



April 30, 2018

Via ECFS

Ms. Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

RE: NOTICE OF EX PARTE
WT Docket No. 10-208: *Universal Service Reform – Mobility Fund*
WC Docket No. 10-90: *Connect America Fund*

Dear Ms. Dortch,

This *ex parte* filing is a follow up to RWA's March 21, 2018 *ex parte* filing and April 20, 2018 meeting in which FCC staff requested additional information.¹ During its meeting with the Rural Broadband Auctions Task Force, RWA discussed concerns regarding overstated unsubsidized coverage and the fact that these concerns are exacerbated by the Bureaus' imposition of a square kilometer grid cell with a ¼ kilometer buffer radius that makes it nearly (if not actually) impossible to challenge claimed coverage in the 150-day challenge period.² Concern regarding this issue prompted RWA to file its Application for Review, which is pending.³

RWA's *March 21 Ex Parte* discussed this issue in detail, illustrating that utilizing square kilometer grid cells paired with a ¼ kilometer buffer radius would leave the vast majority of square kilometer grid cells in several different service areas unmeasurable using drive tests – and

¹ [Ex Parte Letter](#) to Ms. Marlene H. Dortch, Secretary, FCC, from Caressa D. Bennet, General Counsel, Rural Wireless Association, Inc., WT Docket No. 10-208, WC Docket No. 10-90 (Mar. 21, 2018) (*March 21 Ex Parte*); [Ex Parte Letter](#) to Ms. Marlene H. Dortch, Secretary, FCC, from Caressa D. Bennet, General Counsel, Rural Wireless Association, Inc., WT Docket No. 10-208, WC Docket No. 10-90 (Apr. 20, 2018) (*April 20 Ex Parte*).

² See generally *March 21 Ex Parte* and *April 20 Ex Parte*.

³ [Application for Review of the Rural Wireless Association, Inc.](#), WC Docket No. 10-90, WT Docket No. 10-208 (Mar. 29, 2018); see also [Public Notice](#), *Requirements for Oppositions and Replies Regarding Application for Review in Mobility Fund Phase II Proceeding*, WC Docket No. 10-90, WT Docket No. 10-208, DA 18-367 (rel. Apr. 12, 2018). The Application for Review asks the Commission to modify its MF-II challenge process procedure to require the use of a uniform grid with cells of one square mile and a one-quarter mile "buffer" radius instead of square kilometer grid cells and a one-quarter kilometer "buffer" radius.

therefore tremendously difficult to challenge. As RWA has stated, its members and others would be forced to mount challenges by testing on foot, or via drones, horseback, four-wheeler, or crop duster. The difficulty and cost of doing so poses a significant deterrent to conducting such measurements, and is tremendously burdensome.

RWA's *April 20 Ex Parte* discussed RWA's concerns regarding overstated unsubsidized 4G LTE coverage in the context of the square kilometer grid vs. square mile grid issue, and further illustrated *why* the current grid cell scheme is a problem by analyzing the hours necessary to complete both on- and off-road testing.

In the majority of rural America, roads are situated directly on the borders of a one *mile* by one *mile* grid. RWA⁴ and other parties⁵ expressed serious concerns about the use of a one square kilometer grid to determine challenge areas, noting that it could seriously impair the ability to mount challenges. The Bureaus stated that they used kilometers instead of miles "to be consistent with the units used for the 'equal area' map projection that [they] will use when processing geospatial data."⁶ Pursuant to conversations with staff regarding this issue, RWA has undertaken a study to determine whether a buffer radius longer than ¼ kilometer (250 meters) could lessen the detrimental impact of retaining a square kilometer grid cell.

For ease of reference and comparison, this *ex parte* contains an "Attachment Table of Contents" that lists the items in each attachment that are discussed below. RWA reminds Commissioners, staff, and parties that ALL of the maps discussed below represent a "best case scenario" because the maps took into consideration all 2010 census public and private roads. Further review using Google Earth discloses "roads" that are really just dirt paths on private property that are behind locked gates or otherwise inaccessible. As such, even the green squares deemed challengeable via drive tests are overstated.

Attachment A: Oklahoma Panhandle Materials

Page 1 of Attachment A depicts the Oklahoma Panhandle divided into one square kilometer grid cells, utilizing a ¼ kilometer buffer. The green grid cells are those with roads sufficient to meet the 75% coverage requirement for testing. The red areas are those without sufficient roads to

⁴ [Comments](#) of the Rural Wireless Association, Inc., *Universal Service Reform – Mobility Fund*, WC Docket No. 10-90, WT Docket No. 10-208, at p. 3 (Nov. 8, 2017) (*RWA Comments*); [Reply Comments](#) of the Rural Wireless Association, Inc., *Universal Service Reform – Mobility Fund*, WC Docket No. 10-90, WT Docket No. 10-208, at p. 5 (Nov. 29, 2017).

⁵ [Comments](#) of ATN International, Inc., *Universal Service Reform – Mobility Fund*, WC Docket No. 10-90, WT Docket No. 10-208, at p. 4 (Nov. 8, 2017); [Reply Comments](#) of United States Cellular Corporation, *Universal Service Reform – Mobility Fund*, WC Docket No. 10-90, WT Docket No. 10-208, at p. 10 (Nov. 29, 2017); [Reply Comments](#) of NTCA – The Rural Broadband Association, *Universal Service Reform – Mobility Fund*, WC Docket No. 10-90, WT Docket No. 10-208, at p. 5 (Nov. 29, 2017).

⁶ *Procedures for the Mobility Fund Phase II Challenge Process*, [Public Notice](#), DA 18-186, WC Docket No. 10-90, WT Docket No. 10-208, at ¶ 21 (rel. Feb. 27, 2018).

meet the 75% threshold because they are not capable of being tested from roads. In the Oklahoma Panhandle, 82.3 percent of the kilometer grid squares with a ¼ kilometer buffer would be unmeasurable using drive tests along road ways.

An investigation into the hours necessary to complete both on- and off-road testing illustrates *why* the current grid cell scheme is a problem. Page 2 of Attachment A depicts the results of a testing hours analysis undertaken by Monte R. Lee and Company's professional engineers to determine how many hours it would take to challenge the 15,110 complete or partial square kilometer grid cells in the Oklahoma Panhandle when utilizing a ¼ kilometer buffer.

The analysis was completed using a ¼ kilometer buffer around all 2010 census public and private roads. Upon developing the total area that would be part of each test from the roadways, the Commission's square kilometer grid was overlaid and the actual amount of speed test coverage from the road inside each grid was determined. Square kilometer grid cells determined to have 75 percent or greater speed test coverage from the road were counted and listed in the row entitled "Over 75% based on roads driven." Square kilometer grid cells with less than 75 percent of speed test coverage from the road will require one, two, three or four off road tests (taken at least 250 meters from any other buffer area) to obtain the minimal 75 percent area coverage. Each square kilometer grid cell was counted according to the number of "off road" test(s) required and the corresponding percentage of total grid cells by test types are provided. The calculation of hours necessary to complete the tests is based on the total road miles inclusive of the backtracking factor (the need to backtrack on roads to get to different test areas) all driven at an average speed of 30 mph. Faster speeds were not used due to the time interval between application tests on phones. A total average time for each off road test of 15 minutes was used for rural Oklahoma. This time period includes the time necessary to get out of the vehicle, go to the testing site, take the test, and return to the vehicle. The total hour figures were summed from the drive test hours and the actual number of required off road tests performed.

The analysis found that it will take 7,522 hours (or 50 hours per day for each of the 150 days in the challenge period) to test claimed unsubsidized coverage throughout the Oklahoma Panhandle. In sum, it would take six to eight full-time employees working 150 days just to collect the data needed to mount a challenge. The hours required to do the necessary testing is a tremendous burden on small and rural carriers with small staffs and narrow operating margins. Neither this result, nor the others discussed in this filing below, includes the time that must be spent seeking permission from landowners to test on private property or to assimilate the collected data into the Challenge Portal.

Page 3 of Attachment A depicts the Oklahoma Panhandle divided into one square mile grid cells, utilizing a ¼ mile buffer. Whereas 82.3 percent of the kilometer grid squares with a ¼ kilometer buffer would be unmeasurable using drive tests, that figure would be reduced to 43.6 percent utilizing mile grid squares and a ¼ mile buffer.

Page 4 of Attachment A depicts the Oklahoma Panhandle divided into one square kilometer grid cells, utilizing a 400 meter (approximately ¼ mile) buffer. Whereas 82.3 percent of the kilometer grid squares with a ¼ kilometer buffer would be unmeasurable using drive tests, that figure would be reduced to 44.87 percent of the kilometer grid squares with a 400 meter buffer.

Page 5 of Attachment A depicts a testing hours analysis using a square kilometer grid cell and 400 meter buffer radius for the Oklahoma Panhandle. The analysis found that it will take 2,813 hours (or approximately 19 hours per day for each of the 150 days in the challenge period) to test claimed unsubsidized coverage throughout the Oklahoma Panhandle.

Page 6 of Attachment A depicts the Oklahoma Panhandle divided into one square kilometer grid cells, utilizing a 500 meter buffer. Whereas 82.3 percent of the kilometer grid squares with a ¼ kilometer buffer would be unmeasurable using drive tests, that figure would be reduced to 32 percent of the kilometer grid squares with a 500 meter buffer.

Page 7 of Attachment A depicts a testing hours analysis using a square kilometer grid cell and 500 meter buffer radius for the Oklahoma Panhandle. The analysis found that it will take 1,864 hours (or approximately 12.5 hours per day for each of the 150 days in the challenge period) to test claimed unsubsidized coverage throughout the Oklahoma Panhandle.

Attachment B: Partial Alabama Materials

Page 1 of Attachment B depicts portions of Alabama divided into one square kilometer grid cells, utilizing a ¼ kilometer buffer. 86 percent of the kilometer grid squares would be unmeasurable using drive tests.

Page 2 of Attachment B depicts the results of a testing hours analysis undertaken by Monte R. Lee and Company's professional engineers to determine how many hours it would take to challenge the 11,636 complete or partial square kilometer grid cells in Pine Belt Cellular, Inc.'s service area. The analysis was done using the same method as described for Page 2 of Attachment A, but the analysis utilized a total average time for each off road test of 30 minutes for the heavily wooded areas of Alabama. The analysis found that it will take 11,623 hours (or 77 hours per day for each of the 150 days in the challenge period) – to test claimed unsubsidized coverage throughout Pine Belt Cellular, Inc.'s service area. Differences in terrain, road layout, and tree cover mean it would take more time to test fewer grid cells in Alabama than it would in the Oklahoma Panhandle.

Page 3 of Attachment B depicts portions of Alabama divided into one square mile grid cells, utilizing a ¼ mile buffer. Whereas 86 percent of the kilometer grid squares with a ¼ kilometer buffer would be unmeasurable using drive tests, that figure would be reduced to 69.6 percent utilizing mile grid squares and a ¼ mile buffer

Page 4 of Attachment B depicts portions of Alabama divided into one square kilometer grid cells, utilizing a 400 meter (approximately ¼ mile) buffer. Whereas 86 percent of the kilometer grid squares with a ¼ kilometer buffer would be unmeasurable using drive tests, that figure would be reduced to 60.22 percent of the kilometer grid squares with a 400 meter buffer.

Page 5 of Attachment B depicts a testing hours analysis using a square kilometer grid cell and 400 meter buffer radius for portions of Alabama. The analysis found that it will take 3,343 hours

(or approximately 22.3 hours per day for each of the 150 days in the challenge period) to test claimed unsubsidized coverage throughout this portion of Alabama.

Page 6 of Attachment B depicts portions of Alabama divided into one square kilometer grid cells, utilizing a 500 meter buffer. Whereas 86 percent of the kilometer grid squares with a ¼ kilometer buffer would be unmeasurable using drive tests, that figure would be reduced to 50.8 percent of the kilometer grid squares with a 500 meter buffer.

Page 7 of Attachment B depicts a testing hours analysis using a square kilometer grid cell and 500 meter buffer radius for portions of Alabama. The analysis found that it will take 2,808 hours (or approximately 19 hours per day for each of the 150 days in the challenge period) to test claimed unsubsidized coverage throughout this portion of Alabama.

Discussion

RWA recognizes the Bureaus' desire to utilize a square kilometer grid cell scheme, and believes that the use of a one square kilometer grid cell and accompanying longer buffer radius will give prospective challengers the ability to more meaningfully participate in the MF-II challenge process. A longer buffer radius provides prospective challengers, for lack of a better term, a "buffer" that better allows them to make use of a sparse road grid in rural America from which to take drive test measurements. Attachment C depicts a MF-II Testing Hours Summary for the Oklahoma Panhandle and portions of Alabama. As illustrated, mounting a challenge will remain a costly and time-intensive endeavor – even with a longer buffer radius than the current 250 meters, and particularly in the heavily wooded areas of Alabama or other rural areas with similarly challenging terrain. Note that, even with a 500 meter buffer radius, it will take 2,808 hours (or approximately 19 hours per day for each of the 150 days in the challenge period) to test claimed unsubsidized coverage throughout this portion of Alabama. As such, RWA urges the use of the more generous 500 meter – rather than the 400 meter – buffer radius with a square kilometer grid cell scheme.

Further, RWA urges the Bureaus to grant its Request for Extension of Challenge Window, filed contemporaneously with its Application for Review.⁷ As noted in the *RWA Extension Request*, RWA did not seek to delay the opening of the challenge window. Rather, RWA requested that the window close 150 days after the Commission rules on the *RWA Application for Review* rather than 150 days from when the window opened on March 29, 2018. Grant of RWA's request will give the Commission an opportunity to correct a significant flaw in the challenge process while at the same time ensuring that small rural carriers will have sufficient time to collect the data that is required to challenge the existence of 4G LTE service in certain rural areas throughout the country. At the same time, challengers in less rural areas of the country will not be delayed in conducting their own data speed measurements or engaging in the challenge process.

⁷ [Rural Wireless Association, Inc. Request for Extension of Challenge Window](#), WC Docket No. 10-90, WT Docket No. 10-208 (Mar. 29, 2018) (*RWA Extension Request*).

RWA and its members appreciate the attention that Commissioners and staff have dedicated to this important issue. Pursuant to Section 1.1206 of the FCC's Rules,⁸ this *ex parte* is being filed electronically with the Office of the Secretary.

Respectfully submitted,

/s/ Caressa D. Bennet

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⁸ 47 C.F.R. § 1.1206.

Attachment Table of Contents

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 - **Page 1:** *Oklahoma Panhandle* MF-II Challenge Analysis Using Square Kilometer Grid Cell and ¼ Kilometer (250 Meter) Buffer Radius;
 - **Page 2:** *Oklahoma Panhandle* Testing Hours Analysis Using Square Kilometer Grid Cell and 250 Meter Buffer Radius;
 - **Page 3:** *Oklahoma Panhandle* MF-II Challenge Analysis Using Square Mile Grid Cell and ¼ Mile Buffer Radius;
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- **Attachment C: MF-II Testing Hours Summary for Oklahoma Panhandle and Partial Alabama**

Attachment A – Oklahoma Panhandle Materials



Sq Km Grid
Total Challenge Area - 15,109 Sq Km

	Grid >75 percent 2,681 sq km (17.7 percent)
	Grid <75 percent 12,428 sq km (82.3 percent)
	Eligible for auction >75 percent 130 sq km
	Counties
	States

MFII Challenge Analysis
1 Sq Km Grid, 1/4 Km Buffer
Oklahoma Panhandle

Analysis Details:

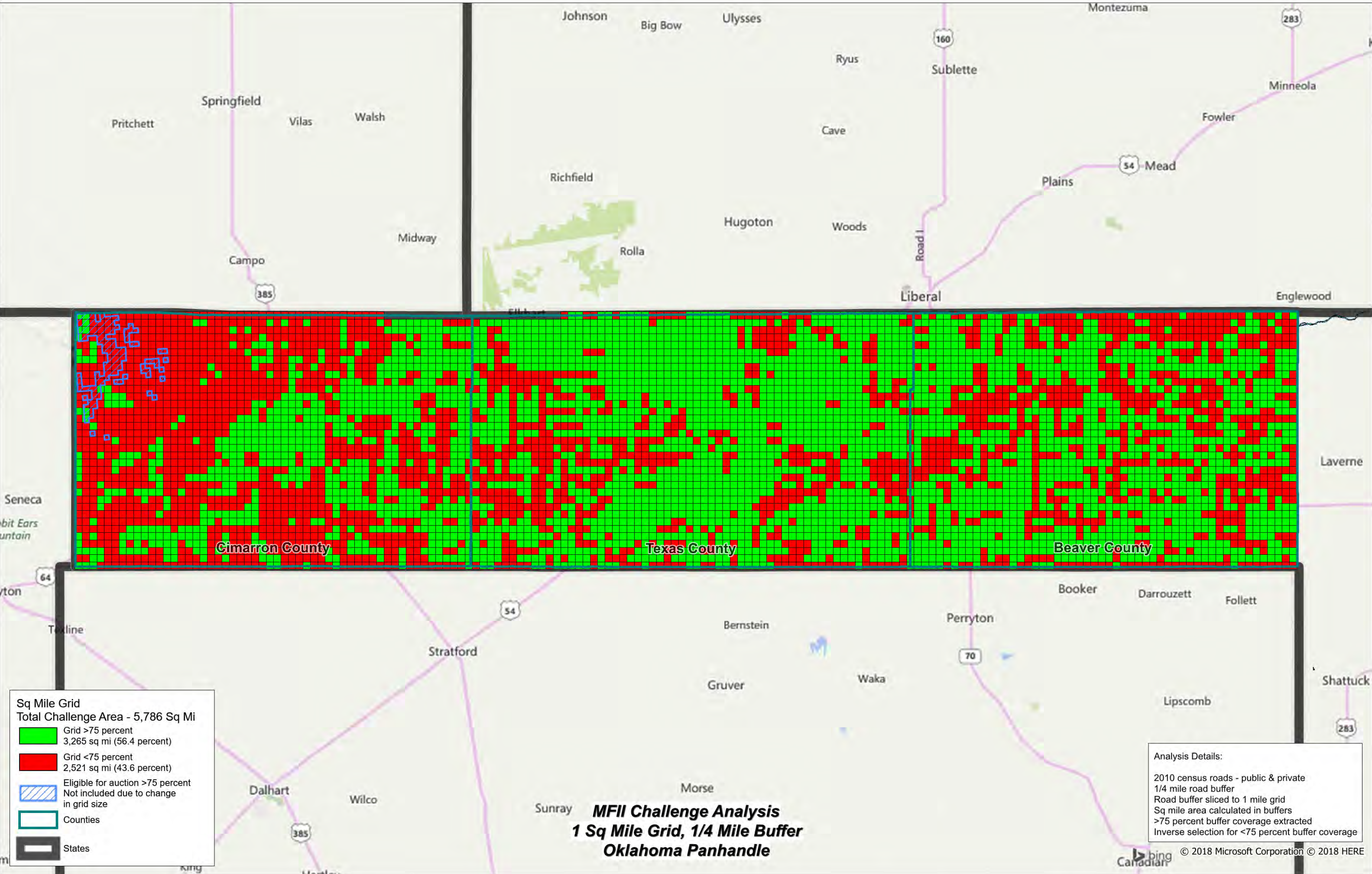
2010 census roads - public & private
1/4 km road buffer
Road buffer sliced to 1 sq km grid
Sq km area calculated in buffers
>75 percent buffer coverage extracted
Inverse selection for <75 percent buffer coverage

Oklahoma Testing Analysis 250m Buffer Radius based on 15,110 Km²

Description of off-road test	Number of Km ² Cell Grids	Grids	Number of Tests	Total Minutes	Hours
Over 75% based on roads driven	2,681	17.7%			
need 1 off-road test	4,446	29.4%	4,446	66,690	1,112
need 2 off-road tests	3,468	23.0%	6,936	104,040	1,734
need 3 off-road tests	1,968	13.0%	5,904	88,560	1,476
need 4 off-road tests	2,547	16.9%	10,188	152,820	2,547
Total Grid Cells	15,110				
Cells Needing Off-Road Tests	12,429				
Total Off-Road Tests	27,474				
Grid Cells with No Roads	2,683				

Description of Drive test	Total Road miles within the 15,110 Km ² Grid Cells	Added % of Backtracking Drive test roads	Total Road miles to be tested	Average Drive test speed (MPH)	Hours needed to Drive test road miles
Drive testing roads	14,524	35%	19,607	30	654

	Minutes	
off-road test time (per test)	15	
on-road test time (4 test per KM)	3.66	
Total Manhours		7,522



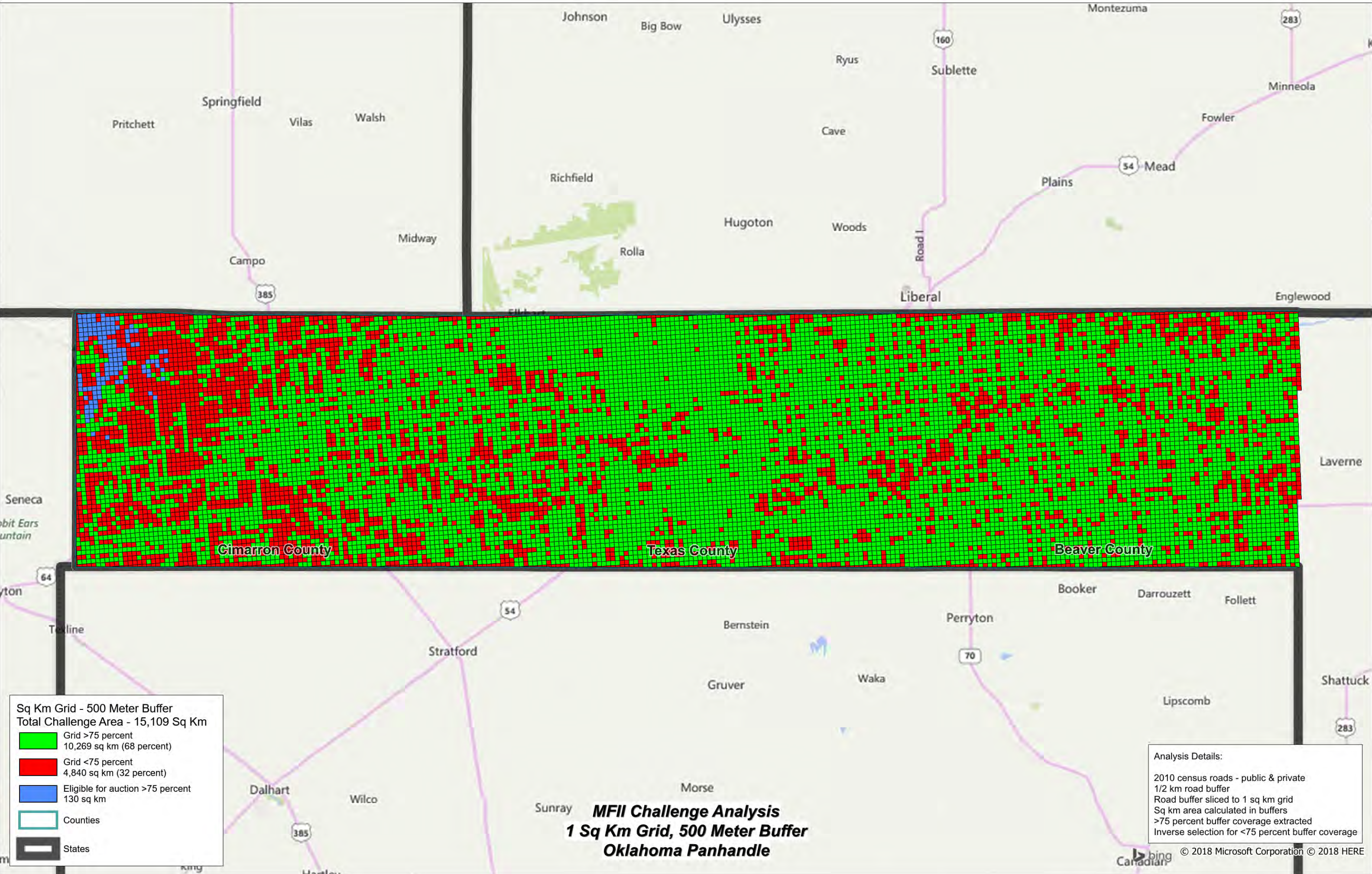


Oklahoma Testing Analysis 400m Buffer Radius based on 15,110 Km²

Description of off-road test	Number of Km ² Cell Grids	Grids	Number of Tests	Total Minutes	Hours
Over 75% based on roads driven	8,360	55.3%			
need 1 off-road test	4,861	32.2%	4,861	72,915	1,215
need 2 off-road tests	1,889	12.5%	3,778	56,670	945
need 3 off-road tests		0.0%	-	-	-
need 4 off-road tests		0.0%	-	-	-
Total Grid Cells	15,110				
Cells Needing Off-Road Tests	6,750				
Total Off-Road Tests	8,639				
Grid Cells with No Roads	2,683				

Description of Drive test	Total Road miles within the 15,110 Km ² Grid Cells	Added % of Backtracking Drive test roads	Total Road miles to be tested	Average Drive test speed (MPH)	Hours needed to Drive test road miles
Drive testing roads	14,524	35%	19,607.40	30	654

	Minutes	
off-road test time (per test)	15	
on-road test time (4 test per KM)	1.17	
Total Manhours		2,813



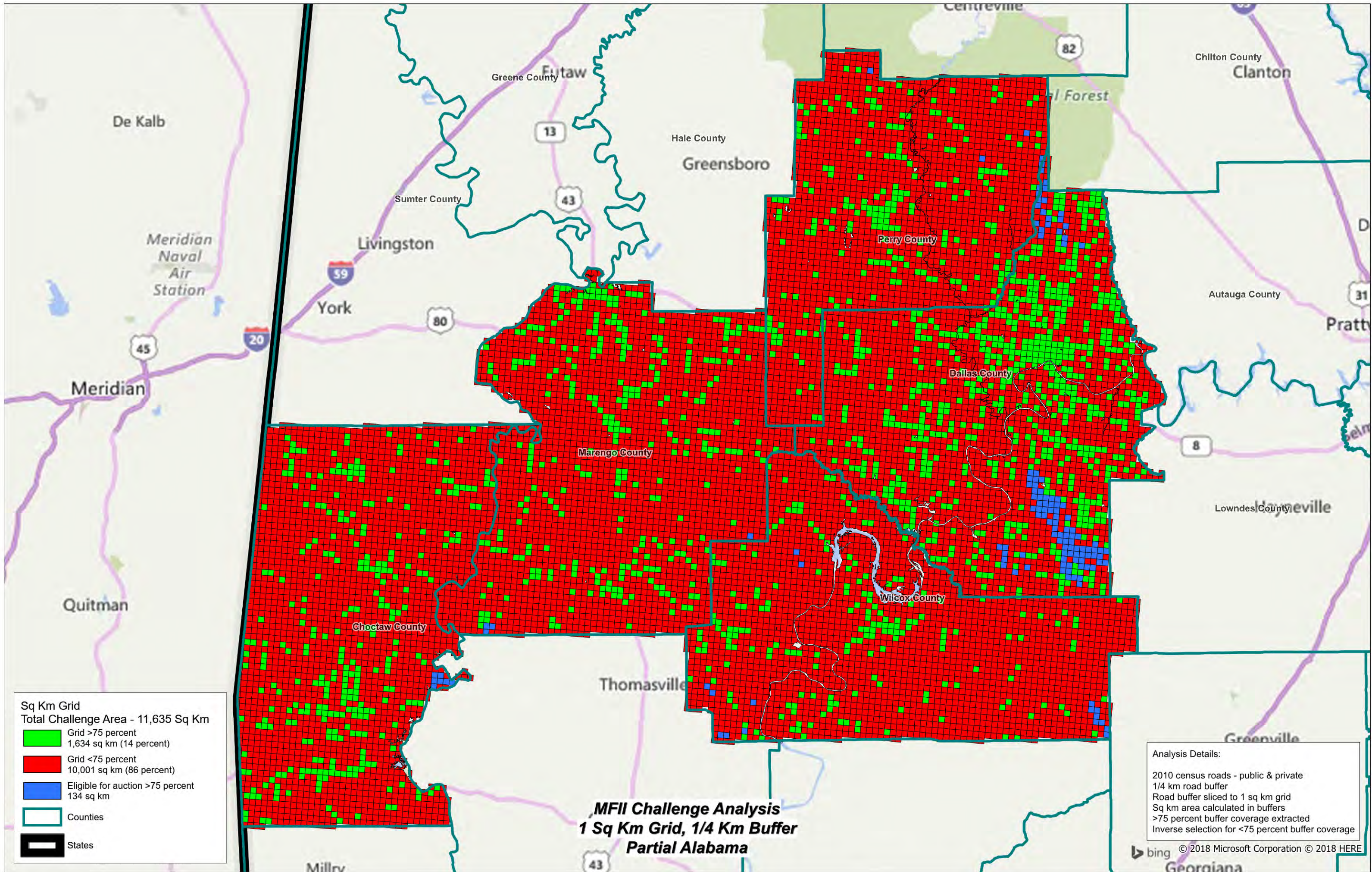
Oklahoma Testing Analysis 500m Buffer Radius based on 15,110 Km²

Description of off-road test	Number of Km ² Grid Cells	Grids	Number of Tests	Total Minutes	Hours
Over 75% based on roads driven	10,270	68.0%			
need 1 off-road test	4,840	32.0%	4,840	72,600	1,210
need 2 off-road tests		0.0%	-	-	-
need 3 off-road tests		0.0%	-	-	-
need 4 off-road tests		0.0%	-	-	-
Total Grid Cells	15,110				
Cells Needing Off-Road Tests	4,840				
Total Off-Road Tests	4,840				
Grid Cells with No Roads	2,683				

Description of Drive test	Total Road miles within the 15,110 Km ² Grid Cells	Added % of Backtracking Drive test roads	Total Road miles to be tested	Average Drive test speed (MPH)	Hours needed to Drive test road miles
Drive testing roads	14,524	35%	19,607.40	30	654

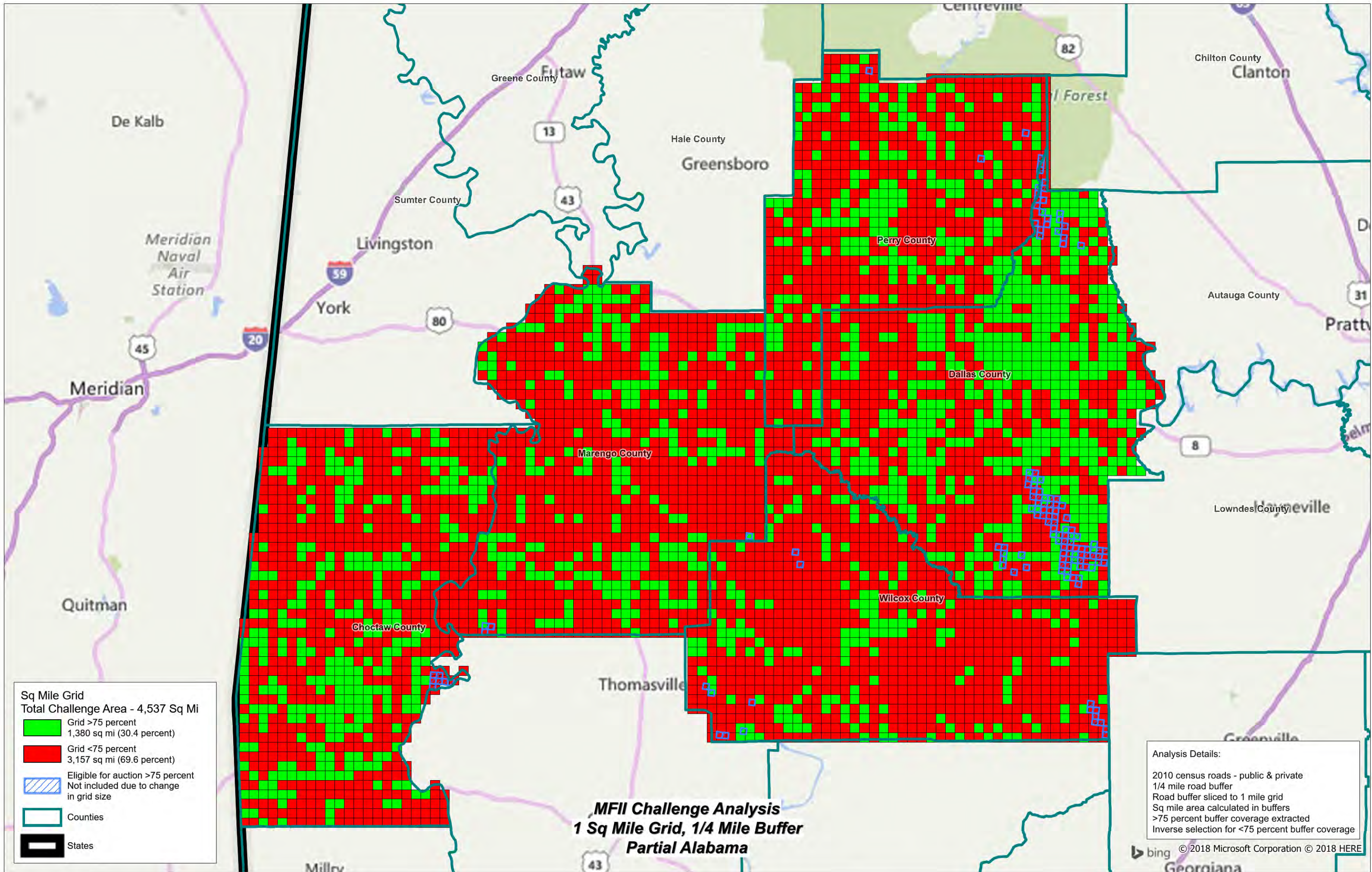
	Minutes	
off-road test time (per test)	15	
on-road test time (4 test per KM)	0.95	
Total Manhours		1,864

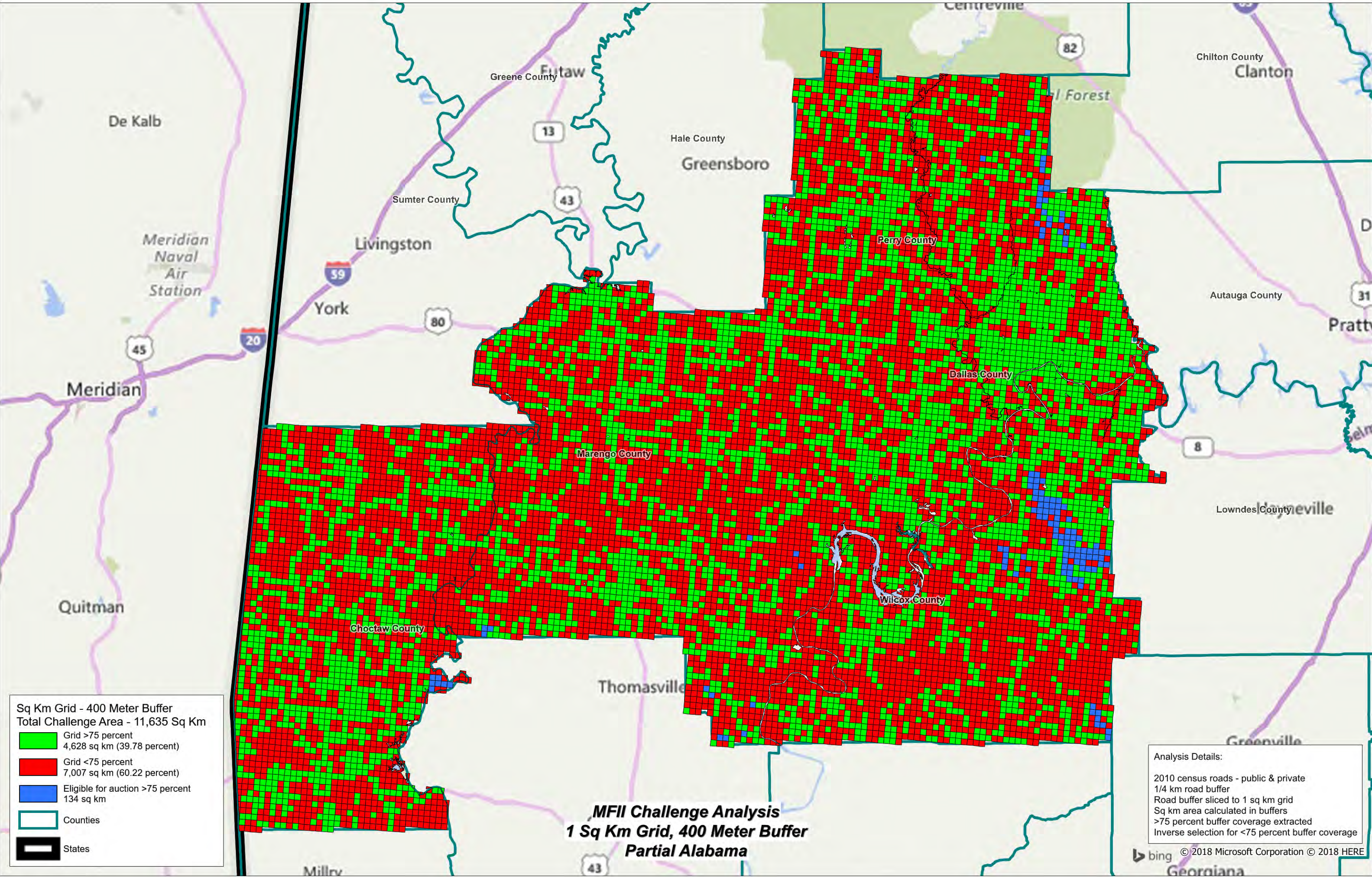
Attachment B – Partial Alabama Materials



Alabama Testing Analysis using 250m Buffer Radius based on 11,636 Km²

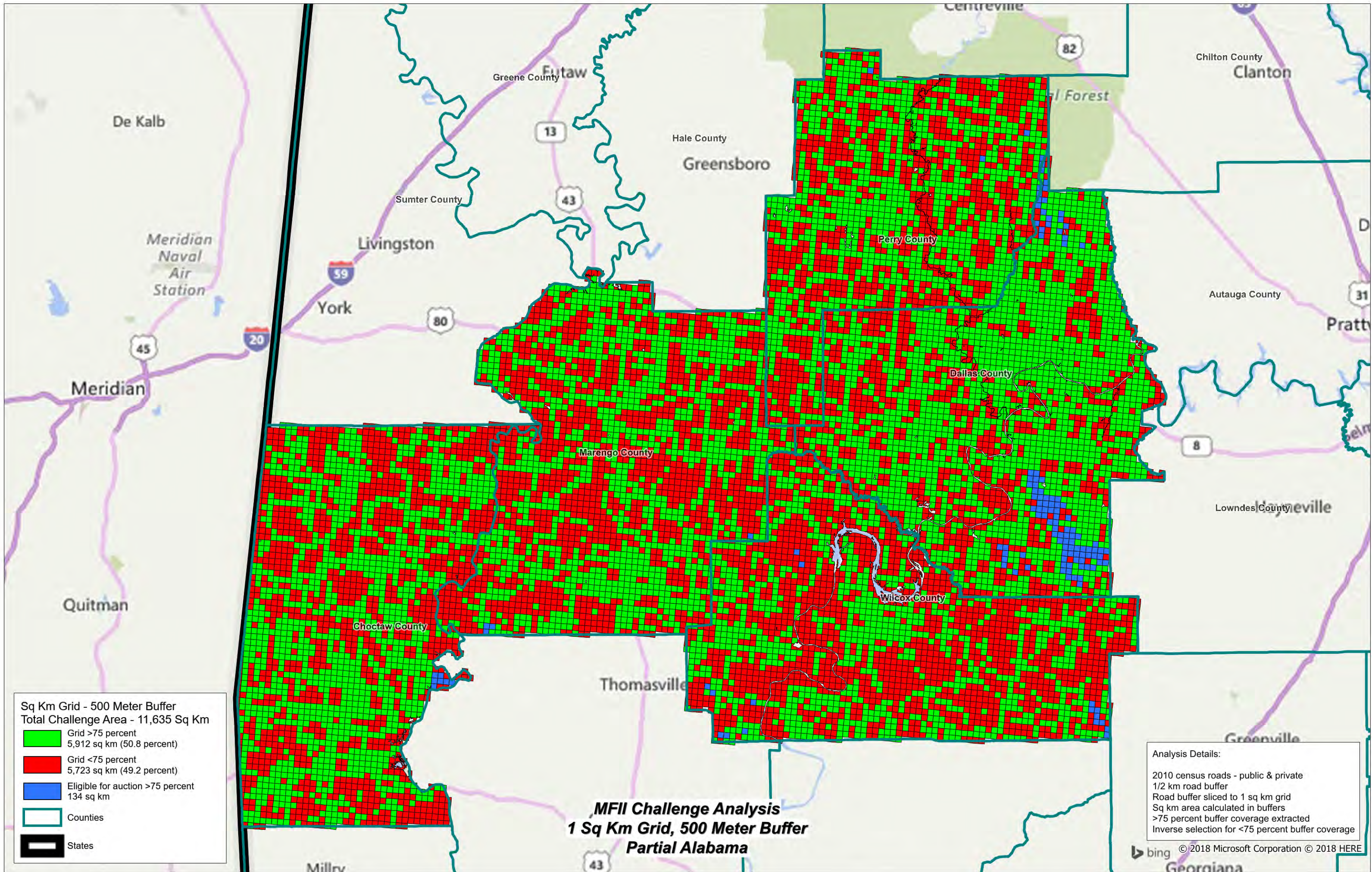
Description of off-road test	Number of Km ² Cell Grids	Grids	Number of Tests	Total Minutes	Hours
Over 75% based on roads driven	1,634	14.0%			
need 1 off-road test	2,310	19.9%	2,310	57,750	963
need 2 off-road tests	2,282	19.6%	4,564	114,100	1,902
need 3 off-road tests	1,635	14.1%	4,905	122,625	2,044
need 4 off-road tests	3,775	32.4%	15,100	377,500	6,292
Total Cell Grids	11,636				
Cells Needing Off-Road Tests	10,002				
Total Off-Road Tests	26,879				
Grid Cells with No Roads	3,408				
Description of Drive test	Total Road miles within the 9718 Km ² Cell Grids	Added % of Backtracking Drive test roads	Total Road miles to be tested	Average Drive test speed (MPH)	Hours needed to Drive test road miles
Drive testing roads	9,406	35%	12,698	30	423
	Minutes				
off-road test time (per test)	25				
on-road test time (4 test per KM)	3.89				
Total Manhours					11,623





Alabama Testing Analysis using 400m Buffer Radius based on 11,635 Km²

Description of off-road test	Number of Km ² Cell Grids	Grids	Number of Tests	Total Minutes	Hours
Over 75% based on roads driven	4,628	39.8%			
need 1 off-road test	7,008	60.2%	7,008	175,200	2,920
need 2 off-road tests		0.0%	-	-	-
need 3 off-road tests		0.0%	-	-	-
need 4 off-road tests		0.0%	-	-	-
Total Grid Cells	11,636				
Cells Needing Off-Road Tests	7,008				
Total Off-Road Tests	7,008				
Grid Cells with No Roads	3,408				
Description of Drive test	Total Road miles within the 11,635 Km ² Grid Cells	Added % of Backtracking Drive test roads	Total Road miles to be tested	Average Drive test speed (MPH)	Hours needed to Drive test road miles
Drive testing roads	9,406	35%	12,698.10	30	423
	Minutes				
off-road test time (per test)	25				
on-road test time (4 test per KM)	1.37				
Total Manhours					3,343



Alabama Testing Analysis using 500m Buffer Radius based on 11,635 Km²

Description of off-road test	Number of Km ² Cell Grids	Grids	Number of Tests	Total Minutes	Hours
Over 75% based on roads driven	5,911	50.8%			
need 1 off-road test	5,724	49.2%	5,724	143,100	2,385
need 2 off-road tests		0.0%	-	-	-
need 3 off-road tests		0.0%	-	-	-
need 4 off-road tests		0.0%	-	-	-
Total Grid Cells	11,635				
Cells Needing Off-Road Tests	5,724				
Total Off-Road Tests	5,724				
Grid Cells with No Roads	3,408				

Description of Drive test	Total Road miles within the 11,635 Km ² Grid Cells	Added % of Backtracking Drive test roads	Total Road miles to be tested	Average Drive test speed (MPH)	Hours needed to Drive test road miles
Drive testing roads	9,406	35%	12,698.10	30	423

	Minutes	
off-road test time (per test)	25	
on-road test time (4 test per KM)	1.07	
Total Manhours		2,808

**Attachment C – MF-II Testing Hours Summary for
Oklahoma Panhandle and Partial Alabama**

MFII Summary Analysis

