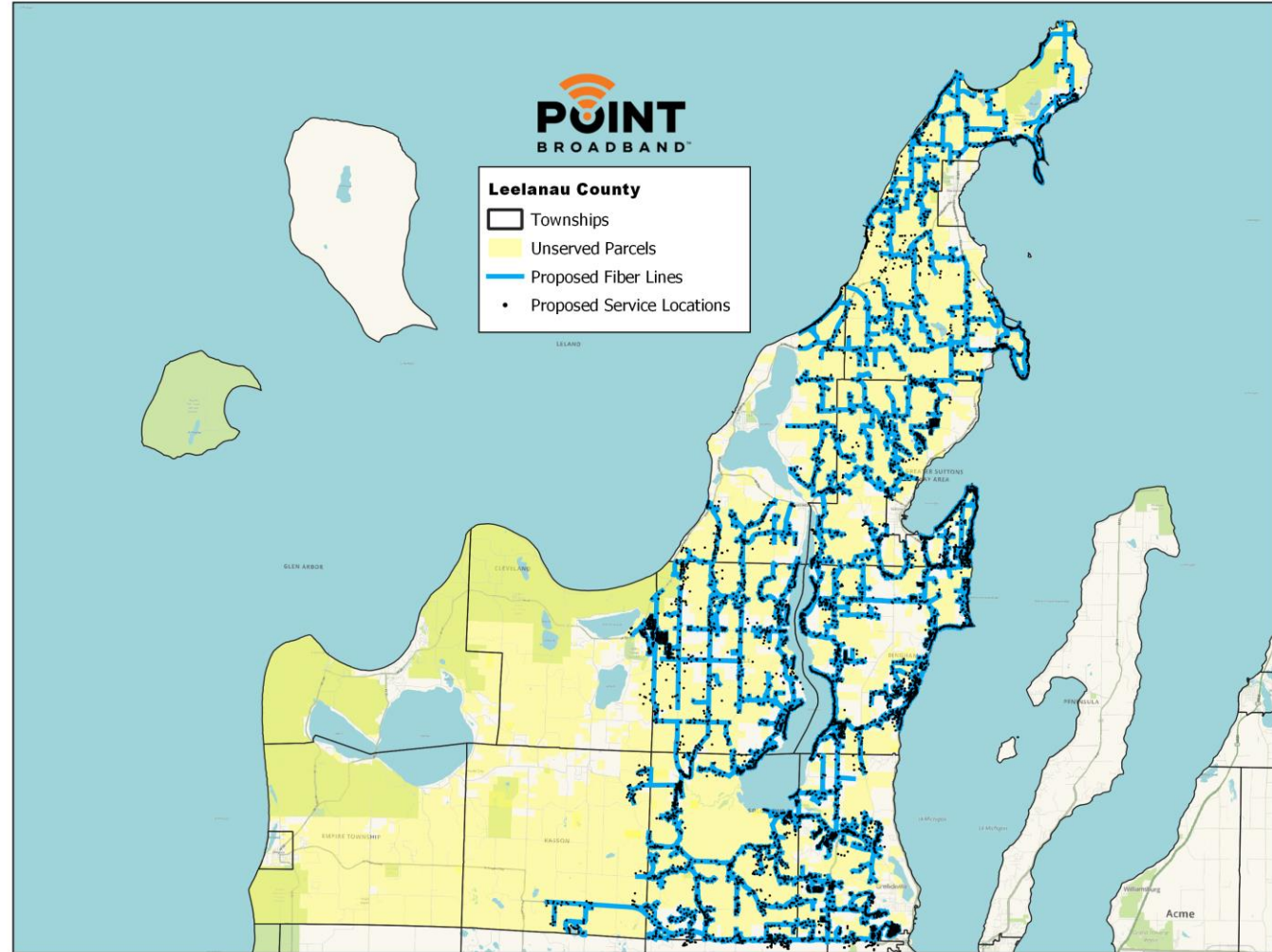
Band 71 predictive model shows that some areas east and northeast of Big Glen Lake may have -105 signal levels and better to provide above threshold data services. It also shows good signal levels around the Glen Arbor



DCS
Technology
Design

Esri, NASA, NGA, USGS, FEMA, Esri Canada, Esri, HERE, Garmin, Swatch, INCREMENT P, NET, NASS, USGS, EA, Intel, Microsoft, Juniper, SDMA

New proposal



DCS
Technology
Design