LaHarpe Telephone Company

Field Test Results

September 22-23, 2015

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1. METHODOLOGY

A change to the coverage map on KwiKom's website was observed on Sept. 9, 2015. Due to the change observed, an additional field trip was made on September 22 and 23, 2015 to determine whether KwiKom had made upgrades enabling provision of service to any household sites in the LaHarpe Telephone study area. During the trip, locations tested during the field trip on August 24 and 25 were re-evaluated to determine if a KwiKom signal could be identified. The same Ubiquiti PowerBeam M2 and Ubiquiti NanoBridge M5 were used for scanning the 2.4GHz and 5.8GHz bands, respectively.

Before testing was performed at the specific household locations, the SSID, MAC address, and Tx frequency from each KwiKom transmitter site was recorded. This information was used to determine if KwiKom upgraded any equipment at its Tx locations. See the table in Section 4 to view the results.

The Ubiquiti PowerBeam M2 was used for scanning SSIDs in the 2.4GHz band. The Ubiquiti NanoBridge M5 was used for scanning SSIDs in the 5GHz band with channels ranging from 5.16GHz to 5.84GHz. The Ubiquiti NanoBridge M5 was selected for testing because it is the same model that KwiKom uses as the customer premise equipment (CPE) for providing service. The Ubiquiti PowerBeam M2 was selected because it is the successor and model replacing the Ubiquiti NanoBridge M2 that was identified as the CPE used by KwiKom to provide service.

The Ubiquiti PowerBeam M2 or the Ubiquiti NanoBridge M5 was mounted to a twenty (20) foot fiberglass pole and was supported against the ground near the home while using the built-in "Site Survey" feature in the web graphical user interface (GUI) to display the SSIDs at that location. Several scans were performed while making minor adjustments to the azimuth of the CPE to ensure that no SSIDs were overlooked. Once testing was completed with the first CPE, it was removed and the same method was repeated for the second CPE. Screenshots were taken to show the results.

In addition to taking measurements at household locations previously studied, testing was performed at three other locations. These locations had been identified in KwiKom's previous online coverage map as being in areas where KwiKom service was not available and thus, had not been studied before. At each of these newly studied locations, measurement confirmed the indications of KwiKom's original coverge map and contradicted the indications of the revised map: no KwiKom service is available at these additional household locations.

On this field trip, most household testing was performed from the peak of the roof on the home. The CPE was mounted to a fiberglass pole ranging from 6-15' in length. The length of the pole used varied based on the height of the roof and trees surrounding the home. In most cases, a centerline of 25-35' above ground level was achieved. Tests were performed from the roof because that is the most likely location for KwiKom's installation of the CPE, based on locations passed and observations of the actual installations by KwiKom.

The encryption type of the SSIDs that were identified have been redacted from the report in order to protect anyone that might have been employing an open wireless network. The encryption of the wireless network does not affect the findings as to whether or not KwiKom can provide service to any particular household.

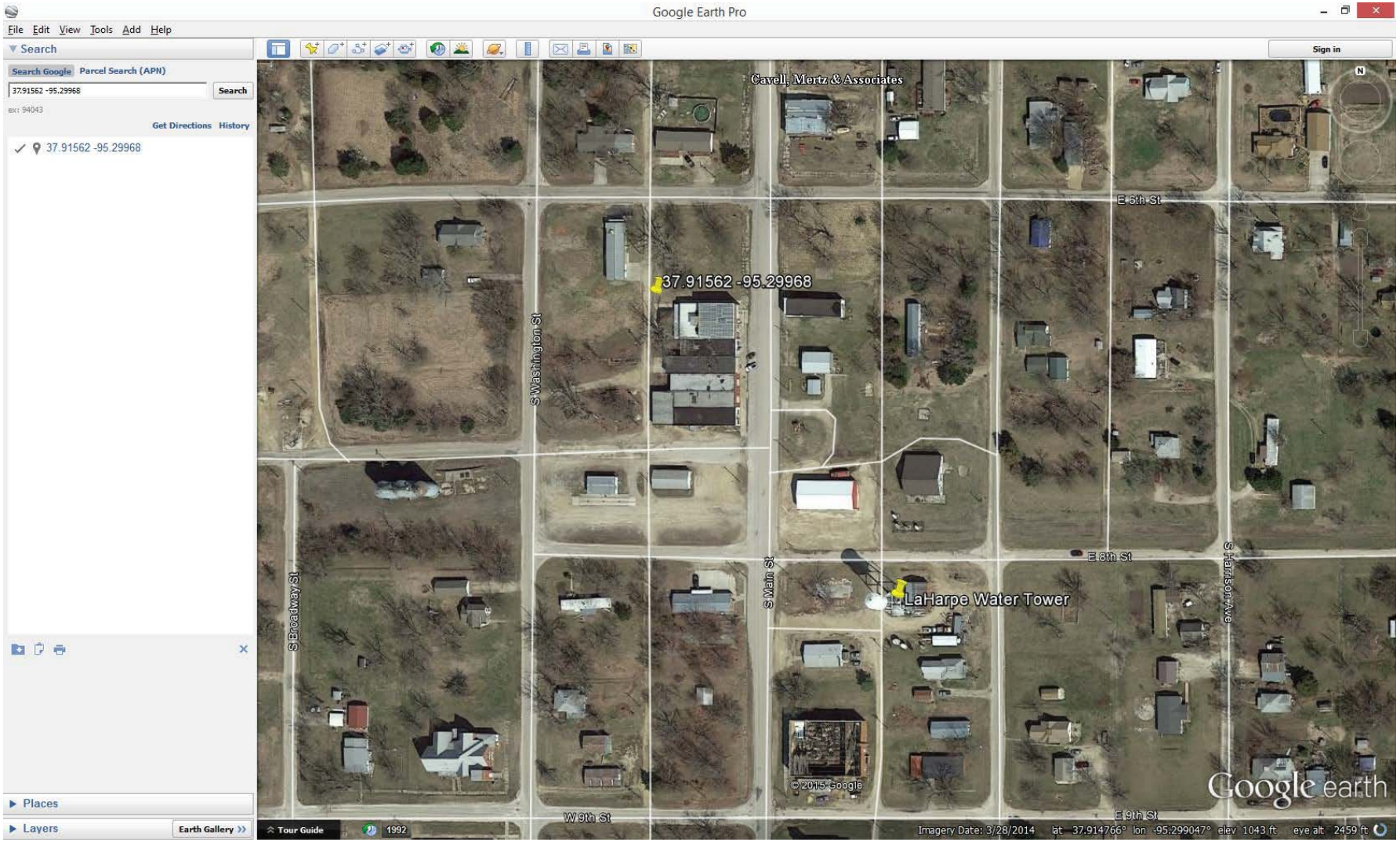
2. KWIKOM TRANSMITTER LOCATIONS

This section contains the locations and SSIDs recorded for each known KwiKom transmitter (Tx) location that could potentially server customers in the LaHarpe Telephone exchange.

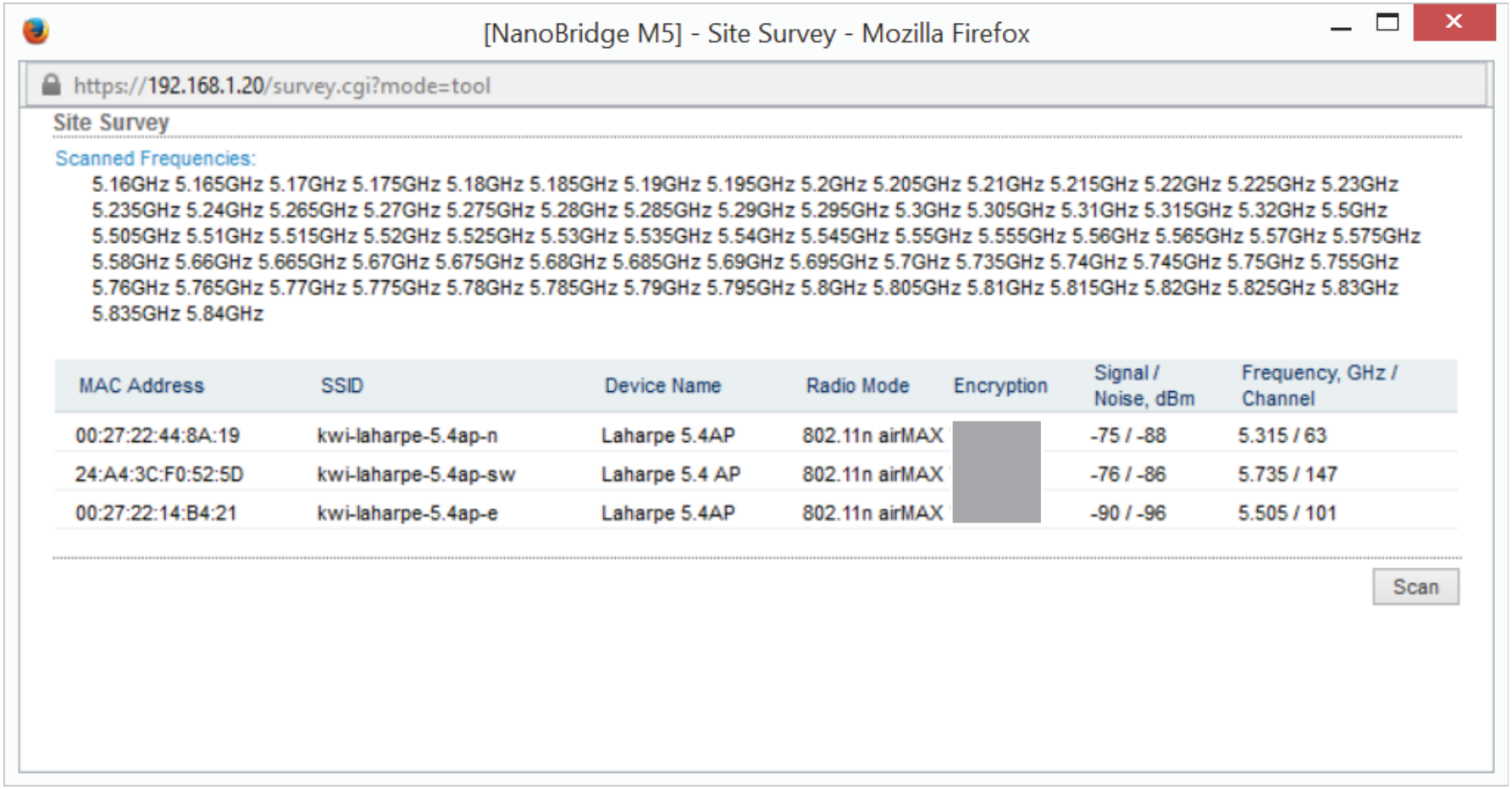
2.1. LAHARPE WATER TOWER

SSID Identification Testing – September 22, 2015

The Ubiquiti NanoBridge M5 and PowerBeam M2 was used to scan for SSIDs at the location below. This location has line of sight to the antennas mounted on the water tower.



The NanoBridge M5 was held about 6' above the ground and pointed toward the LaHarpe Water Tower. The scan results are in the screenshot below. Three KwiKom SSIDs were identified.



[NanoBridge M5] - Site Survey - Mozilla Firefox

https://192.168.1.20/survey.cgi?mode=tool

Site Survey

Scanned Frequencies:

5.16GHz 5.165GHz 5.17GHz 5.175GHz 5.18GHz 5.185GHz 5.19GHz 5.195GHz 5.2GHz 5.205GHz 5.21GHz 5.215GHz 5.22GHz 5.225GHz 5.23GHz 5.235GHz 5.24GHz 5.265GHz 5.27GHz 5.275GHz 5.28GHz 5.285GHz 5.29GHz 5.295GHz 5.3GHz 5.305GHz 5.31GHz 5.315GHz 5.32GHz 5.5GHz 5.505GHz 5.51GHz 5.515GHz 5.52GHz 5.525GHz 5.53GHz 5.535GHz 5.54GHz 5.545GHz 5.55GHz 5.555GHz 5.56GHz 5.565GHz 5.57GHz 5.575GHz 5.58GHz 5.66GHz 5.665GHz 5.67GHz 5.675GHz 5.68GHz 5.685GHz 5.69GHz 5.695GHz 5.7GHz 5.735GHz 5.74GHz 5.745GHz 5.75GHz 5.755GHz 5.76GHz 5.765GHz 5.77GHz 5.775GHz 5.78GHz 5.785GHz 5.79GHz 5.795GHz 5.8GHz 5.805GHz 5.81GHz 5.815GHz 5.82GHz 5.825GHz 5.83GHz 5.835GHz 5.84GHz

MAC Address	SSID	Device Name	Radio Mode	Encryption	Signal / Noise, dBm	Frequency, GHz / Channel
00:27:22:44:8A:19	kwi-laharpe-5.4ap-n	Laharpe 5.4AP	802.11n airMAX		-75 / -88	5.315 / 63
24:A4:3C:F0:52:5D	kwi-laharpe-5.4ap-sw	Laharpe 5.4 AP	802.11n airMAX		-76 / -86	5.735 / 147
00:27:22:14:B4:21	kwi-laharpe-5.4ap-e	Laharpe 5.4AP	802.11n airMAX		-90 / -96	5.505 / 101

Scan

The PowerBeam M2 was held about 6' above the ground and pointed toward the LaHarpe Water Tower. The scan results are in the screenshot below. No KwiKom SSIDs were identified.

[PowerBeam M2 400] - Site Survey - Mozilla Firefox

https://192.168.1.20/survey.cgi?mode=tool

Site Survey

Scanned Frequencies:

2.412GHz 2.417GHz 2.422GHz 2.427GHz 2.432GHz 2.437GHz 2.442GHz 2.447GHz 2.452GHz 2.457GHz 2.462GHz

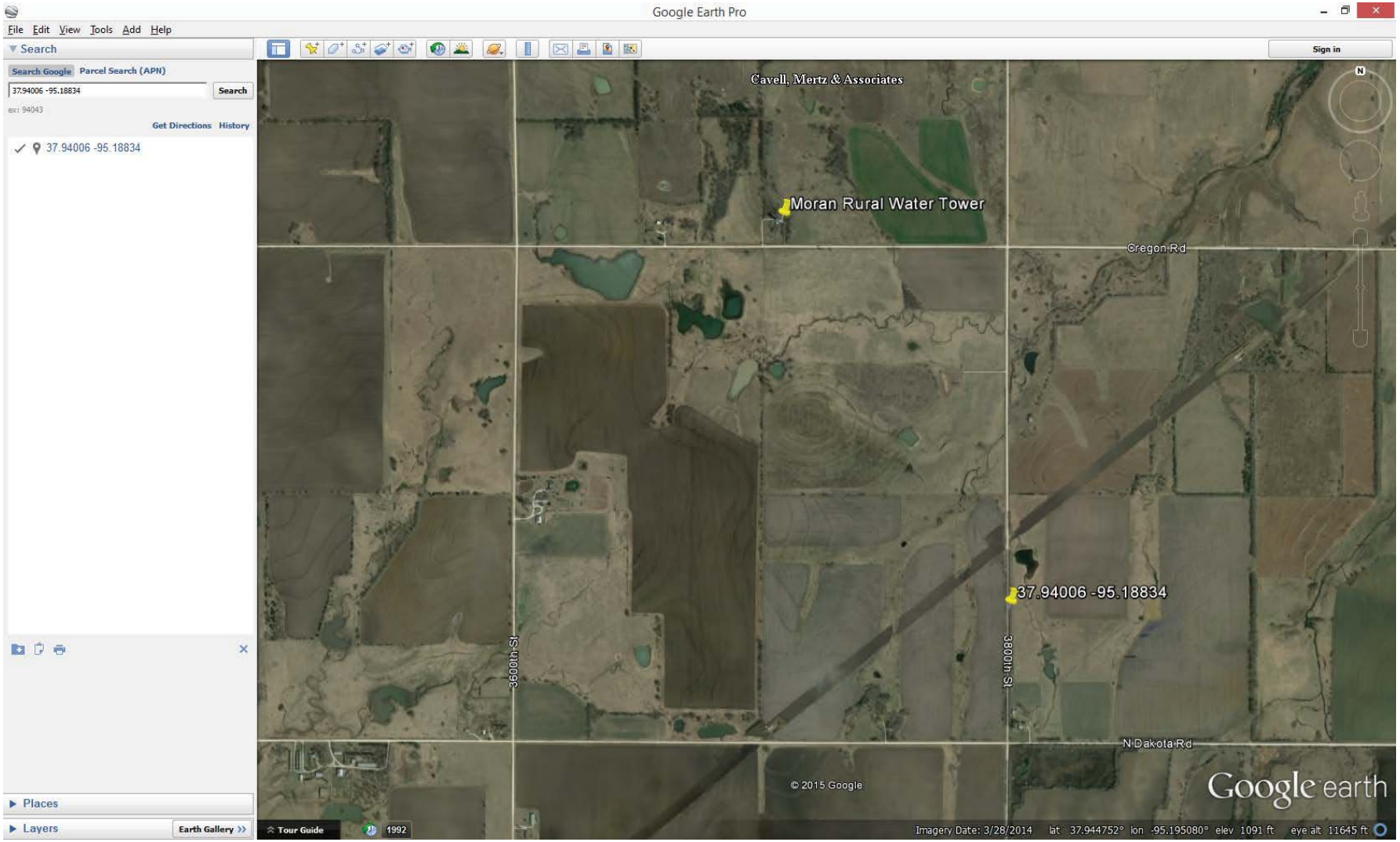
MAC Address	SSID	Device Name	Encryption	Signal / Noise, dBm	Frequency, GHz / Channel
C4:6E:1F:96:A9:B0	Karns_Wireless			-92 / -96	2.412 / 1
00:26:F2:C1:2C:DC	Sandra-pc-wireless			-90 / -96	2.412 / 1
C4:04:15:3A:C4:15	SKYNET			-79 / -85	2.452 / 9
C6:04:15:3A:C4:16	SKYNET-Guest			-85 / -85	2.452 / 9
E4:F4:C6:12:17:B9	NETGEAR42			-75 / -87	2.457 / 10
6C:B0:CE:AB:70:91	NETGEAR84			-86 / -88	2.462 / 11
78:61:7C:23:A8:64	WiFi Hotspot 5983			-81 / -88	2.462 / 11
02:15:99:9A:E5:2A	DIRECT-tESCX-3400mhgb			-88 / -88	2.462 / 11
30:B5:C2:F5:4A:D0	Nelson_Quarry			-88 / -96	2.437 / 6
08:BD:43:CD:56:ED	NETGEAR02			-87 / -88	2.412 / 1
C4:E9:84:87:0D:CC	RPeres_Wireless			-89 / -96	2.437 / 6
E4:8D:8C:86:4F:85	MikroTik-864F85	E48D8C864F85		-71 / -96	2.412 / 1
2E:24:81:BA:A2:FC				-83 / -86	2.437 / 6
00:15:6D:9C:B8:28		oak		-90 / -96	2.432 / 5
00:15:6D:9C:B8:28	iola	oak		-92 / -96	2.432 / 5
00:12:17:1B:22:64	Not Yours			-92 / -96	2.437 / 6

Scan

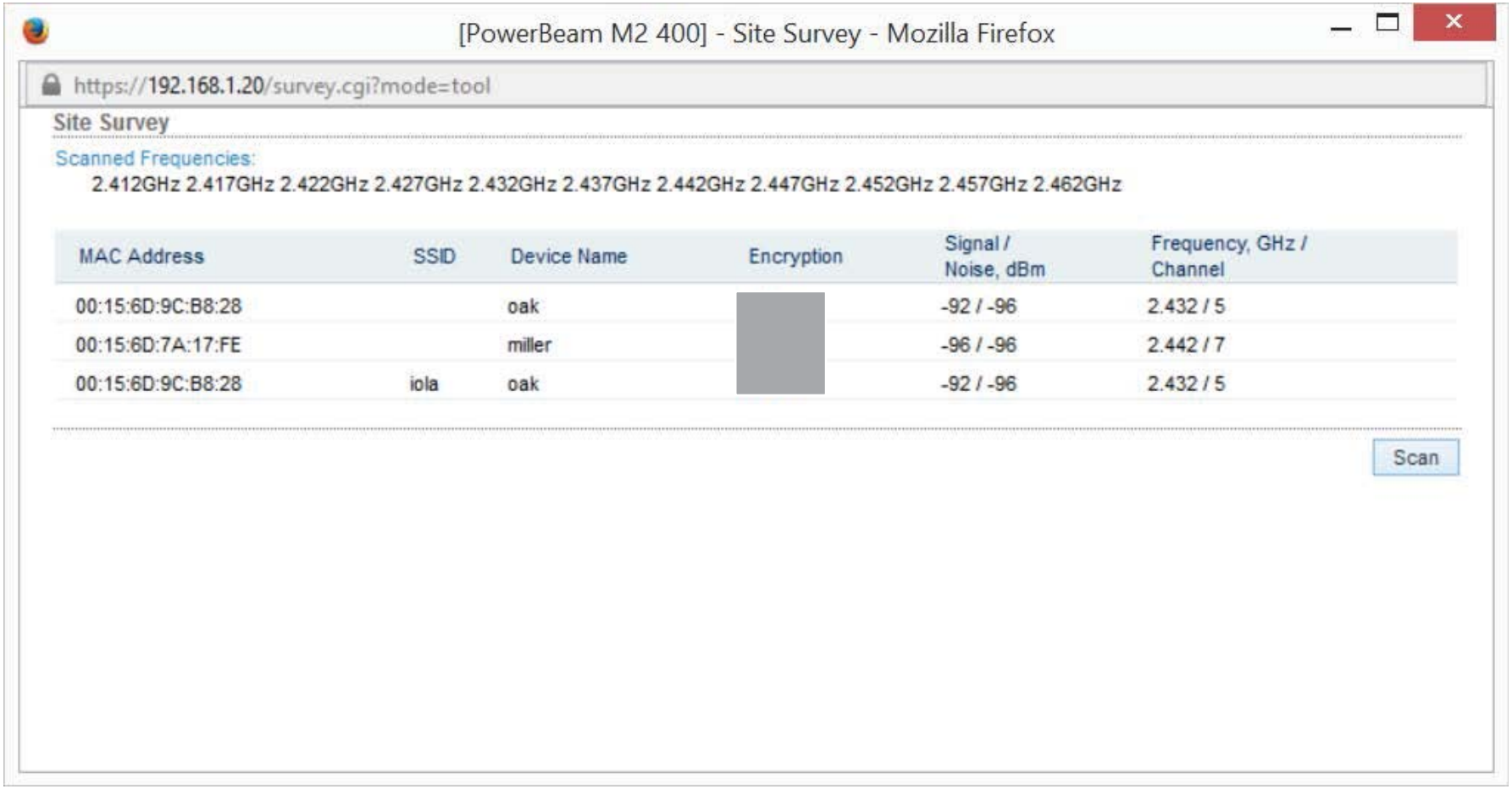
2.2. MORAN RURAL WATER TOWER

SSID Identification Testing – September 22, 2015

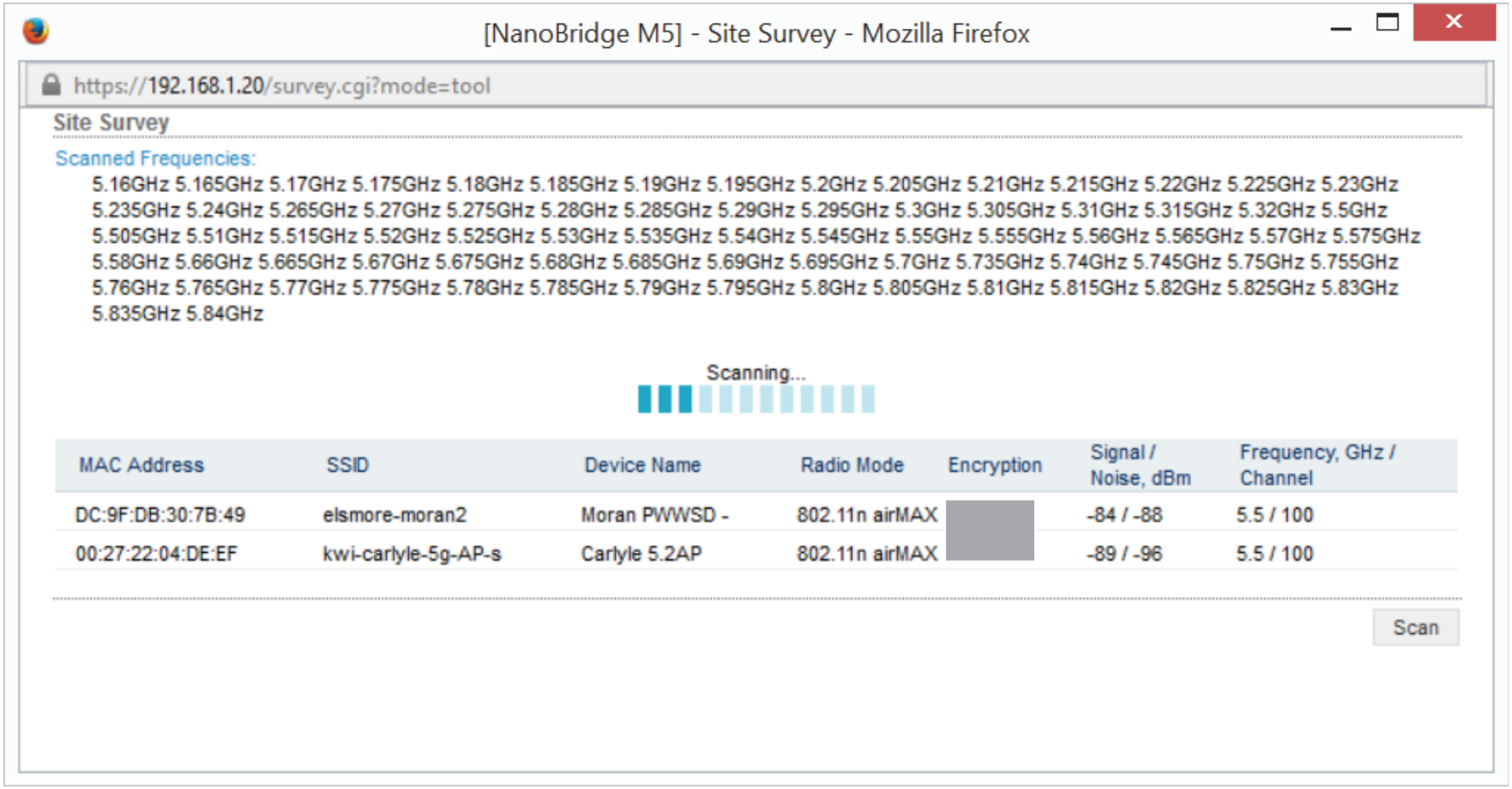
The Ubiquiti NanoBridge M5 and PowerBeam M2 was used to scan for SSIDs at the location below. This location has line of sight to the antennas mounted on the water tower.



Using the PowerBeam M2 about 6’ above the ground and pointing towards the Moran Rural Water Tower, the scan results can be found in the screenshot below. No KwiKom SSIDs were identified.



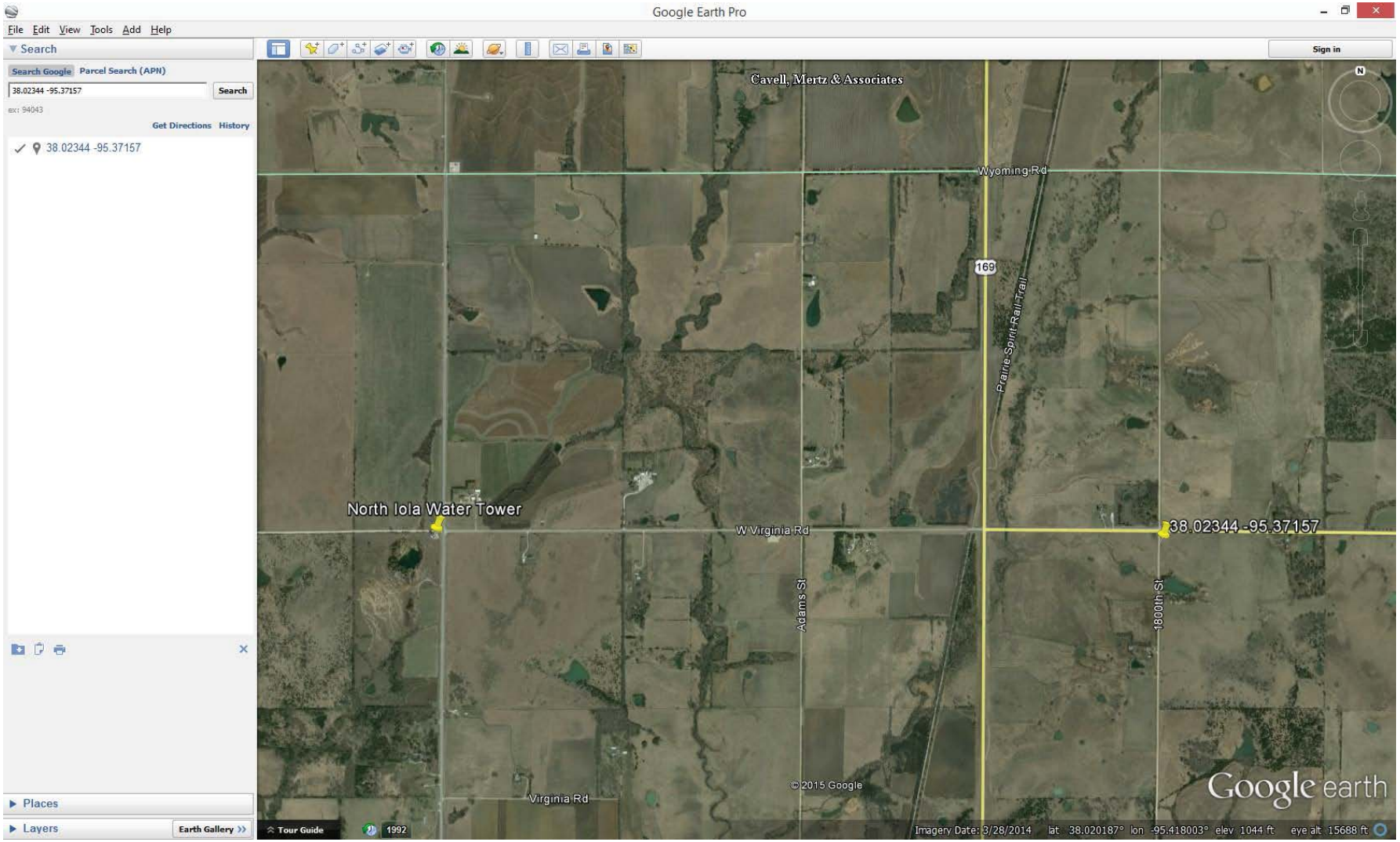
Using the NanoBridge M5 about 6’ above the ground and pointing towards the Moran Rural Water Tower, the scan results can be found in the screenshot below. KwiKom SSIDs were identified.



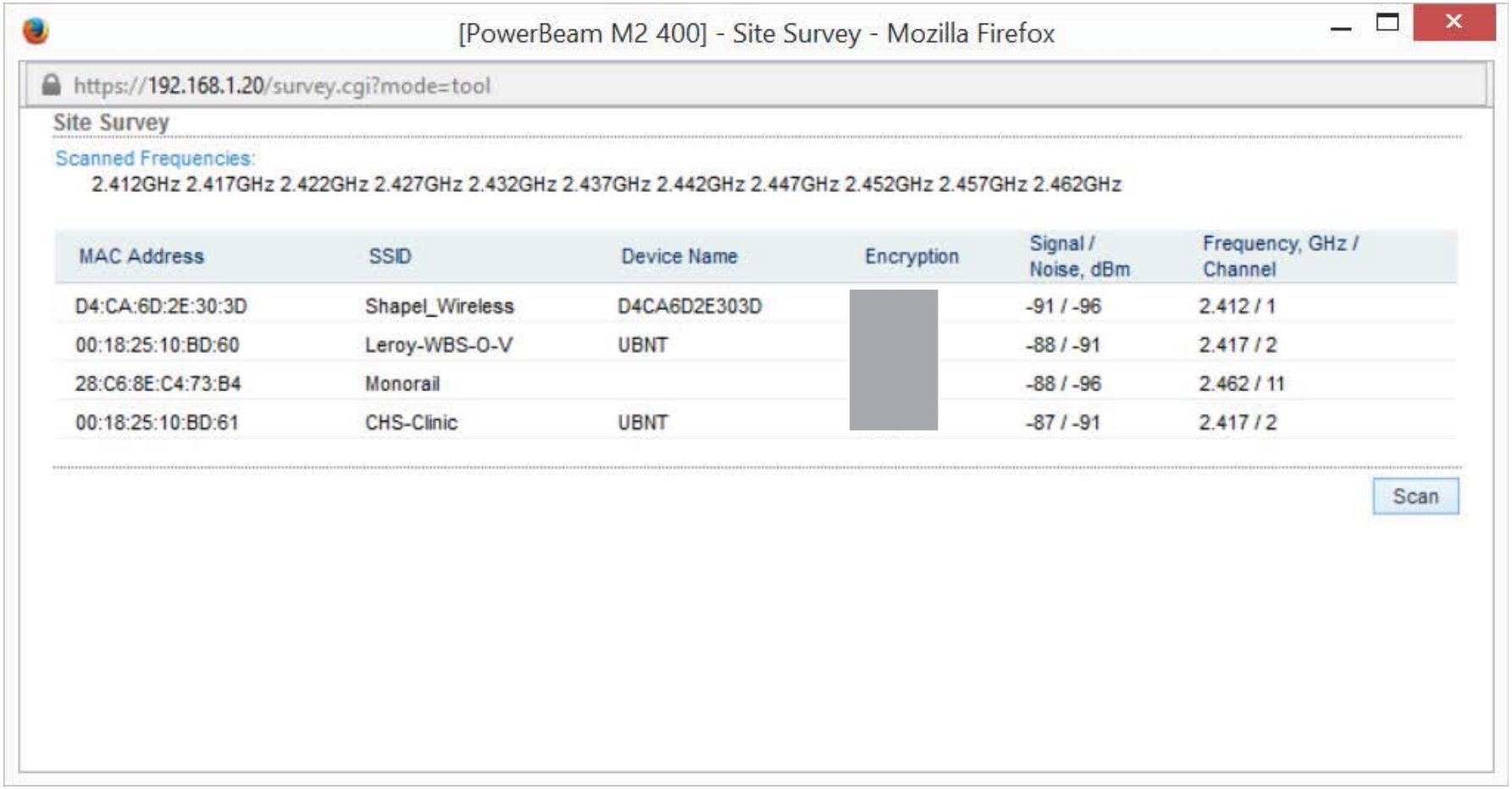
2.3. IOLA NORTH WATER TOWER

SSID Identification Testing – September 22, 2015

The Ubiquiti NanoBridge M5 and PowerBeam M2 was used to scan for SSIDs at the location below. This location has line of sight to the antennas mounted on the water tower.

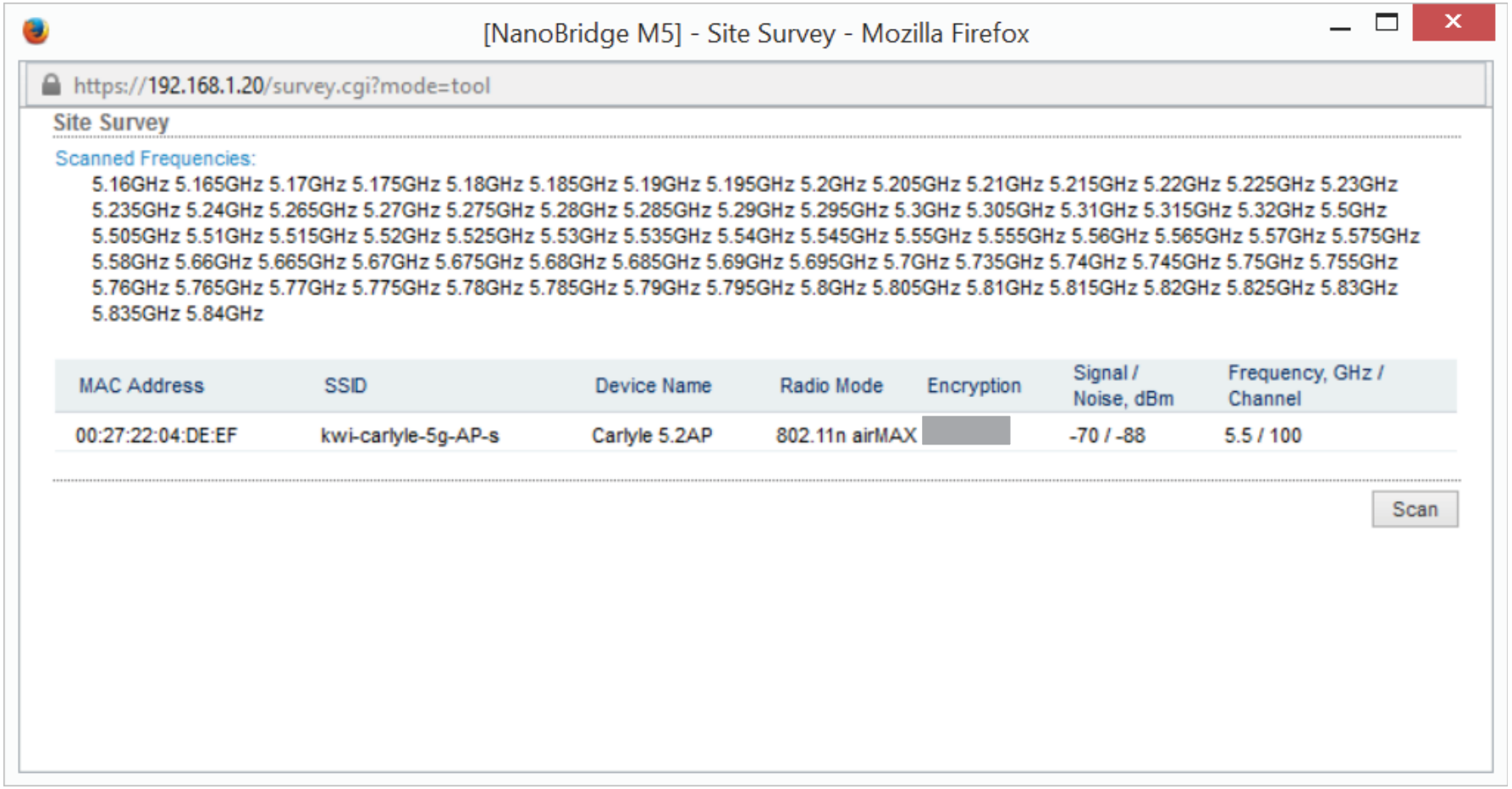


Pointing west toward North Iola Water Tower using the M2 to scan for SSIDs, the scan results can be found in screenshot below. No KwiKom SSIDs were identified.



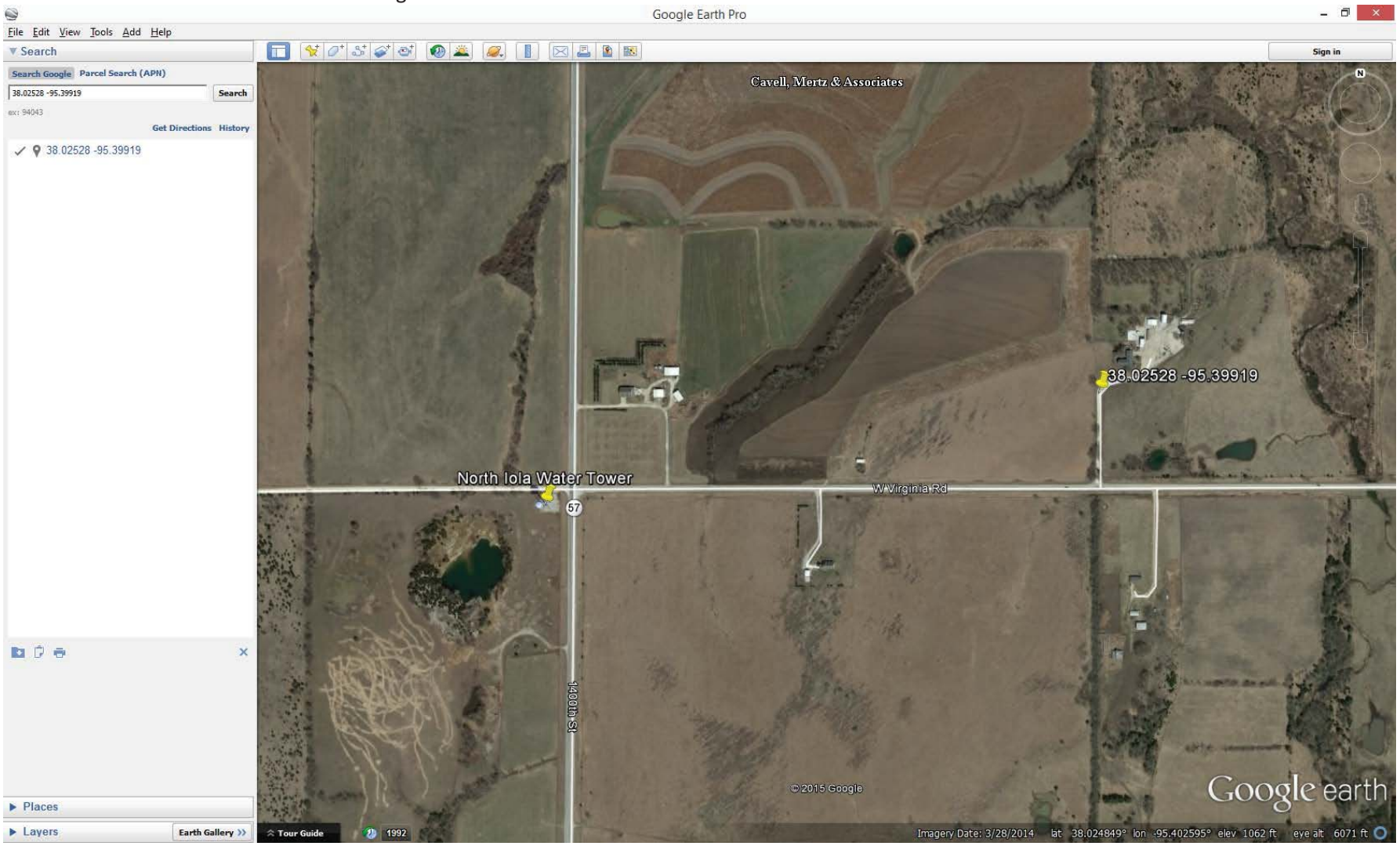
MAC Address	SSID	Device Name	Encryption	Signal / Noise, dBm	Frequency, GHz / Channel
D4:CA:6D:2E:30:3D	Shapel_Wireless	D4CA6D2E303D		-91 / -96	2.412 / 1
00:18:25:10:BD:60	Leroy-WBS-O-V	UBNT		-88 / -91	2.417 / 2
28:C6:8E:C4:73:B4	Monorail			-88 / -96	2.462 / 11
00:18:25:10:BD:61	CHS-Clinic	UBNT		-87 / -91	2.417 / 2

Pointing west toward North Iola Water Tower and using the M5 to scan for SSIDs, the scan results can be found in the screenshot below. A KwiKom SSID was identified.



SSID identification testing was performed on September22, 2015 at a second location east of the North Iola Water Tower with line of sight to the water tower.

Below is a screenshot of the second testing location.



Holding the M5 about 6' above the ground and pointing towards the North Iola Water Tower, several KwiKom SSIDs were identified. See the screenshot below for the results.

[NanoBridge M5] - Site Survey - Mozilla Firefox

https://192.168.1.20/survey.cgi?mode=tool

Site Survey

Scanned Frequencies:

5.16GHz 5.165GHz 5.17GHz 5.175GHz 5.18GHz 5.185GHz 5.19GHz 5.195GHz 5.2GHz 5.205GHz 5.21GHz 5.215GHz 5.22GHz 5.225GHz 5.23GHz 5.235GHz 5.24GHz 5.265GHz 5.27GHz 5.275GHz 5.28GHz 5.285GHz 5.29GHz 5.295GHz 5.3GHz 5.305GHz 5.31GHz 5.315GHz 5.32GHz 5.5GHz 5.505GHz 5.51GHz 5.515GHz 5.52GHz 5.525GHz 5.53GHz 5.535GHz 5.54GHz 5.545GHz 5.55GHz 5.555GHz 5.56GHz 5.565GHz 5.57GHz 5.575GHz 5.58GHz 5.66GHz 5.665GHz 5.67GHz 5.675GHz 5.68GHz 5.685GHz 5.69GHz 5.695GHz 5.7GHz 5.735GHz 5.74GHz 5.745GHz 5.75GHz 5.755GHz 5.76GHz 5.765GHz 5.77GHz 5.775GHz 5.78GHz 5.785GHz 5.79GHz 5.795GHz 5.8GHz 5.805GHz 5.81GHz 5.815GHz 5.82GHz 5.825GHz 5.83GHz 5.835GHz 5.84GHz

MAC Address	SSID	Device Name	Radio Mode	Encryption	Signal / Noise, dBm	Frequency, GHz / Channel
C8:D7:19:F0:D2:30	Cisco07639		802.11ac		-86 / -89	5.765 / 153
00:27:22:04:DE:EF	kwi-carlyle-5g-AP-s	Carlyle 5.2AP	802.11n airMAX		-76 / -91	5.5 / 100
24:A4:3C:96:45:EA	kwi-carlyle-colony-bh	Carlyle-Colony	802.11n airMAX		-79 / -90	5.735 / 147
04:18:D6:84:4E:D5	Kwikom-Valnet	Rocket M5	802.11n airMAX		-90 / -90	5.825 / 165
68:72:51:18:AD:6E	carlyle-west-bh	Carlyle-West B	802.11n airMAX		-80 / -92	5.275 / 55

Scan

Holding the M2 about 6' the ground and pointing towards the North Iola Water Tower, no KwiKom SSIDs were identified. The screenshot of the scan results is below.

[PowerBeam M2 400] - Site Survey - Mozilla Firefox

https://192.168.1.20/survey.cgi?mode=tool

Site Survey

Scanned Frequencies:

2.412GHz 2.417GHz 2.422GHz 2.427GHz 2.432GHz 2.437GHz 2.442GHz 2.447GHz 2.452GHz 2.457GHz 2.462GHz

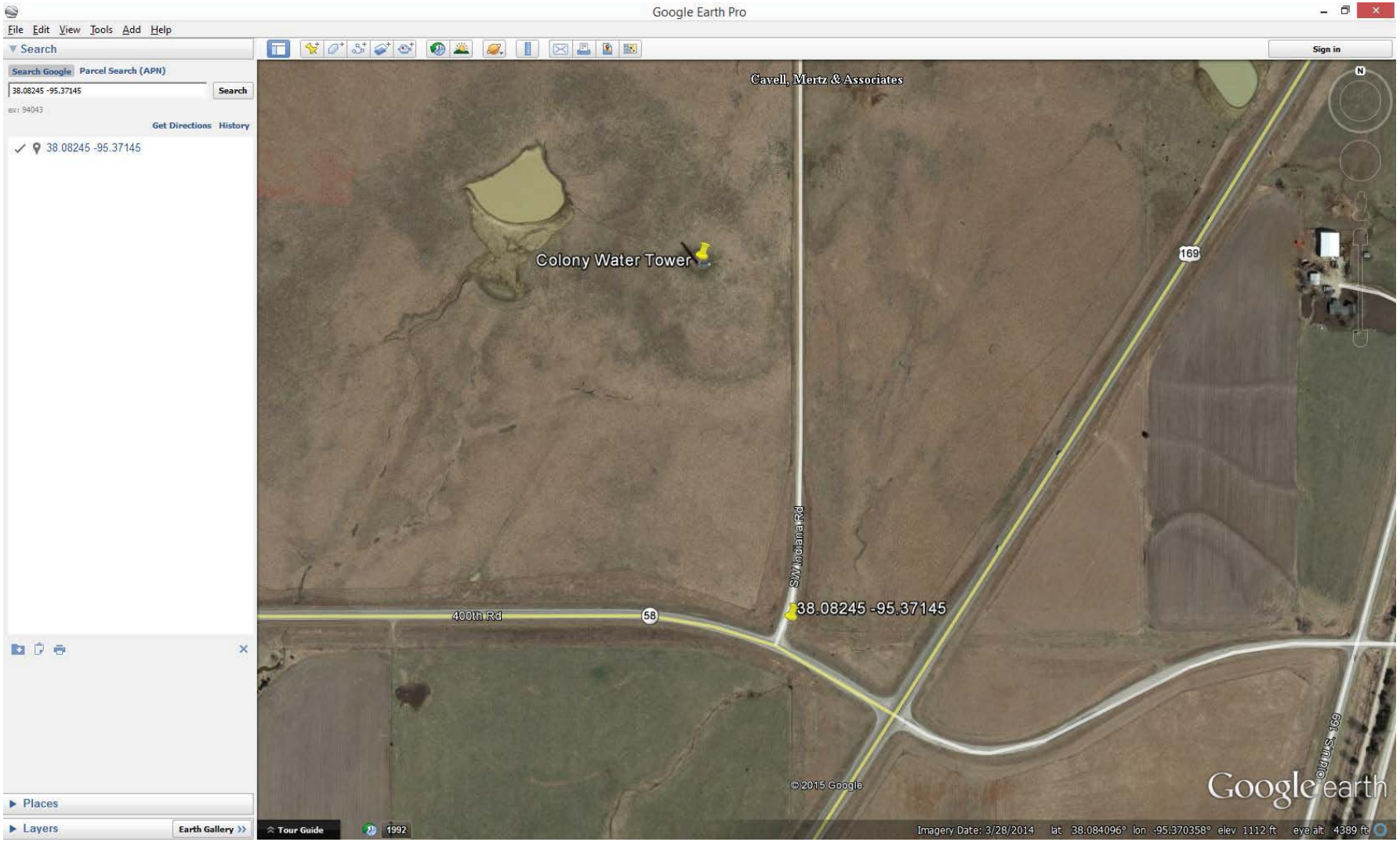
MAC Address	SSID	Device Name	Encryption	Signal / Noise, dBm	Frequency, GHz / Channel
24:A4:3C:A0:49:98	ten.sulituan.ne	north east fee		-89 / -96	2.412 / 1
C8:D7:19:F0:D2:2F	Cisco07639			-80 / -96	2.462 / 11
CA:D7:19:F0:D2:21				-79 / -96	2.462 / 11
28:C6:8E:C4:73:B4	Monorail			-92 / -96	2.462 / 11

Scan

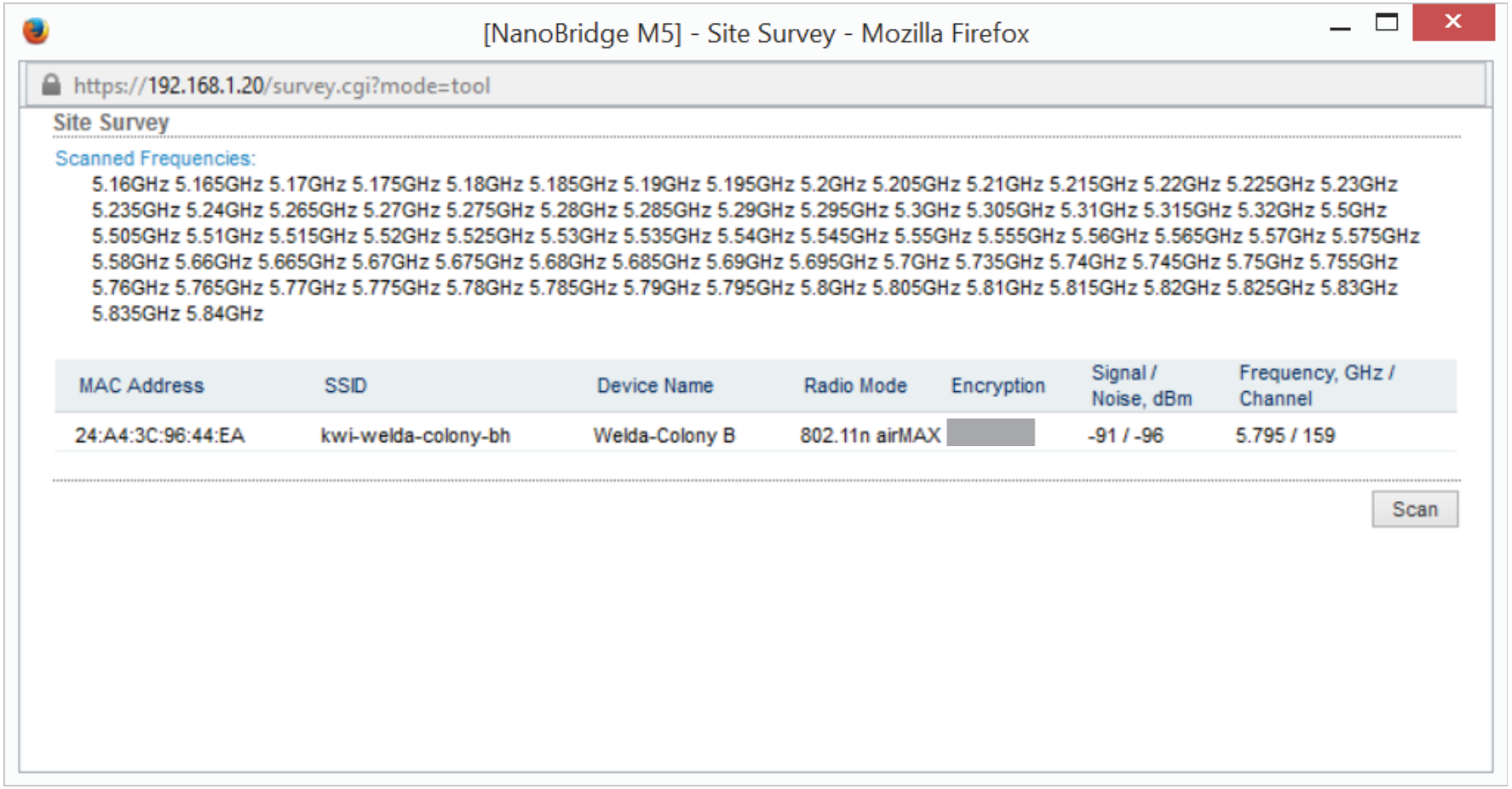
2.4. COLONY WATER TOWER

SSID Identification Testing – September 22, 2015

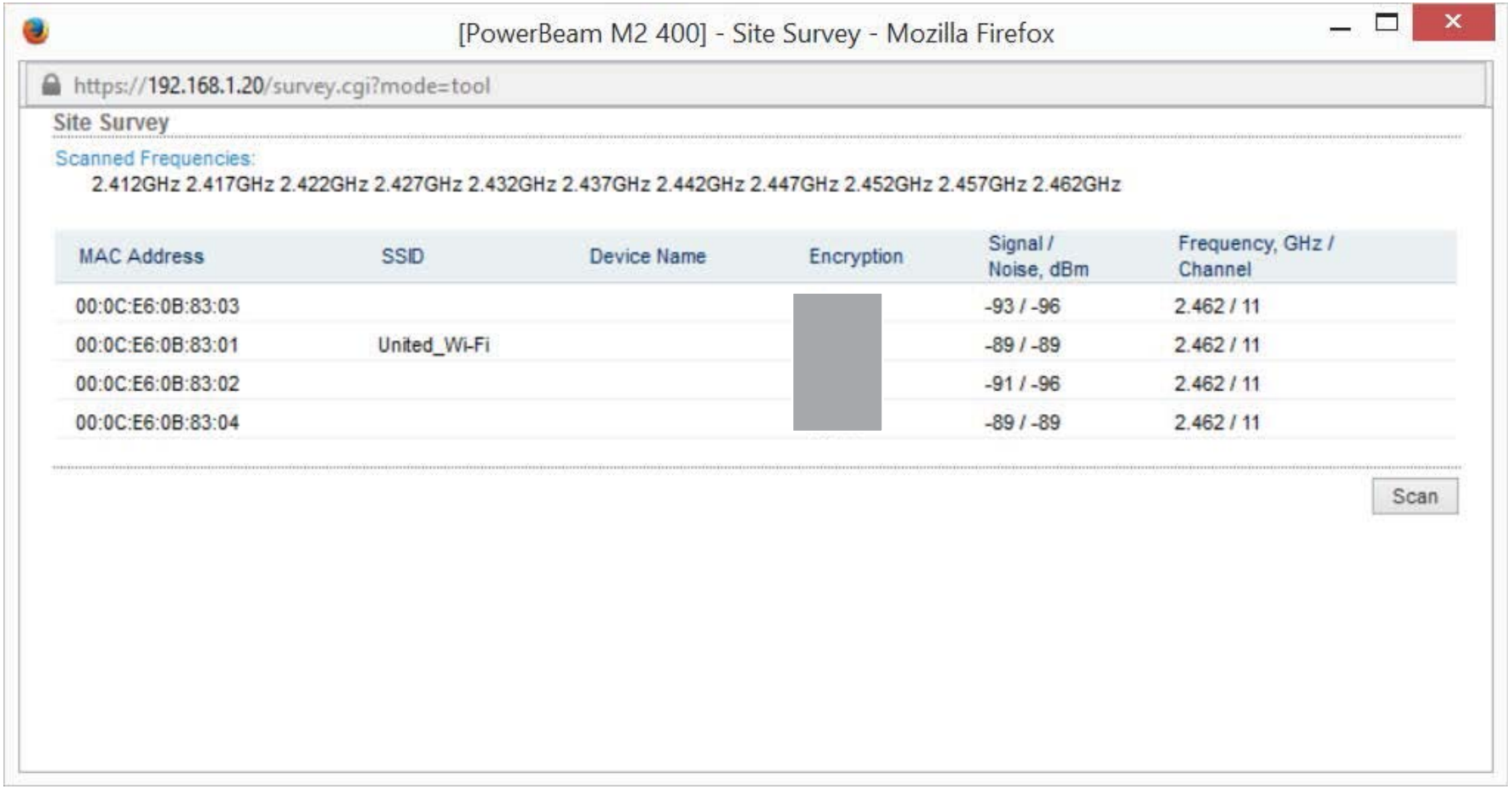
The Ubiquiti NanoBridge M5 and PowerBeam M2 was used to scan for SSIDs at the location below. This location has line of sight to the antennas mounted on the water tower.



Holding the M5 about 6' above the ground and pointing towards the Colony Water Tower, a KwiKom SSID was identified. See the screenshot below for the scan results.



Holding the M2 about 6' above the ground and pointing towards the Colony Water Tower, no KwiKom SSIDs were identified. See the screenshots below for the scan results.

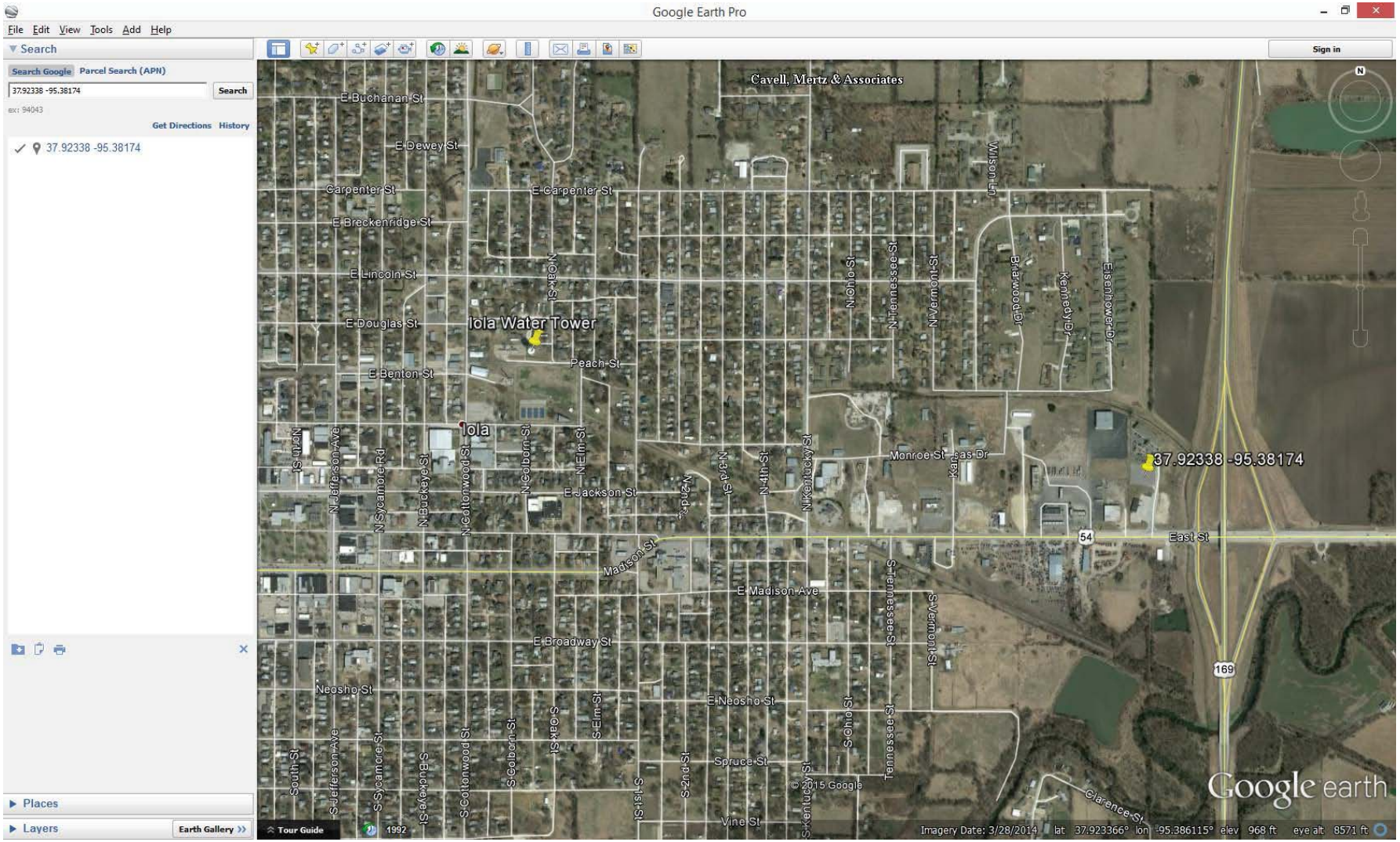


MAC Address	SSID	Device Name	Encryption	Signal / Noise, dBm	Frequency, GHz / Channel
00:0C:E6:0B:83:03				-93 / -96	2.462 / 11
00:0C:E6:0B:83:01	United_Wi-Fi			-89 / -89	2.462 / 11
00:0C:E6:0B:83:02				-91 / -96	2.462 / 11
00:0C:E6:0B:83:04				-89 / -89	2.462 / 11

2.5. IOLA WATER TOWER

SSID Identification Testing – September 22, 2015

The Ubiquiti NanoBridge M5 and PowerBeam M2 was used to scan for SSIDs at the location below. This location has line of sight to the antennas mounted on the water tower.



Holding the M2 about 6' above the ground and pointing towards the Iola Water Tower, no KwiKom SSIDs were identified during the scans. See the screenshot of the scan results below.

[PowerBeam M2 400] - Site Survey - Mozilla Firefox

https://192.168.1.20/survey.cgi?mode=tool

Site Survey

Scanned Frequencies:
2.412GHz 2.417GHz 2.422GHz 2.427GHz 2.432GHz 2.437GHz 2.442GHz 2.447GHz 2.452GHz 2.457GHz 2.462GHz

MAC Address	SSID	Device Name	Encryption	Signal / Noise, dBm	Frequency, GHz / Channel
00:02:6F:BC:BA:5F	Super 8			-81 / -87	2.412 / 1
00:02:6F:BC:BA:65	Super 8			-88 / -89	2.417 / 2
00:15:6D:9C:B8:28		oak		-71 / -88	2.432 / 5
B8:A3:86:8F:FB:74	jpst			-79 / -89	2.432 / 5
00:27:22:84:7C:11	Jumpstart1	UBNT		-70 / -86	2.447 / 8
00:15:6D:9C:B8:28	iola	oak		-69 / -88	2.432 / 5
C8:D7:19:5F:50:0C	CleverTiger-guest			-94 / -96	2.462 / 11
00:15:6D:7A:17:FE		miller		-91 / -96	2.442 / 7
00:8E:F2:E2:46:FD	E246FD			-88 / -88	2.412 / 1
98:2C:BE:F7:2A:9A	ATT735			-73 / -86	2.447 / 8
88:DC:96:1E:57:96	V-IOLA			-67 / -90	2.462 / 11
90:3E:AB:5B:2D:B0	ATT504			-80 / -90	2.462 / 11
D0:57:85:79:67:48	Verizon-291LVW-6748			-80 / -90	2.462 / 11
64:55:B1:8D:B3:40	ATT456			-96 / -96	2.437 / 6
78:61:7C:19:A3:7D	WiFi Hotspot 7408			-88 / -90	2.462 / 11
A0:63:91:81:D3:18	NETGEAR35			-88 / -89	2.427 / 4
64:55:B1:A1:E5:10	ATT928			-91 / -96	2.462 / 11
CC:E1:D5:6D:48:70	eydshome			-93 / -96	2.412 / 1
10:0D:7F:D0:89:A5	D089A5			-87 / -90	2.462 / 11
78:96:84:B2:65:90	ATT440			-92 / -96	2.412 / 1
10:0D:7F:DF:A2:80	DFA280			-88 / -90	2.462 / 11
4C:5E:0C:EF:34:CD	Sprubow	4C5E0CEF34CD		-92 / -96	2.412 / 1

Scan

Holding the M2 about 6' above the ground and pointing towards the Iola Water Tower, two KwiKom SSIDs were identified. See the screenshot of the scan results below.

[NanoBridge M5] - Site Survey - Mozilla Firefox

https://192.168.1.20/survey.cgi?mode=tool

Site Survey

Scanned Frequencies:

5.16GHz 5.165GHz 5.17GHz 5.175GHz 5.18GHz 5.185GHz 5.19GHz 5.195GHz 5.2GHz 5.205GHz 5.21GHz 5.215GHz 5.22GHz 5.225GHz 5.23GHz 5.235GHz 5.24GHz 5.265GHz 5.27GHz 5.275GHz 5.28GHz 5.285GHz 5.29GHz 5.295GHz 5.3GHz 5.305GHz 5.31GHz 5.315GHz 5.32GHz 5.5GHz 5.505GHz 5.51GHz 5.515GHz 5.52GHz 5.525GHz 5.53GHz 5.535GHz 5.54GHz 5.545GHz 5.55GHz 5.555GHz 5.56GHz 5.565GHz 5.57GHz 5.575GHz 5.58GHz 5.66GHz 5.665GHz 5.67GHz 5.675GHz 5.68GHz 5.685GHz 5.69GHz 5.695GHz 5.7GHz 5.735GHz 5.74GHz 5.745GHz 5.75GHz 5.755GHz 5.76GHz 5.765GHz 5.77GHz 5.775GHz 5.78GHz 5.785GHz 5.79GHz 5.795GHz 5.8GHz 5.805GHz 5.81GHz 5.815GHz 5.82GHz 5.825GHz 5.83GHz 5.835GHz 5.84GHz

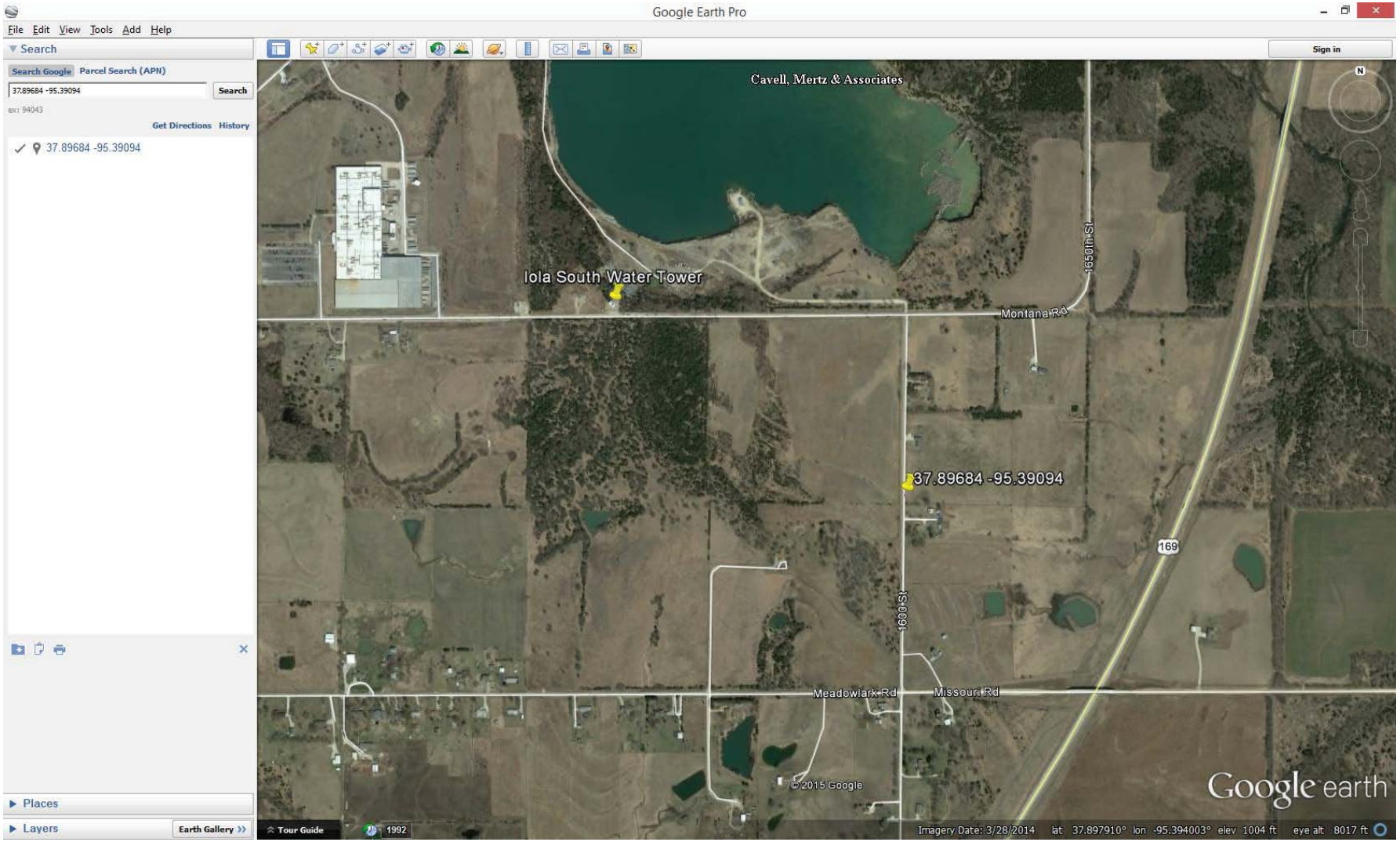
MAC Address	SSID	Device Name	Radio Mode	Encryption	Signal / Noise, dBm	Frequency, GHz / Channel
DC:9F:DB:30:7B:D3	kwi-iola-oak-5.4-new3	SE 5.4 Sector	802.11n airMAX		-84 / -85	5.16 / 32
DC:9F:DB:30:7B:23	kwi-iola-oak-5.4-new2	Oak 5.4AP Nort	802.11n airMAX		-84 / -86	5.765 / 153

Scan

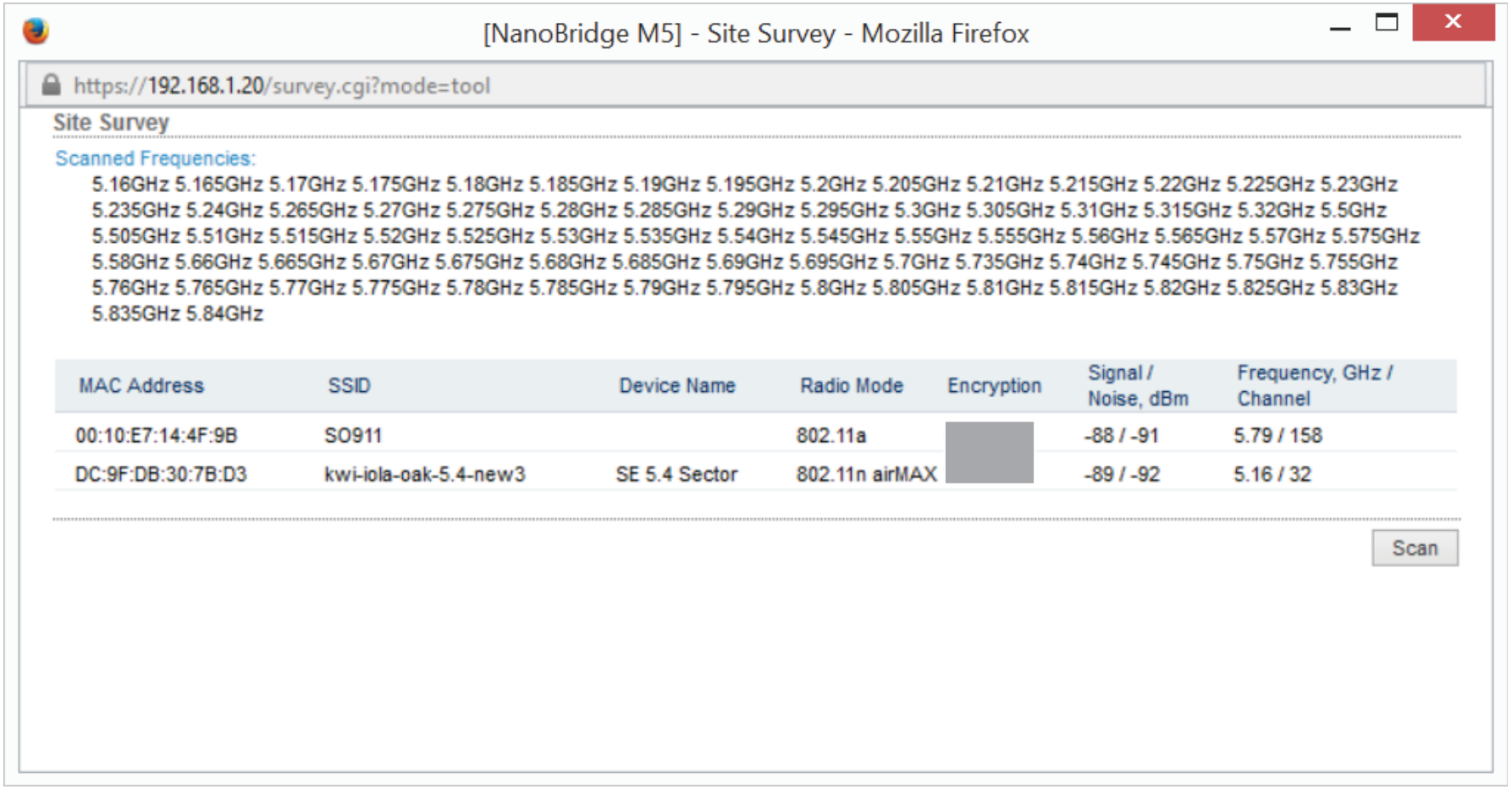
2.6. IOLA SOUTH WATER TOWER

SSID Identification Testing – September 22, 2015

The Ubiquiti NanoBridge M5 and PowerBeam M2 was used to scan for SSIDs at the location below. This location has line of sight to the antennas mounted on the water tower.



Holding the M5 about 6' above the ground and pointing towards the South Iola Water Tower, no KwiKom SSIDs were identified from this water tower. A KwiKom SSID appeared in the scan results but has already been determined to originate from the Iola Water Tower. See the screenshot below for the scan results.



Holding the M2 about 6' above the ground and pointing towards the South Iola Water Tower, no KwiKom SSIDs were identified. See a screenshot of the scan results below.

[PowerBeam M2 400] - Site Survey - Mozilla Firefox

https://192.168.1.20/survey.cgi?mode=tool

Site Survey

Scanned Frequencies:
2.412GHz 2.417GHz 2.422GHz 2.427GHz 2.432GHz 2.437GHz 2.442GHz 2.447GHz 2.452GHz 2.457GHz 2.462GHz

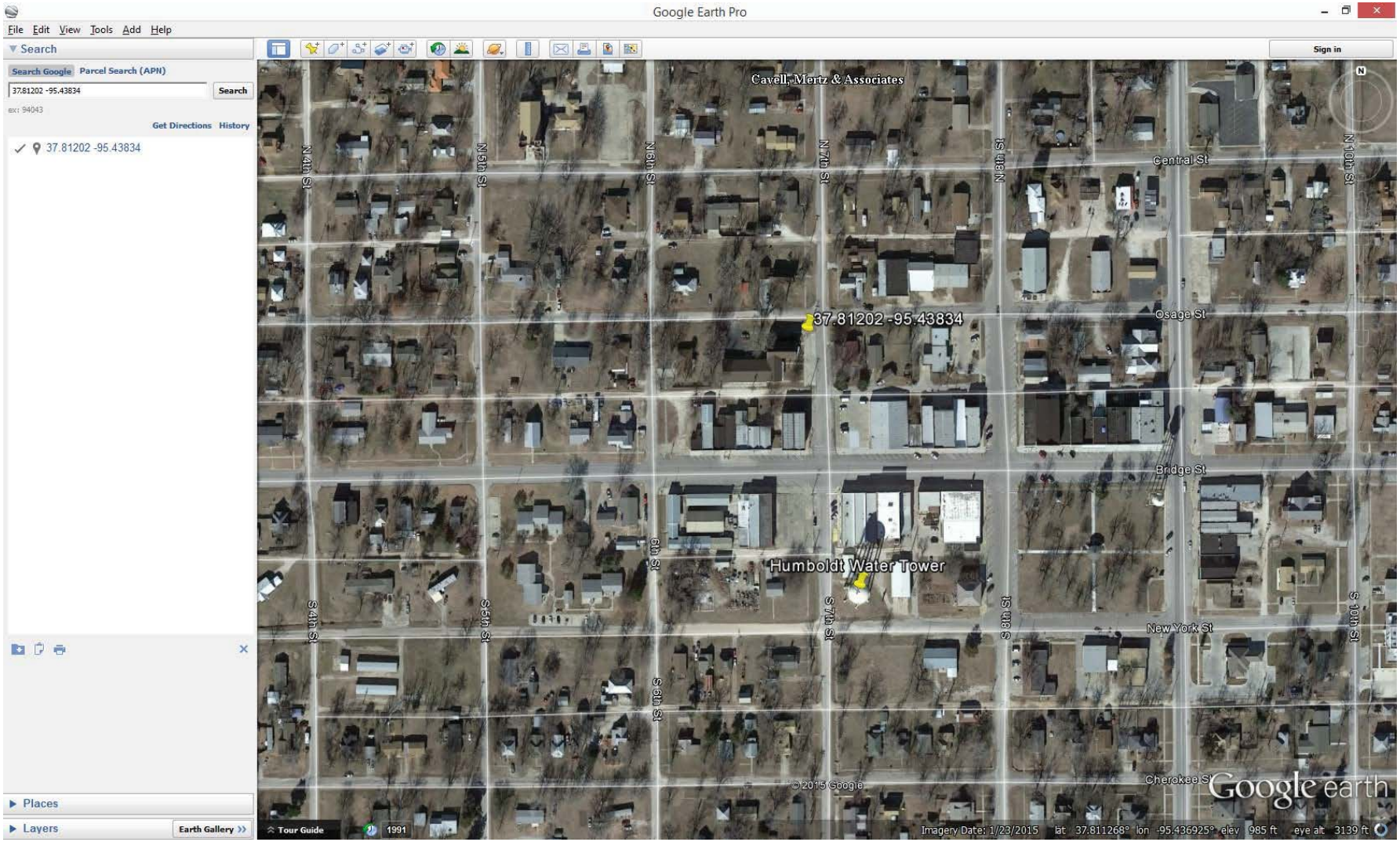
MAC Address	SSID	Device Name	Encryption	Signal / Noise, dBm	Frequency, GHz / Channel
00:15:6D:9C:B8:28		oak		-87 / -96	2.432 / 5
00:15:6D:9C:B8:28	iola	oak		-87 / -96	2.432 / 5
00:15:6D:7A:17:FE		miller		-91 / -96	2.442 / 7
00:27:22:46:FF:B6	nautilus-riverside	riverside omni		-91 / -96	2.447 / 8
F4:4E:05:D0:A7:40				-89 / -96	2.412 / 1
F4:4E:05:D0:A7:43				-92 / -96	2.412 / 1
F4:4E:05:D0:A7:41				-92 / -96	2.412 / 1
F4:4E:05:D0:A7:46	gates			-93 / -96	2.412 / 1
D4:6D:50:89:B4:63				-92 / -96	2.462 / 11
D4:6D:50:89:B4:66	gates			-92 / -96	2.462 / 11
D4:6D:50:89:B4:61				-93 / -96	2.462 / 11
7C:95:F3:06:AD:13				-93 / -96	2.412 / 1
D4:6D:50:89:B4:62	ioapssid036			-90 / -96	2.462 / 11
A0:EC:F9:71:B6:C2	ioapssid036			-92 / -96	2.462 / 11
F4:4E:05:D0:A7:42	ioapssid036			-91 / -96	2.412 / 1
7C:95:F3:06:AD:12				-93 / -96	2.412 / 1

Scan

2.7. HUMBOLDT WATER TOWER

SSID Identification Testing – September 22, 2015

The Ubiquiti NanoBridge M5 and PowerBeam M2 was used to scan for SSIDs at the location below. This location has line of sight to the antennas mounted on the water tower.



Holding the M5 about 6' about the ground and pointing south towards the Humboldt Water Tower, several KwiKom SSIDs were identified. See the screenshot below for the scan results.

[NanoBridge M5] - Site Survey - Mozilla Firefox

https://192.168.1.20/survey.cgi?mode=tool

Site Survey

Scanned Frequencies:

5.16GHz 5.165GHz 5.17GHz 5.175GHz 5.18GHz 5.185GHz 5.19GHz 5.195GHz 5.2GHz 5.205GHz 5.21GHz 5.215GHz 5.22GHz 5.225GHz 5.23GHz 5.235GHz 5.24GHz 5.265GHz 5.27GHz 5.275GHz 5.28GHz 5.285GHz 5.29GHz 5.295GHz 5.3GHz 5.305GHz 5.31GHz 5.315GHz 5.32GHz 5.5GHz 5.505GHz 5.51GHz 5.515GHz 5.52GHz 5.525GHz 5.53GHz 5.535GHz 5.54GHz 5.545GHz 5.55GHz 5.555GHz 5.56GHz 5.565GHz 5.57GHz 5.575GHz 5.58GHz 5.66GHz 5.665GHz 5.67GHz 5.675GHz 5.68GHz 5.685GHz 5.69GHz 5.695GHz 5.7GHz 5.735GHz 5.74GHz 5.745GHz 5.75GHz 5.755GHz 5.76GHz 5.765GHz 5.77GHz 5.775GHz 5.78GHz 5.785GHz 5.79GHz 5.795GHz 5.8GHz 5.805GHz 5.81GHz 5.815GHz 5.82GHz 5.825GHz 5.83GHz 5.835GHz 5.84GHz

MAC Address	SSID	Device Name	Radio Mode	Encryption	Signal / Noise, dBm	Frequency, GHz / Channel
00:15:6D:64:81:2D	kwi-humboldt-north-bh	00156D64812D	802.11a		-68 / -92	5.18 / 36
DC:9F:DB:0A:4C:F9	kwi-humboldt-south-n5	Humboldt South	802.11n airMAX		-66 / -92	5.5 / 100
9C:D3:6D:A1:D6:D2	NETGEAR06-5G		802.11n		-80 / -90	5.745 / 149
08:EA:44:6C:31:64			802.11n		-87 / -90	5.805 / 161
08:EA:44:6C:37:E4			802.11n		-87 / -90	5.805 / 161
08:EA:44:6C:37:E9	ANW CO Wireless		802.11n		-85 / -90	5.805 / 161
08:EA:44:6C:38:68	ANW CO Wireless		802.11n		-82 / -92	5.22 / 44
00:15:6D:1E:E9:A8	humb2rwd7n	Humboldt >> Ch	802.11n airMAX		-90 / -92	5.265 / 53
DC:9F:DB:0A:4C:F8	kwi-humboldt-south-se5	Humboldt South	802.11n airMAX		-85 / -93	5.305 / 61
00:27:22:CA:A7:07	kwi-humboldt-south-sw5	Humboldt South	802.11n airMAX		-73 / -93	5.32 / 64
20:0C:C8:0D:20:0C	NETGEAR53-5G		802.11n		-89 / -90	5.765 / 153
00:15:6D:9E:68:B0	humboldt-chanute-grant		802.11n airMAX		-90 / -90	5.805 / 161

Scan

Holding the M2 6’ above the ground and pointing towards the Humboldt Water Tower, a KwiKom SSID was identified. Based on the name of the SSID, it has been determined that this is used for providing Wi-Fi in the downtown area and not providing coverage to customers in the LaHarpe Telephone Exchange. See the screenshot on the following page for the scan results.

[PowerBeam M2 400] - Site Survey - Mozilla Firefox

https://192.168.1.20/survey.cgi?mode=tool

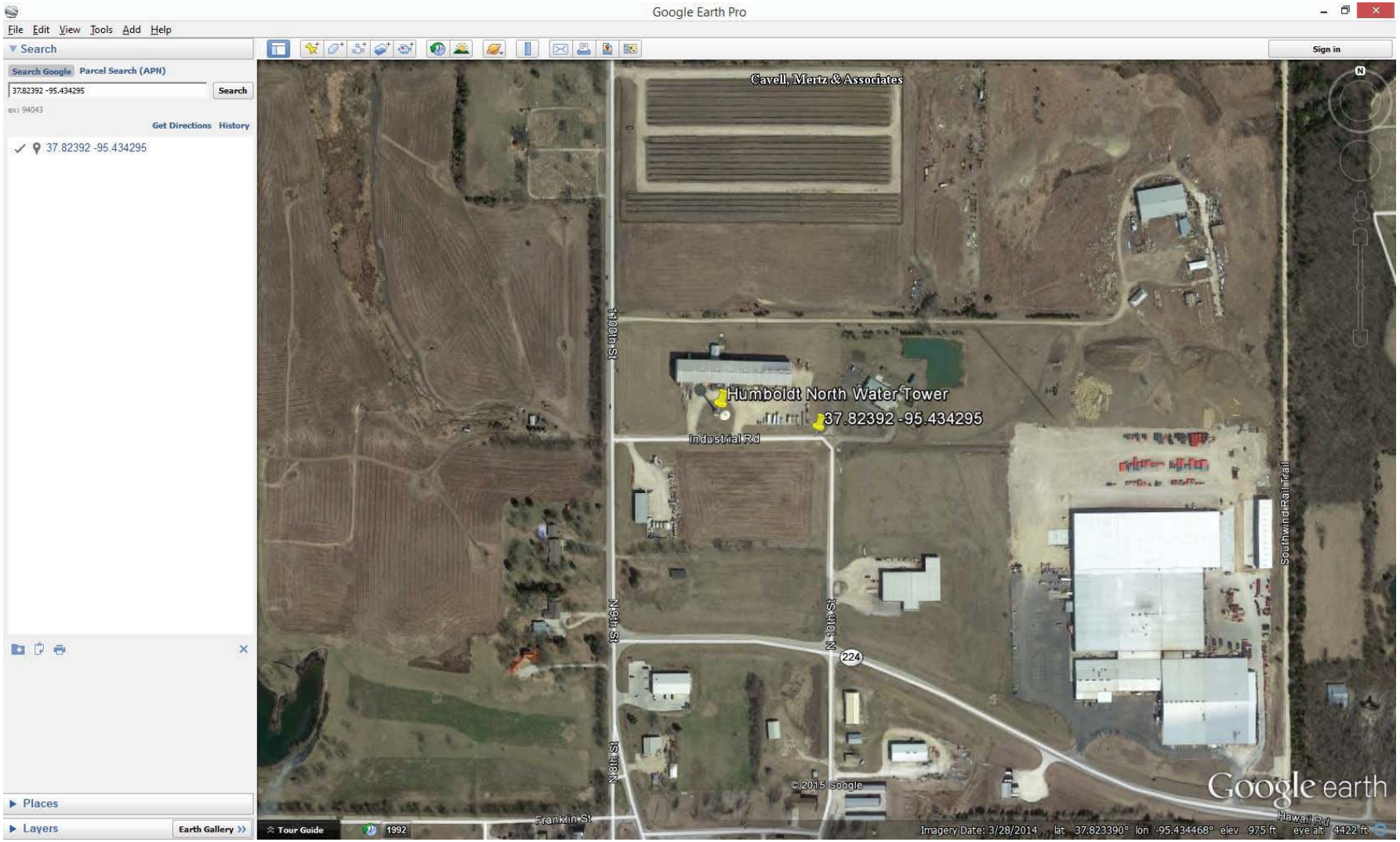
Scanned Frequencies:
2.412GHz 2.417GHz 2.422GHz 2.427GHz 2.432GHz 2.437GHz 2.442GHz 2.447GHz 2.452GHz 2.457GHz 2.462GHz

MAC Address	SSID	Device Name	Encryption	Signal / Noise, dBm	Frequency, GHz / Channel
9C:D3:6D:A1:D6:D3	NETGEAR06			-69 / -88	2.412 / 1
9E:D3:6D:A1:D6:D4	NETGEAR-Guest			-70 / -88	2.412 / 1
94:62:69:E6:77:90	ATT424			-66 / -88	2.412 / 1
08:EA:44:6C:37:D4	ANW CO Wireless			-72 / -85	2.437 / 6
08:EA:44:6C:37:D6	ANWGuest			-76 / -85	2.437 / 6
B0:A7:37:A3:89:1D	DIRECT-roku-37FE08			-82 / -85	2.437 / 6
58:56:E8:93:BB:70	ATT632			-79 / -85	2.437 / 6
E8:33:81:04:32:E0	ATT160			-84 / -88	2.462 / 11
08:EA:44:6C:38:56	ANWGuest			-64 / -88	2.462 / 11
08:EA:44:6C:38:54	ANW CO Wireless			-59 / -88	2.462 / 11
08:EA:44:6C:38:94	ANW CO Wireless			-84 / -85	2.437 / 6
20:AA:4B:BC:70:62	Humboldt EMS			-81 / -88	2.462 / 11
08:EA:44:6C:31:D4	ANW CO Wireless			-84 / -88	2.412 / 1
00:25:9C:FF:61:1B	linksys			-89 / -96	2.437 / 6
08:EA:44:6C:31:96	ANWGuest			-85 / -88	2.462 / 11
B0:A7:37:DE:59:ED				-83 / -85	2.437 / 6
20:0C:C8:0D:20:0D	NETGEAR53			-84 / -86	2.442 / 7
08:EA:44:6C:31:94	ANW CO Wireless			-83 / -88	2.462 / 11
08:EA:44:6C:38:96	ANWGuest			-74 / -85	2.437 / 6
78:96:84:A5:BF:30	ATT416			-90 / -96	2.462 / 11
B8:3E:59:DF:F6:49	DIRECT-roku-BB9ECB			-85 / -85	2.437 / 6
08:EA:44:6C:31:D5	cisco-voice			-86 / -88	2.412 / 1
6C:62:6D:10:3E:84	S300wi TrainingRM			-80 / -87	2.432 / 5
08:EA:44:6C:37:D5	cisco-voice			-73 / -85	2.437 / 6
08:EA:44:6C:38:95	cisco-voice			-80 / -85	2.437 / 6
08:EA:44:6C:38:55	cisco-voice			-65 / -89	2.462 / 11
36:97:56:F0:C3:BD				-90 / -96	2.462 / 11
08:EA:44:6C:31:95	cisco-voice			-83 / -89	2.462 / 11
00:24:B2:59:3F:03	HotPants			-92 / -96	2.412 / 1
20:AA:4B:BC:70:63	Humboldt EMS-guest			-87 / -88	2.462 / 11
00:0C:42:3A:B0:26	KwiKom.com WiFi Hostspot	000C423AB026		-86 / -88	2.412 / 1

2.8. HUMBOLDT NORTH WATER TOWER

SSID Identification Testing – September 22, 2015

The Ubiquiti NanoBridge M5 and PowerBeam M2 was used to scan for SSIDs at the location below. This location has line of sight to the antennas mounted on the water tower.



Holding the M2 6’ above the ground and pointing towards the North Humboldt Water Tower, no KwiKom SSIDs were identified. See the screenshot of the scan results below.

[PowerBeam M2 400] - Site Survey - Mozilla Firefox

https://192.168.1.20/survey.cgi?mode=tool

Site Survey

Scanned Frequencies:
2.412GHz 2.417GHz 2.422GHz 2.427GHz 2.432GHz 2.437GHz 2.442GHz 2.447GHz 2.452GHz 2.457GHz 2.462GHz

MAC Address	SSID	Device Name	Encryption	Signal / Noise, dBm	Frequency, GHz / Channel
C0:EA:E4:AD:6E:15	Clinical_Wifi		W	-90 / -96	2.412 / 1
58:56:E8:9A:B6:00	ATT992		W	-82 / -90	2.462 / 11
38:EA:A7:4E:3B:5F	HP-Print-5F-Officejet 6700		W	-90 / -96	2.437 / 6
00:1C:F0:99:B5:1B	BW_WiFi		W	-92 / -96	2.442 / 7
00:26:5A:86:B2:BA	BW_WiFi		W	-91 / -96	2.412 / 1
90:3E:AB:96:67:50	ATT880		W	-92 / -96	2.437 / 6
E8:DE:27:6D:AC:3B	TP-LINK_2.4GHz_6DAC3B		W	-91 / -96	2.462 / 11
2C:41:38:29:A4:DC	HII-AP		W	-90 / -96	2.412 / 1
00:1C:F0:99:B4:EB	BW_WiFi		W	-92 / -96	2.442 / 7
00:26:5A:71:BC:47	BW_WiFi		W	-91 / -96	2.412 / 1
00:0E:8E:3F:89:56	vCore-8004198		W	-85 / -90	2.462 / 11
58:56:E8:94:18:F0	ATT568		W	-92 / -96	2.437 / 6
F0:7D:68:74:F5:A8	BW_WiFi		W	-93 / -96	2.412 / 1
00:15:E9:6B:99:4E	BROYLES OFFICE		N	-87 / -90	2.417 / 2
22:60:C9:F2:9F:29			N	-90 / -90	2.462 / 11
00:15:6D:E6:AC:F1	ch2ua	Chanute2ua	N	-92 / -96	2.412 / 1
00:15:6D:9C:B8:28		oak	N	-92 / -96	2.432 / 5
00:15:6D:7A:17:FE		miller	N	-95 / -96	2.442 / 7
00:15:6D:9C:B8:28	iola	oak	N	-91 / -96	2.432 / 5

Scan

Holding the M5 6’ above the ground and pointing towards the North Humboldt Water Tower, several KwiKom SSIDs were identified. See the screenshot of the scan results below.

[NanoBridge M5] - Site Survey - Mozilla Firefox

https://192.168.1.20/survey.cgi?mode=tool

Site Survey

Scanned Frequencies:

5.16GHz 5.165GHz 5.17GHz 5.175GHz 5.18GHz 5.185GHz 5.19GHz 5.195GHz 5.2GHz 5.205GHz 5.21GHz 5.215GHz 5.22GHz 5.225GHz 5.23GHz 5.235GHz 5.24GHz 5.265GHz 5.27GHz 5.275GHz 5.28GHz 5.285GHz 5.29GHz 5.295GHz 5.3GHz 5.305GHz 5.31GHz 5.315GHz 5.32GHz 5.5GHz 5.505GHz 5.51GHz 5.515GHz 5.52GHz 5.525GHz 5.53GHz 5.535GHz 5.54GHz 5.545GHz 5.55GHz 5.555GHz 5.56GHz 5.565GHz 5.57GHz 5.575GHz 5.58GHz 5.66GHz 5.665GHz 5.67GHz 5.675GHz 5.68GHz 5.685GHz 5.69GHz 5.695GHz 5.7GHz 5.735GHz 5.74GHz 5.745GHz 5.75GHz 5.755GHz 5.76GHz 5.765GHz 5.77GHz 5.775GHz 5.78GHz 5.785GHz 5.79GHz 5.795GHz 5.8GHz 5.805GHz 5.81GHz 5.815GHz 5.82GHz 5.825GHz 5.83GHz 5.835GHz 5.84GHz

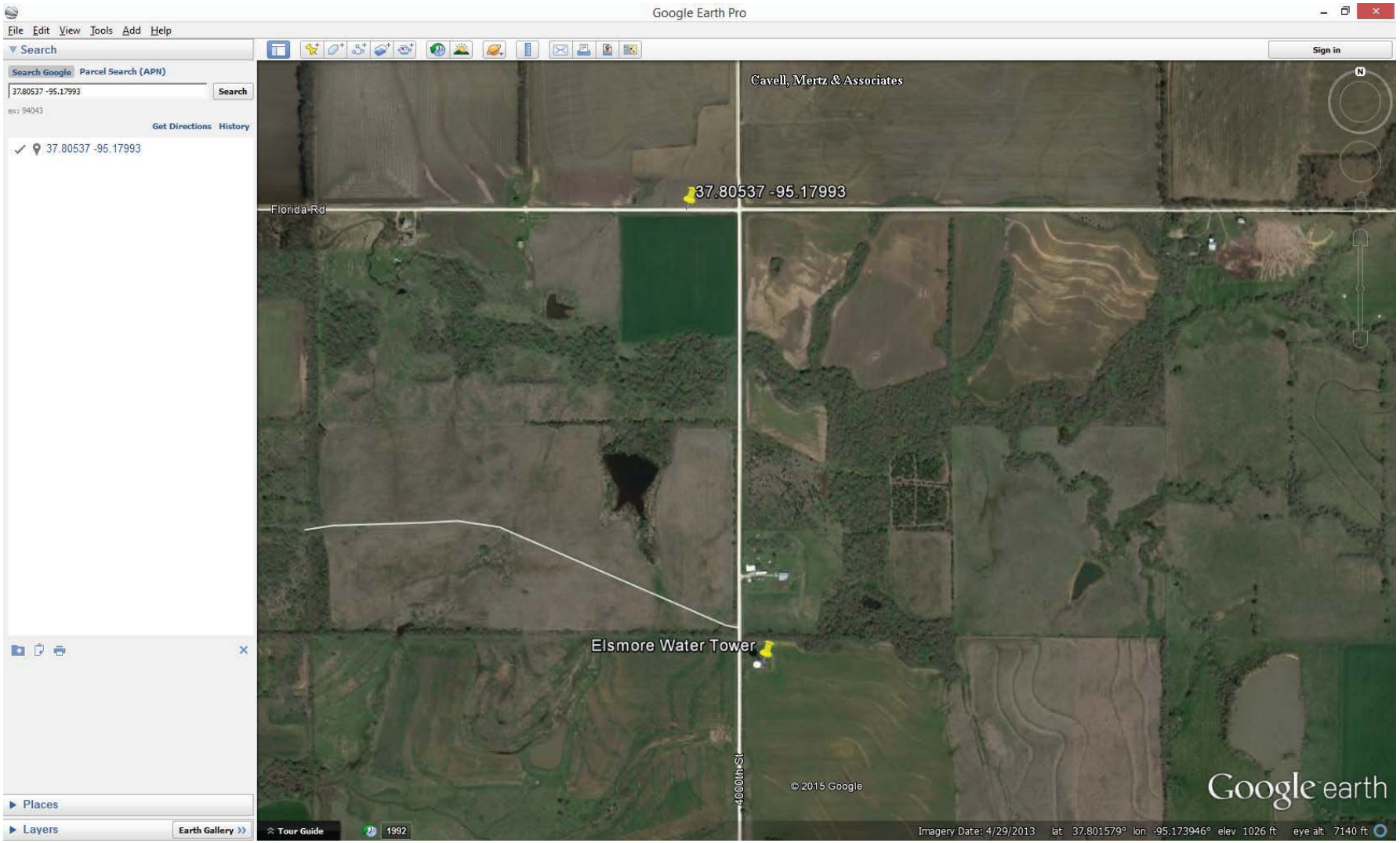
MAC Address	SSID	Device Name	Radio Mode	Encryption	Signal / Noise, dBm	Frequency, GHz / Channel
00:15:6D:64:81:2D	kwi-humboldt-north-bh	00156D64812D	802.11a		-81 / -90	5.18 / 36
24:A4:3C:F0:4F:9C	kwi-humboldt-north-5.3o	Humboldt North	802.11n airMAX		-67 / -91	5.275 / 55
DC:9F:DB:0A:4C:F9	kwi-humboldt-south-n5	Humboldt South	802.11n airMAX		-80 / -91	5.5 / 100
00:15:6D:E6:38:0F		Humboldt to lo	802.11n airMAX		-89 / -89	5.79 / 158

Scan

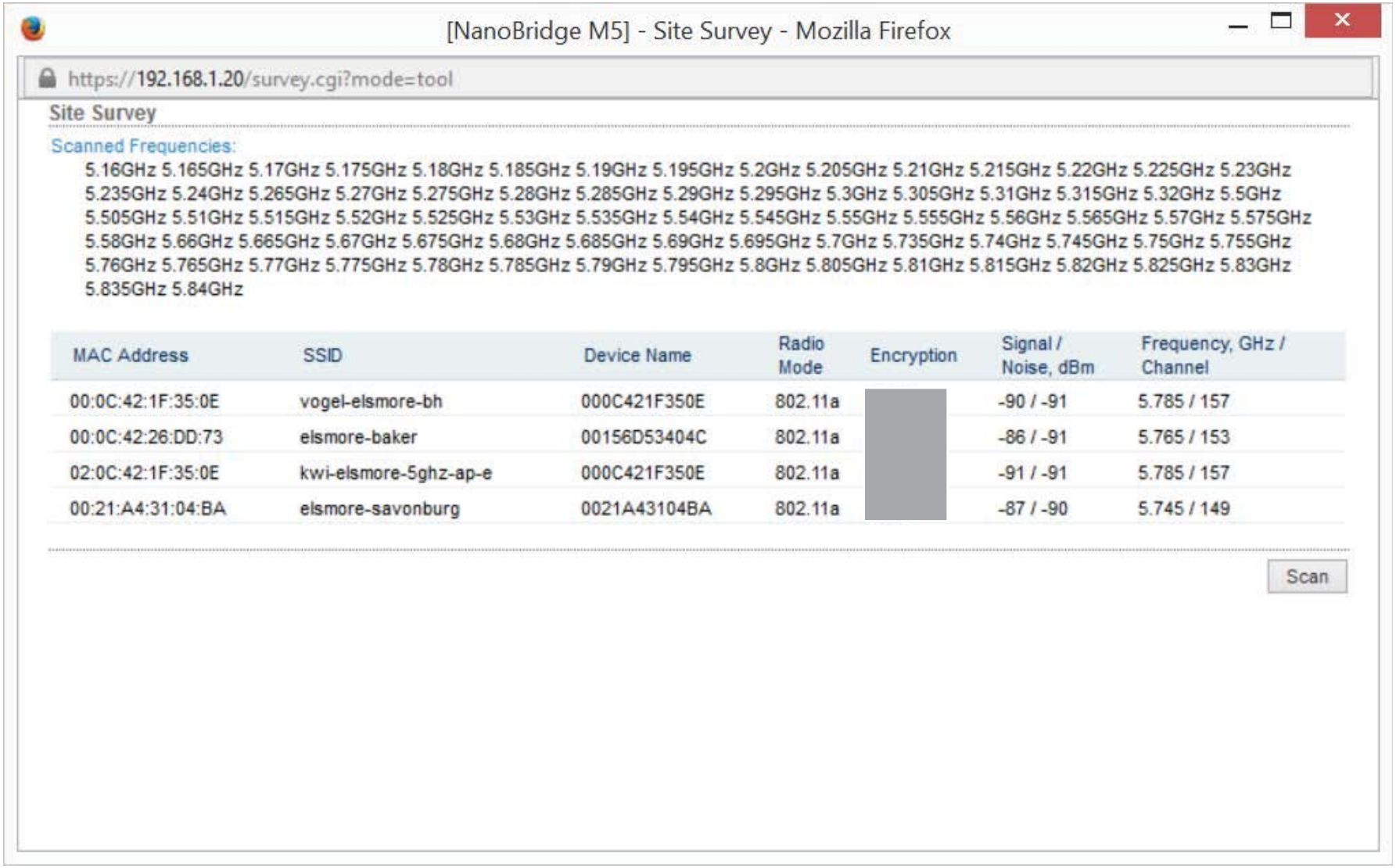
2.9. ELSMORE WATER TOWER

SSID Identification Testing – September 22, 2015

The Ubiquiti NanoBridge M5 and PowerBeam M2 was used to scan for SSIDs at the location below. This location has line of sight to the antennas mounted on the water tower.



Holding the M5 6’ above the ground and pointing it towards the Elsmore Water Tower, several KwiKom SSIDs were identified. See the screenshot of the scan results below.



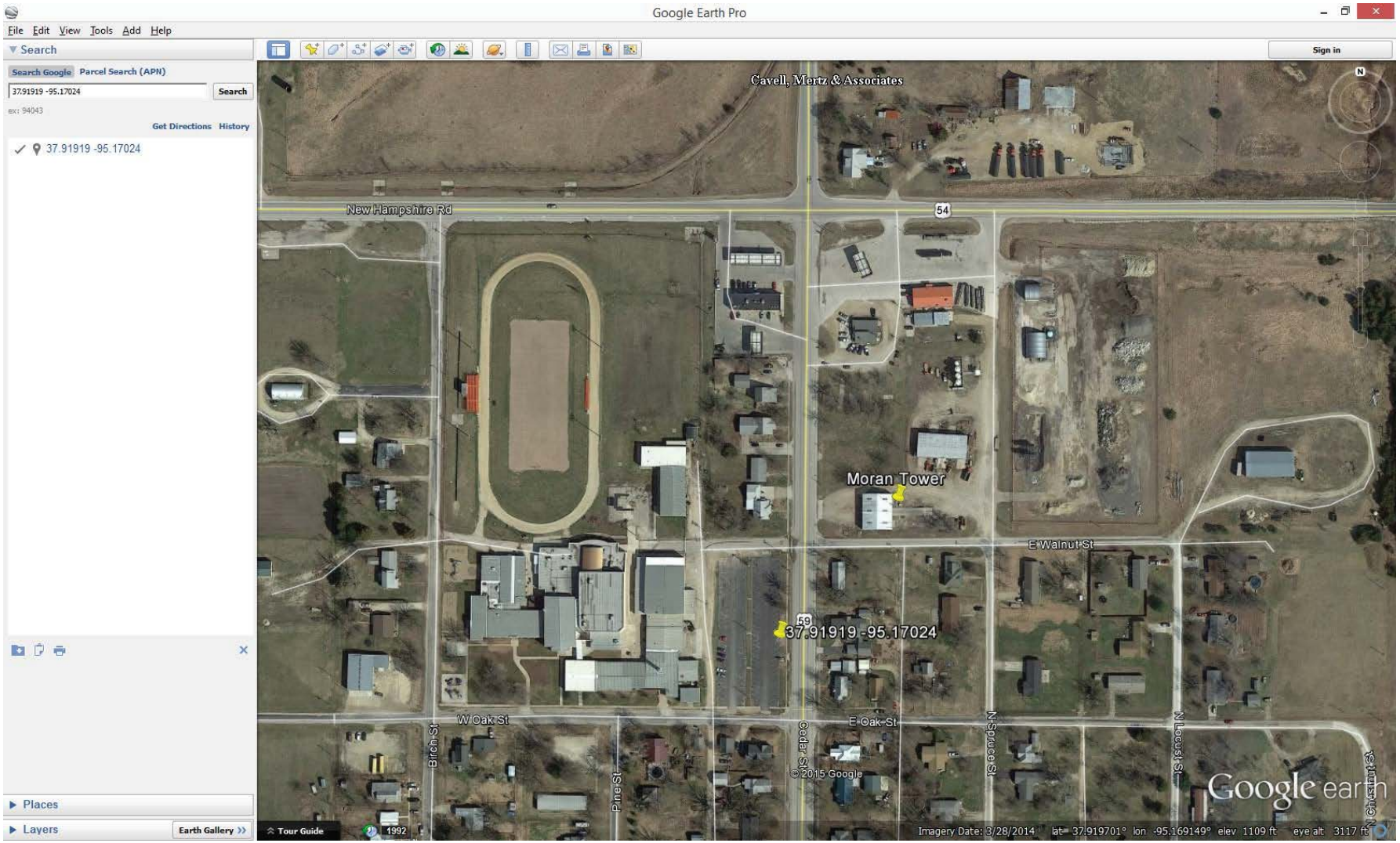
MAC Address	SSID	Device Name	Radio Mode	Encryption	Signal / Noise, dBm	Frequency, GHz / Channel
00:0C:42:1F:35:0E	vogel-elsmore-bh	000C421F350E	802.11a		-90 / -91	5.785 / 157
00:0C:42:26:DD:73	elsmore-baker	00156D53404C	802.11a		-86 / -91	5.765 / 153
02:0C:42:1F:35:0E	kwi-elsmore-5ghz-ap-e	000C421F350E	802.11a		-91 / -91	5.785 / 157
00:21:A4:31:04:BA	elsmore-savonburg	0021A43104BA	802.11a		-87 / -90	5.745 / 149

The M2 was held 6’ above the ground and pointed toward the Elsmore tower to scan the 2.4GHz band for SSIDs. The scan did not yield any SSIDs.

2.10. MORAN TOWER

SSID Identification Testing – September 22, 2015

The Ubiquiti NanoBridge M5 and PowerBeam M2 was used to scan for SSIDs at the location below. This location has line of sight to the antennas mounted on the tower.



Holding the M2 6’ above the ground and pointing towards the tower, no KwiKom SSIDs were identified. See the screenshot of the scan results below.

[PowerBeam M2 400] - Site Survey - Mozilla Firefox

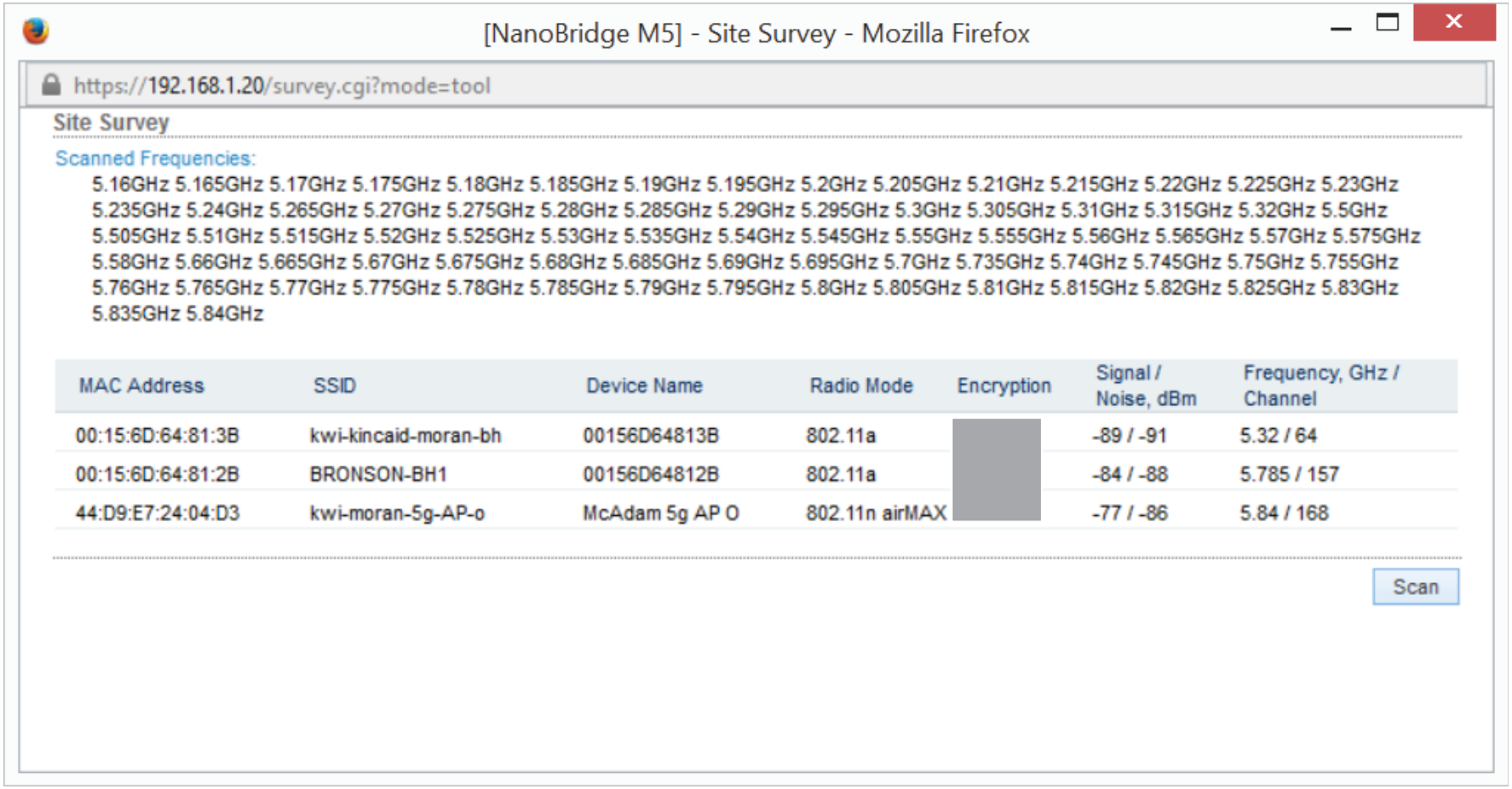
https://192.168.1.20/survey.cgi?mode=tool

2.412GHz 2.417GHz 2.422GHz 2.427GHz 2.432GHz 2.437GHz 2.442GHz 2.447GHz 2.452GHz 2.457GHz 2.462GHz

MAC Address	SSID	Device Name	Encryption	Signal / Noise, dBm	Frequency, GHz / Channel
00:27:22:36:A9:DE	stewart-vogent.net	Ubiquiti	W	88 / -89	2.432 / 5
0C:D5:02:9F:35:5A	westell5836		W	87 / -87	2.437 / 6
92:EF:68:A9:61:FC	CenturyLink1892		W	92 / -96	2.462 / 11
80:37:73:D7:CF:A9	NETGEAR41		W	89 / -96	2.437 / 6
C4:E9:84:87:60:AA	mightydog		W	74 / -87	2.437 / 6
A0:A3:E2:A0:5C:E8	CenturyLink1431		W	82 / -89	2.412 / 1
A0:63:91:6D:42:3C	NETGEAR70		W	89 / -89	2.412 / 1
30:B5:C2:66:3D:F0	Callaway_Wireless		W	78 / -87	2.437 / 6
30:B5:C2:66:5C:C8	Hyden_Wireless		W	87 / -87	2.437 / 6
A0:A3:E2:81:B8:A8	CenturyLink6163		W	90 / -90	2.462 / 11
4E:9E:FF:AF:E3:80	Crawford		W	92 / -96	2.417 / 2
04:18:D6:90:43:EC	Grewing_Wireless	Cindy Grewing	W	89 / -89	2.412 / 1
CE:5D:4E:F4:AF:90	CenturyLink5219		W	94 / -96	2.412 / 1
A0:A3:E2:A6:F3:78	CenturyLink6662		W	90 / -96	2.437 / 6
0C:D5:02:35:4E:19	westell2154		W	92 / -96	2.437 / 6
D0:57:4C:28:B1:70	intermec		W	93 / -96	2.437 / 6
68:1C:A2:06:1A:C4	Drakes		W	93 / -96	2.412 / 1
48:F8:B3:20:4E:8C	Carr		W	92 / -96	2.462 / 11
14:CC:20:B3:82:F8	K_Colgin		W	93 / -96	2.437 / 6
24:A4:3C:9C:AD:2E	Heskett_Wireless	AirGateway	W	95 / -96	2.462 / 11
DC:9F:DB:02:73:66	Adams Wireless	Adams Wireles	W	91 / -96	2.452 / 9
00:1A:70:32:E3:53	USD256		N	75 / -87	2.437 / 6
68:7F:74:5C:C8:89	USD256		N	89 / -90	2.417 / 2
00:1A:70:A9:E3:B8	USD256		N	83 / -87	2.437 / 6
20:E5:2A:0B:62:5C	NETGEAR42		N	85 / -87	2.437 / 6
68:7F:74:5E:7D:E7	USD256		N	90 / -90	2.462 / 11
68:7F:74:5C:C8:67	USD256		N	85 / -90	2.417 / 2
C8:D3:A3:25:75:FC	USD256		N	89 / -89	2.412 / 1
2C:44:FD:6A:D8:AC	HP-Print-AC-Deskjet 3520 series		N	92 / -96	2.437 / 6
D4:CA:6D:2E:30:9D	Chancy's_Wireless	D4CA6D2E309D	N	92 / -96	2.462 / 11
00:12:17:6B:38:38	USD256		N	92 / -96	2.437 / 6

Scan

Holding the M5 6’ above the ground and pointing towards the tower, several KwiKom SSIDs were identified. See the screenshot of the scan results below.



[NanoBridge M5] - Site Survey - Mozilla Firefox

https://192.168.1.20/survey.cgi?mode=tool

Site Survey

Scanned Frequencies:

5.16GHz 5.165GHz 5.17GHz 5.175GHz 5.18GHz 5.185GHz 5.19GHz 5.195GHz 5.2GHz 5.205GHz 5.21GHz 5.215GHz 5.22GHz 5.225GHz 5.23GHz 5.235GHz 5.24GHz 5.265GHz 5.27GHz 5.275GHz 5.28GHz 5.285GHz 5.29GHz 5.295GHz 5.3GHz 5.305GHz 5.31GHz 5.315GHz 5.32GHz 5.5GHz 5.505GHz 5.51GHz 5.515GHz 5.52GHz 5.525GHz 5.53GHz 5.535GHz 5.54GHz 5.545GHz 5.55GHz 5.555GHz 5.56GHz 5.565GHz 5.57GHz 5.575GHz 5.58GHz 5.66GHz 5.665GHz 5.67GHz 5.675GHz 5.68GHz 5.685GHz 5.69GHz 5.695GHz 5.7GHz 5.735GHz 5.74GHz 5.745GHz 5.75GHz 5.755GHz 5.76GHz 5.765GHz 5.77GHz 5.775GHz 5.78GHz 5.785GHz 5.79GHz 5.795GHz 5.8GHz 5.805GHz 5.81GHz 5.815GHz 5.82GHz 5.825GHz 5.83GHz 5.835GHz 5.84GHz

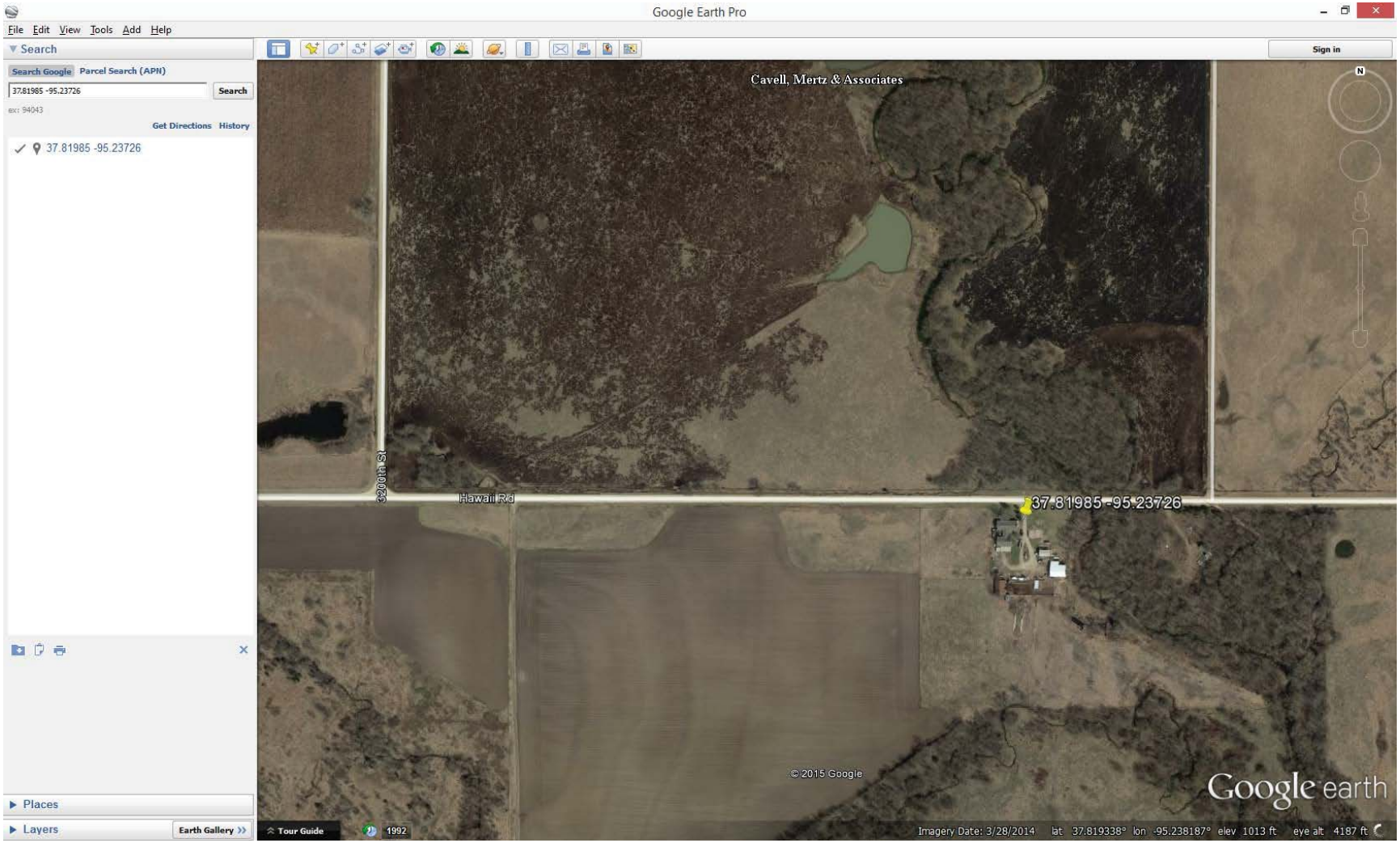
MAC Address	SSID	Device Name	Radio Mode	Encryption	Signal / Noise, dBm	Frequency, GHz / Channel
00:15:6D:64:81:3B	kwi-kincaid-moran-bh	00156D64813B	802.11a		-89 / -91	5.32 / 64
00:15:6D:64:81:2B	BRONSON-BH1	00156D64812B	802.11a		-84 / -88	5.785 / 157
44:D9:E7:24:04:D3	kwi-moran-5g-AP-o	McAdam 5g AP O	802.11n airMAX		-77 / -86	5.84 / 168

Scan

3. POTENTIAL CUSTOMER LOCATIONS

This section contains addresses, GPS coordinates, and test results for household locations within the LaHarpe Telephone exchange boundary where tests were performed and no KwiKom SSID was identified.

3.1. 3361 HAWAII ROAD, ELSMORE, KS 66732

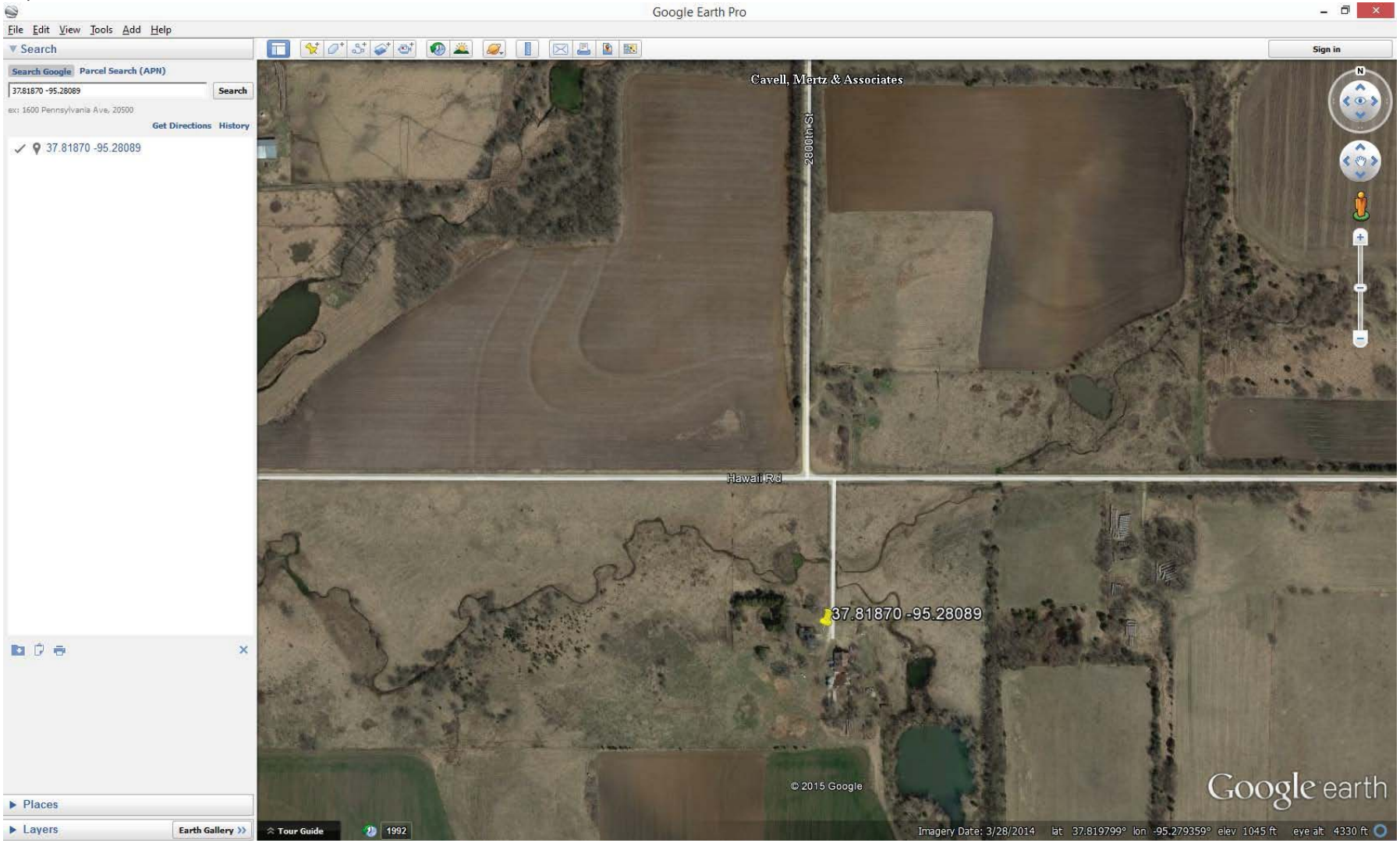


The M5 was used to scan for SSIDs from the Elsmore Water Tower. The CPE was mounted on a 9’ pole and held at several locations at the peak of the roof of the home. The CPE was approximately 25’ above ground level. There was not a KwiKom signal identified.

The M2 was not used to scan for SSIDs because no SSIDs were identified from the Elsmore Water Tower.

3.2. 2875 HAWAII ROAD, ELSMORE, KS 66732

This is one of the locations that was previously identified by the coverage map on KwiKom's website as not having service available. The field trip on Sept. 22-23, 2015 was made to determine if KwiKom service is available at this household location.

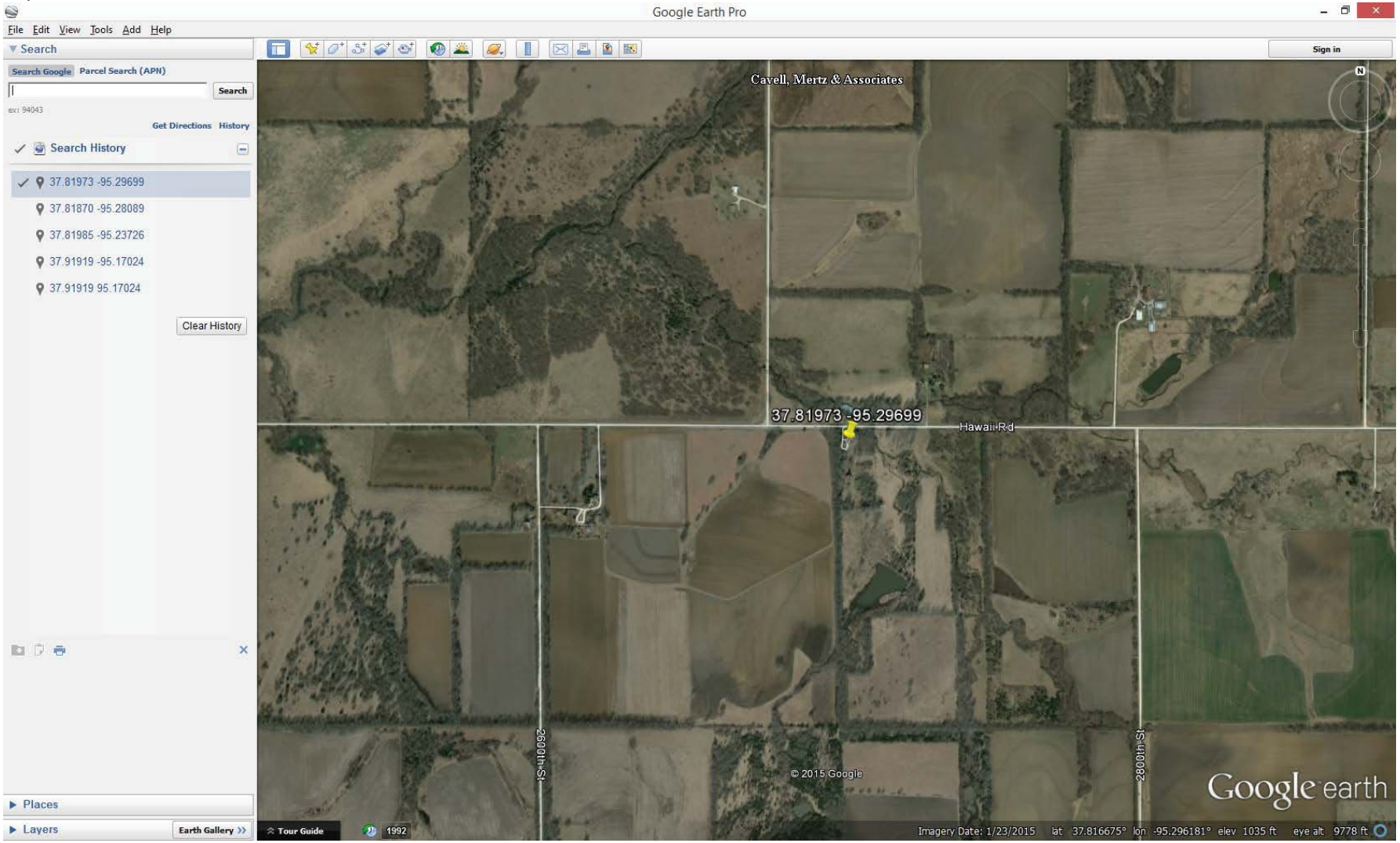


The M5 CPE was mounted to a 15’ pole and held on the peak of the roof of the second story of the home. The total height about the ground was approximately 35’ above ground level. The scan for SSIDs was performed while pointing the M5 towards the LaHarpe Water Tower, Elsmore Water Tower, and Humboldt. No SSIDs were identified in the results.

The M2 was not used because there were not any 2.4GHz SSIDs identified on any transmitter locations in the area.

3.3. 2701 HAWAII ROAD, LAHARPE, KS 66751

This is one of the locations that was previously identified by the coverage map on KwiKom's website as not having service available. The field trip on Sept. 22-23, 2015 was made to determine if KwiKom service is available at this household location.

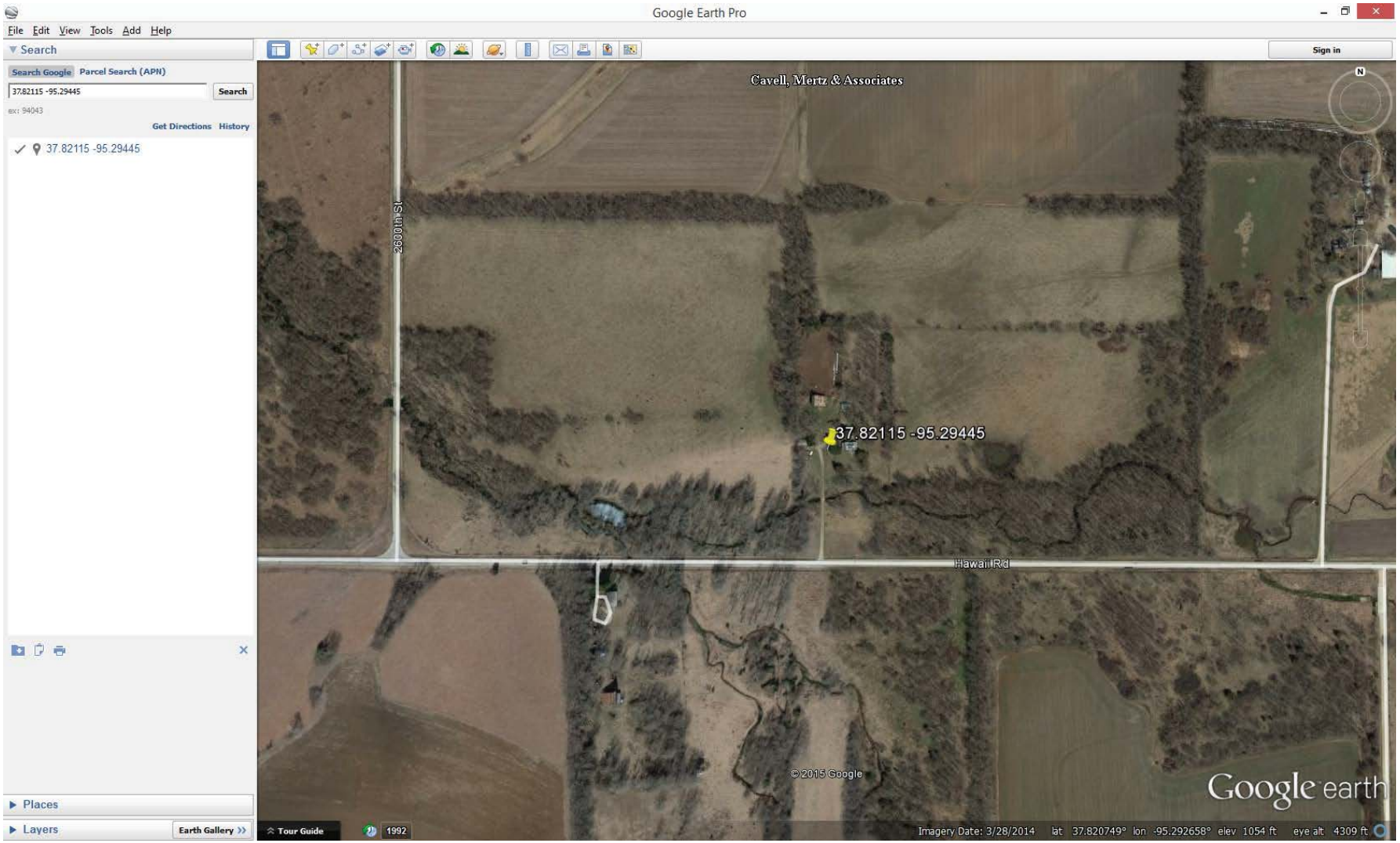


The M5 was mounted to the top of a 20’ fiberglass pole. The CPE was held against the home in several locations. Scans were performed while pointing toward the LaHarpe Water Tower, Elsmore Water Tower, and Humboldt. No KwiKom SSIDs were found.

The M2 was not used because there were not any 2.4GHz SSIDs identified on any transmitter locations in the area.

3.4. 2732 HAWAII ROAD, IOLA, KS 66749

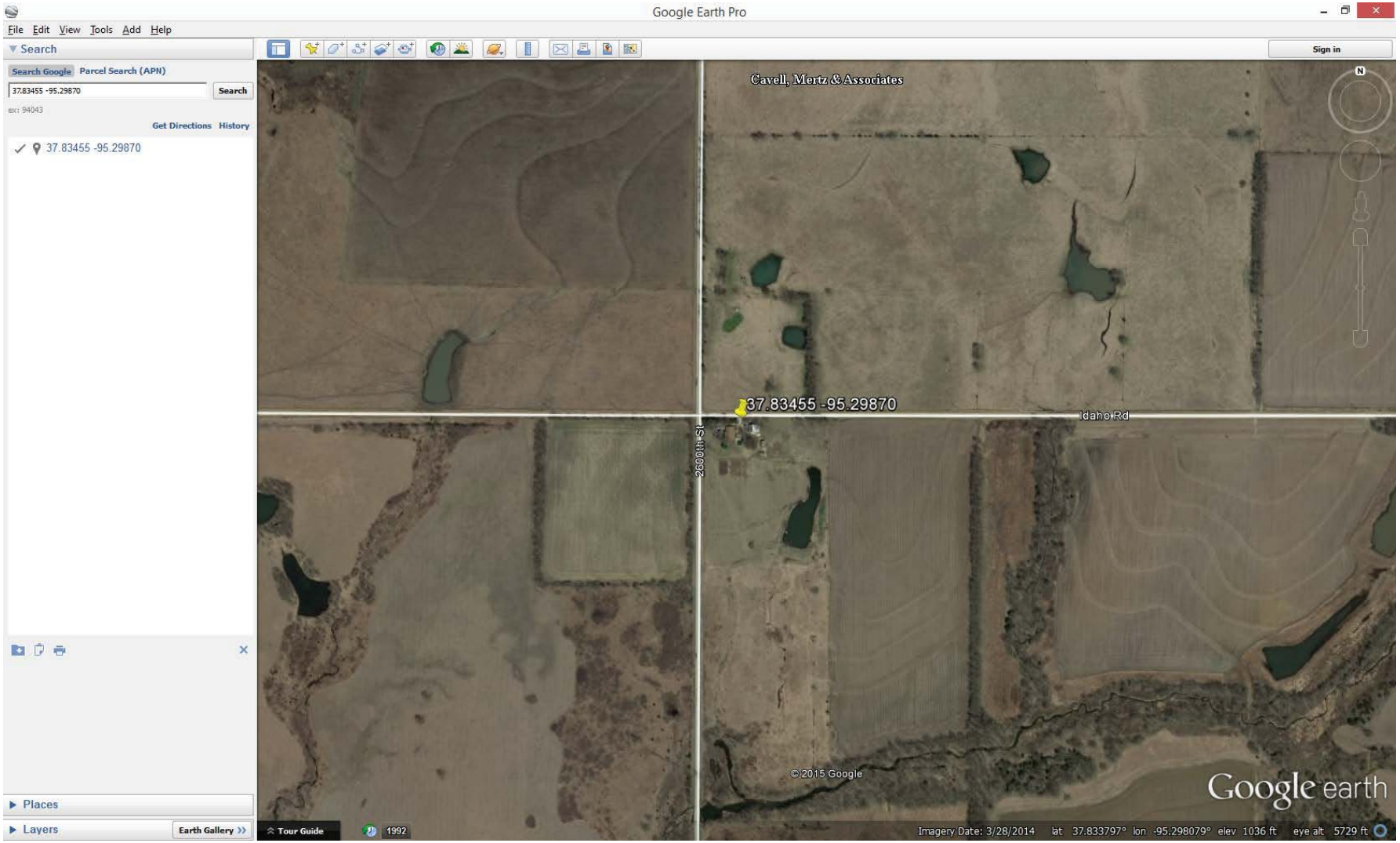
This is one of the locations that was previously identified by the coverage map on KwiKom's website as not having service available. The field trip on Sept. 22-23, 2015 was made to determine if KwiKom service is available at this household location.



The M5 was mounted to the top of a 20’ fiberglass pole. The CPE was held against the home in several locations. Scans were performed while pointing toward the LaHarpe Water Tower, Elsmore Water Tower, and Humboldt. No KwiKom SSIDs were identified.

The M2 was not used because there were not any 2.4GHz SSIDs identified on any transmitter locations in the area.

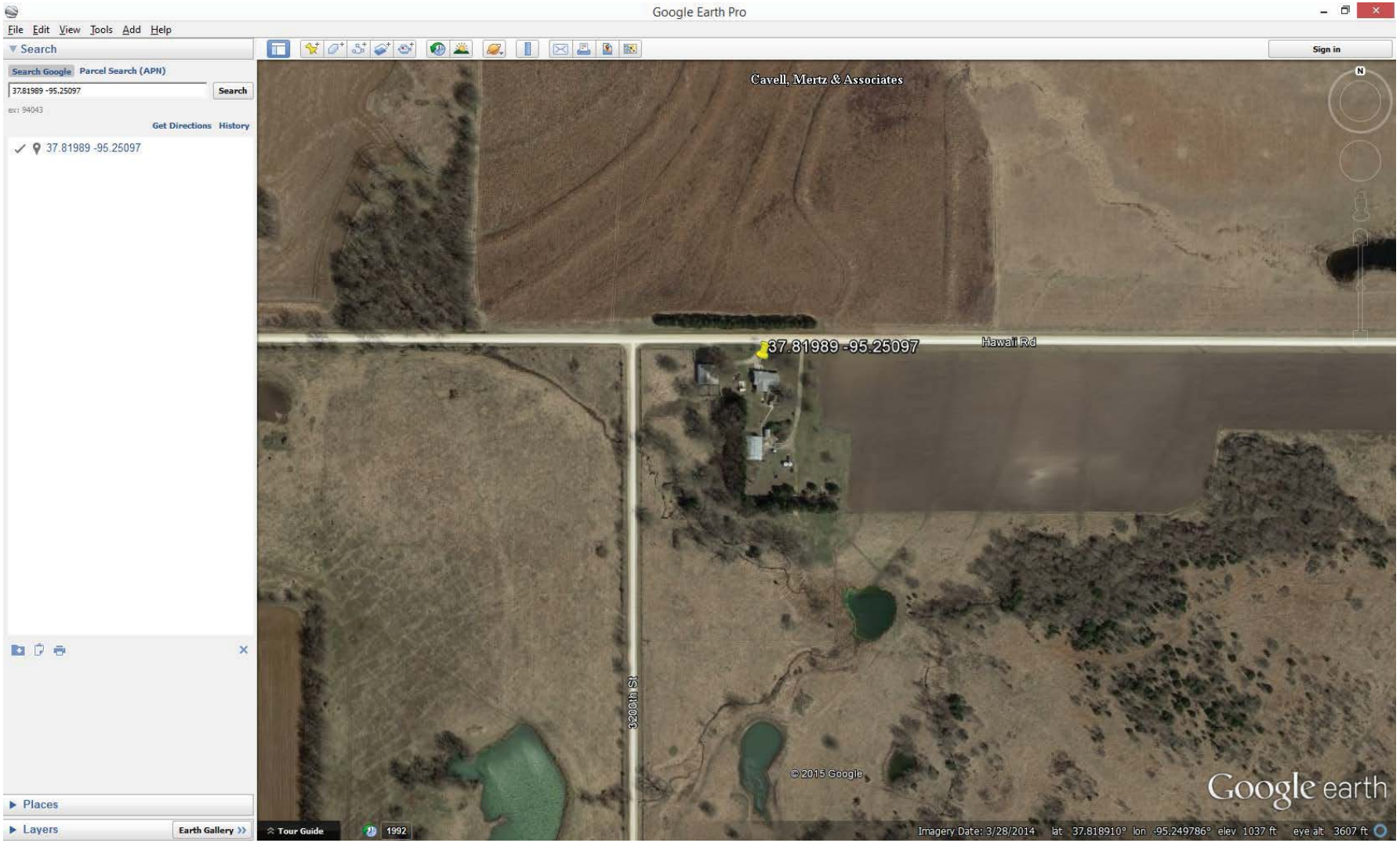
3.5. 697 2600TH STREET, LAHARPE, KS 66751



The M5 was mounted on a 6’ pole and held at several locations along the peak of the roof of the house. The CPE was approximately 20’ above the ground during the test. Scans were performed while pointing towards Elsmore Water Tower, LaHarpe Water Tower, Humboldt, Iola, and straight south. No KwiKom SSID was identified.

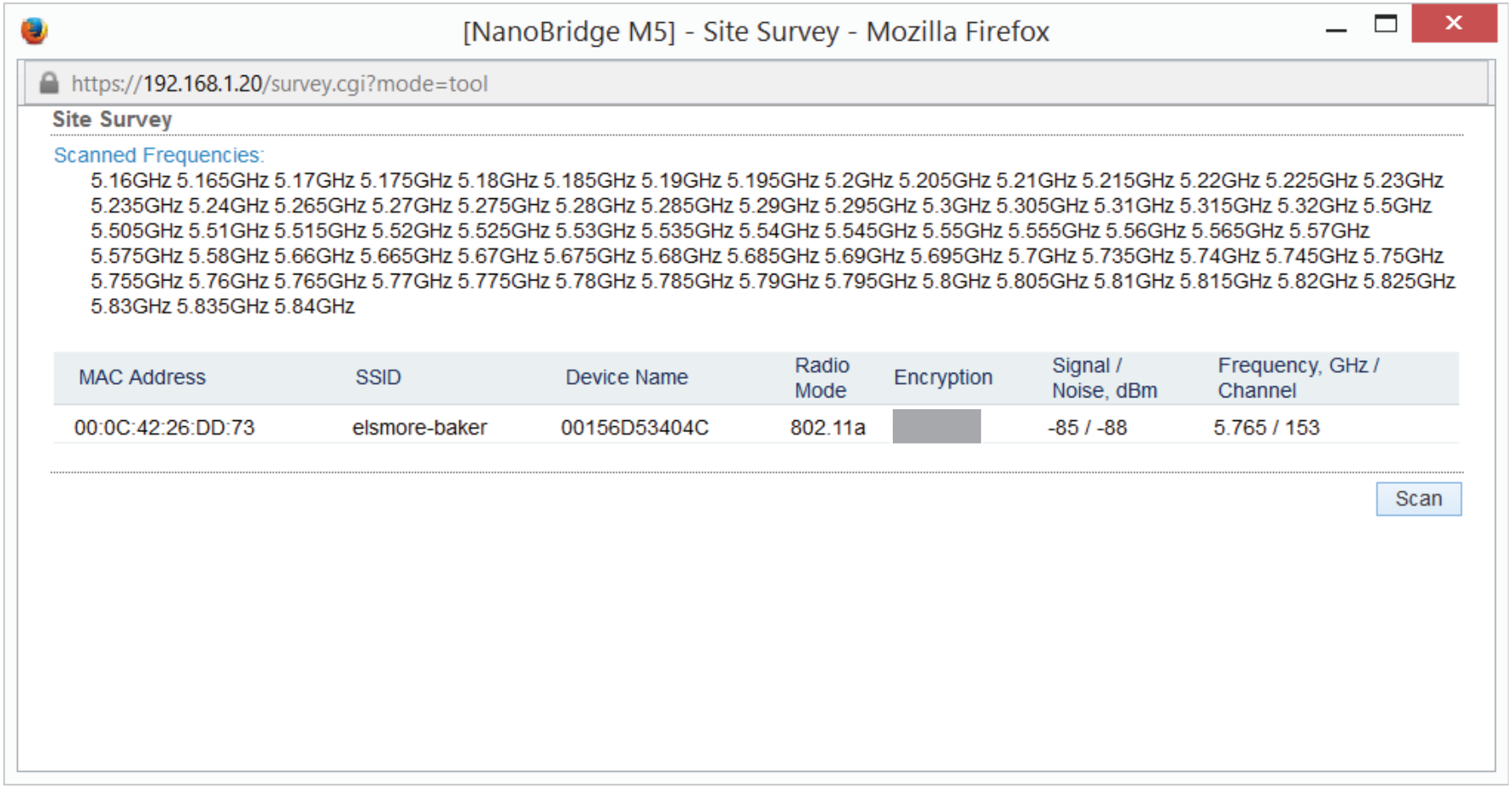
The M2 was not used because there were not any 2.4GHz SSIDs identified on any transmitter locations in the area.

3.6. 3203 HAWAII ROAD, ELSMORE, KS 66732

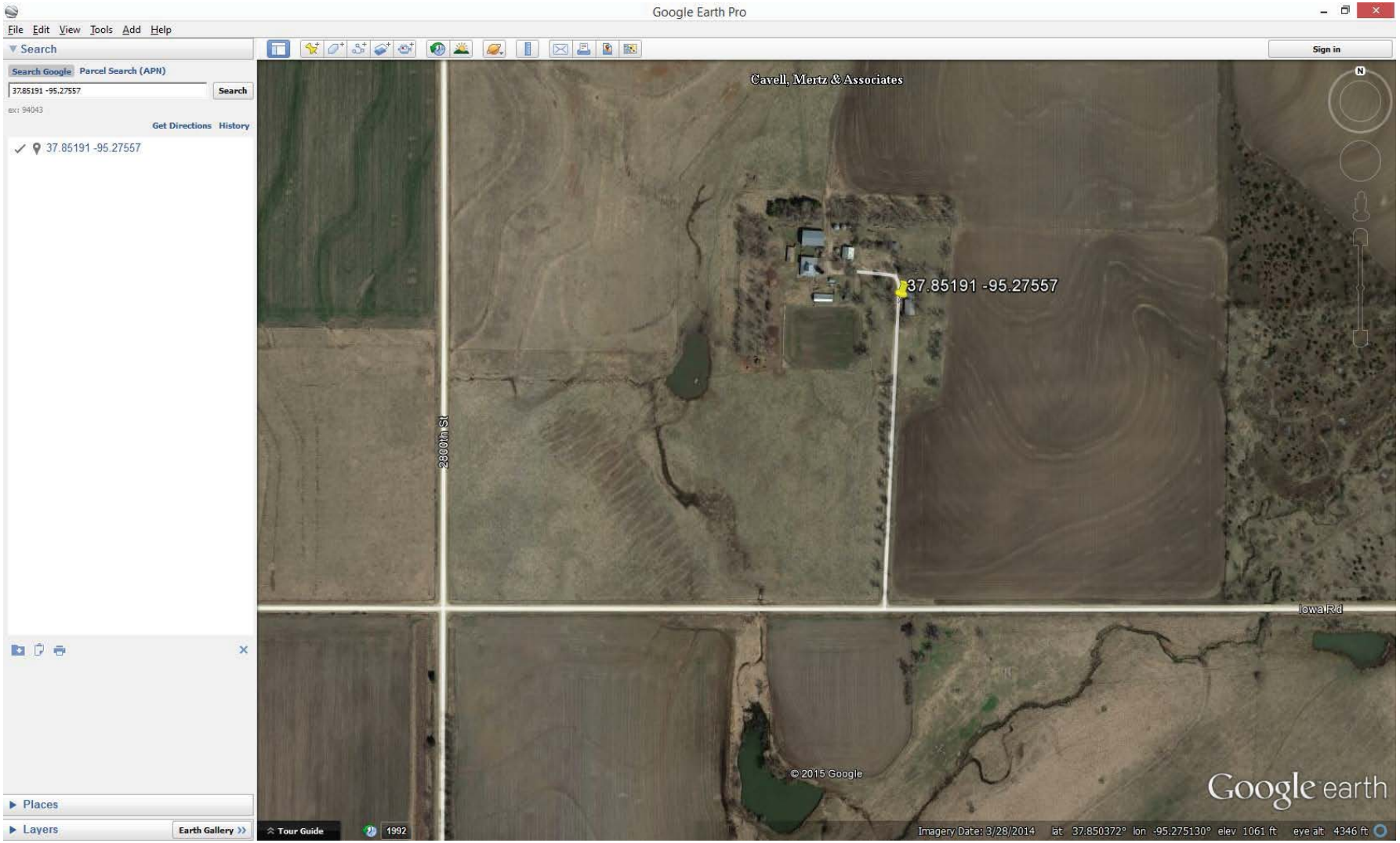


The M2 was not used because there were not any 2.4GHz SSIDs identified on any transmitter locations in the area.

The M5 was mounted on a 6’ pole and held at several locations along the peak of the roof of the house. The CPE was approximately 20’ above the ground during the test. Scans were performed while pointing towards Elsmore Water Tower, LaHarpe Water Tower, Humboldt, Iola, and straight south. See the screenshot below for the results of the scan. No KwiKom SSID was identified.



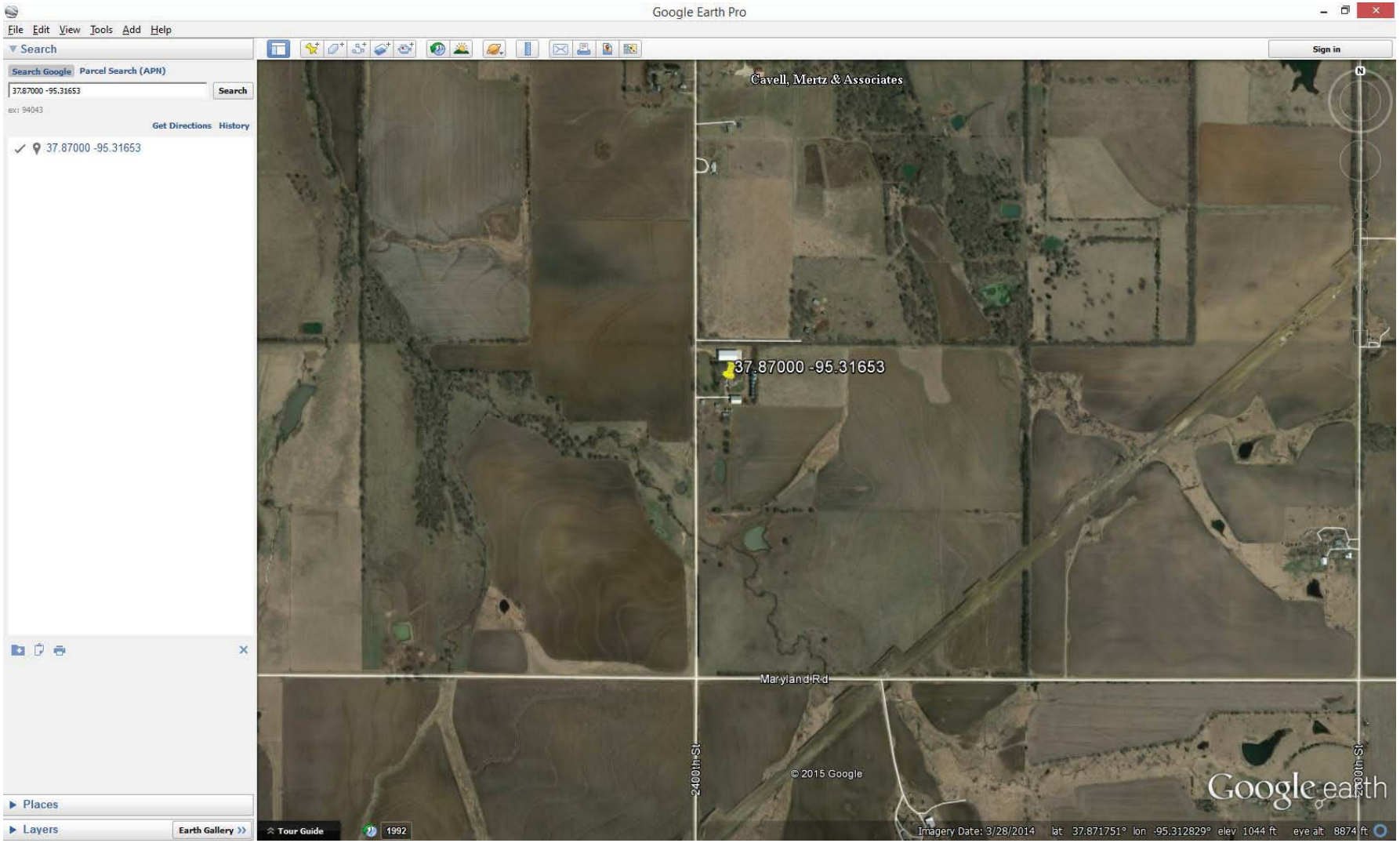
3.7. 2850 IOWA ROAD, LAHARPE, KS 66751



The M5 was mounted on a 6’ pole and held at several locations along the peak of the roof of the house. The CPE was approximately 20’ above the ground during the test from the roof. Scans were performed while pointing towards Elsmore Water Tower, LaHarpe Water Tower, Humboldt, Iola, and straight south. In addition, several tests were performed around the yard with the M5 mounted on a 20’ pole to eliminate some trees around the house that were in the path. No KwiKom SSID was identified.

The M2 was not used because there were not any 2.4GHz SSIDs identified on any transmitter locations in the area.

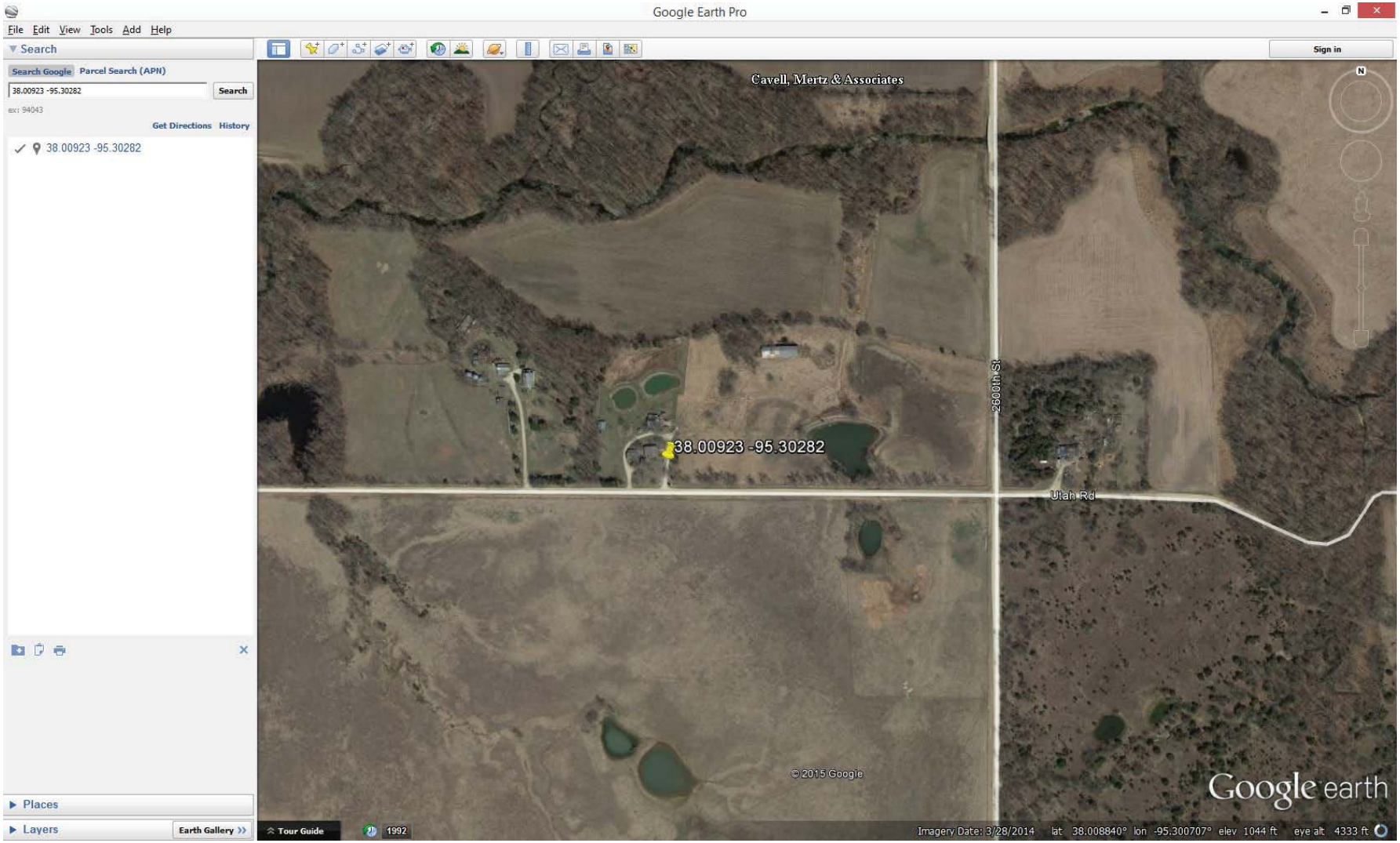
3.8. 941 2400TH STREET, IOLA, KS 66749



The M5 was mounted on a 6’ pole and held at several locations along the peak of the roof of the house. The CPE was approximately 20’ above the ground during the test from the roof. Scans were performed while pointing towards LaHarpe Water Tower, Humboldt, and Iola. In addition, several tests were performed around the yard with the M5 mounted on a 15’ pole to eliminate some trees around the house that were in the path. No KwiKom SSID was identified.

The M2 was not used because there were not any 2.4GHz SSIDs identified on any transmitter locations in the area.

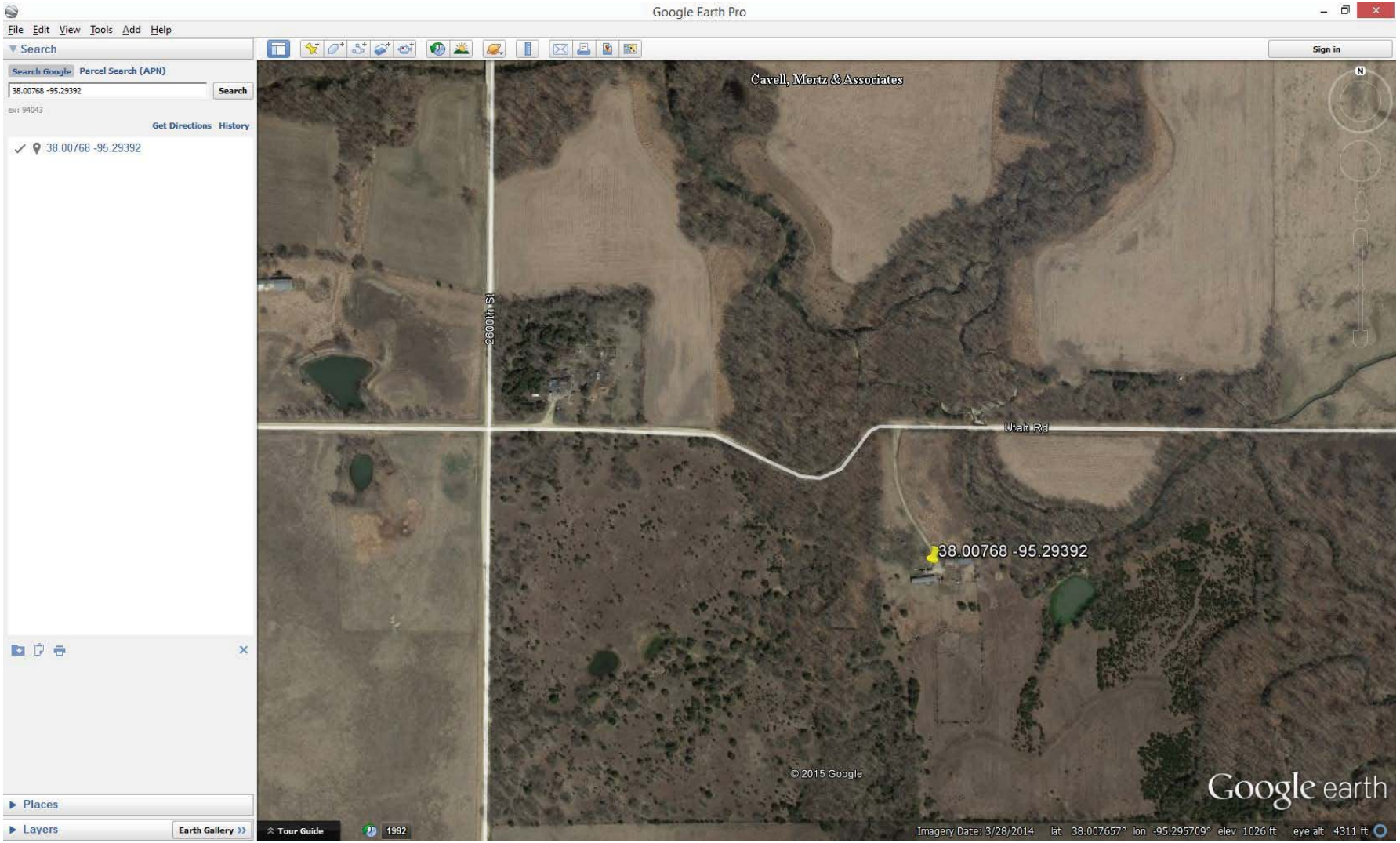
3.9. 2560 UTAH ROAD, LAHARPE, KS 66751



The peak of the roof wasn't very tall and the home was surrounded by large trees. The tests were performed near the road since it was the highest point on the property. Scans were performed while the M5 was mounted on a 15' pole and pointed towards North Iola Water Tower, Iola Water Tower, and LaHarpe Water Tower. No KwiKom SSIDs were identified.

The M2 was not used because there were not any 2.4GHz SSIDs identified on any transmitter locations in the area.

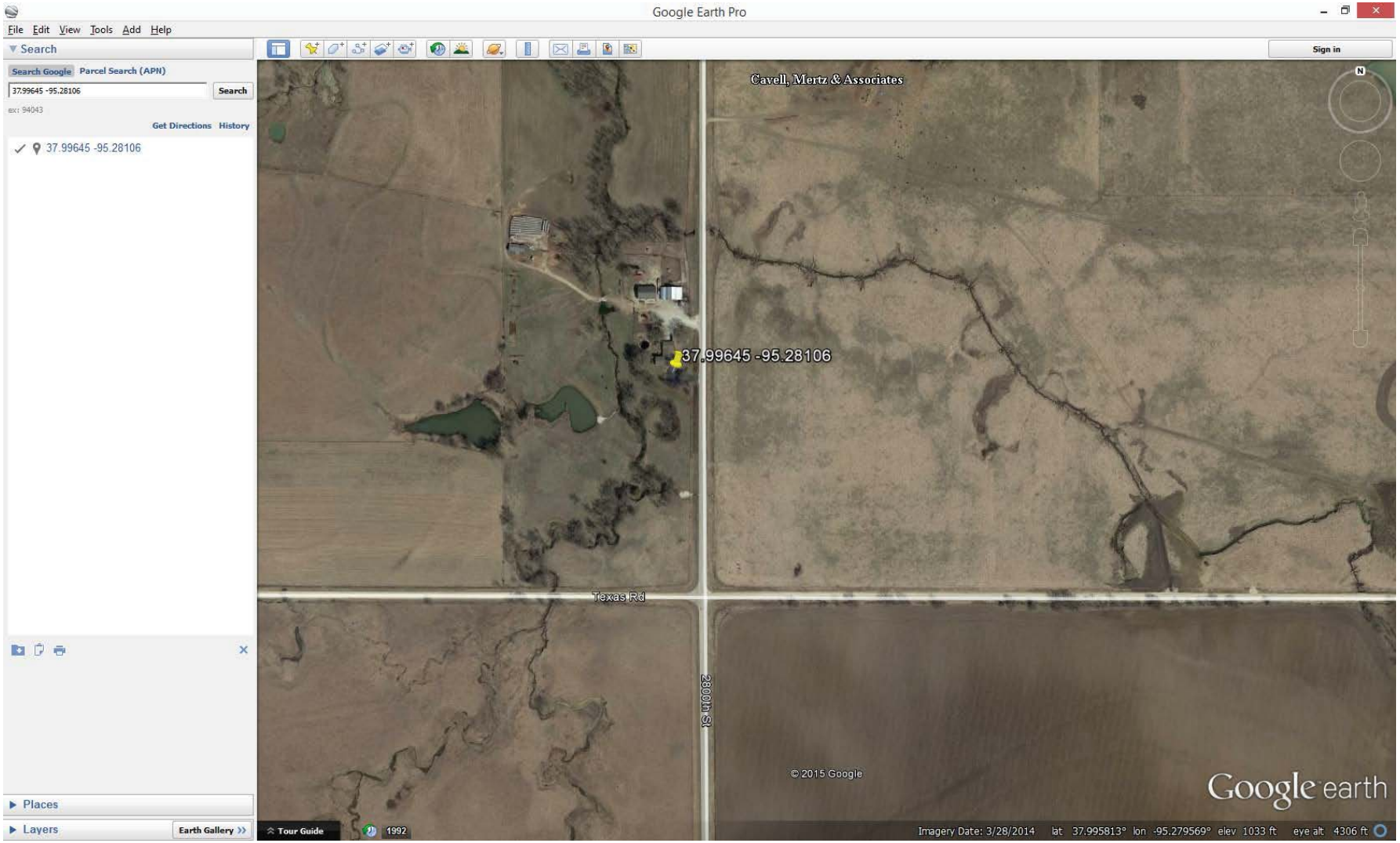
3.10. 2695 UTAH ROAD, LAHARPE, KS 66751



Using the M5 mounted on a 9’ pole and standing at the peak of the roof at the west end approximately 22’ above ground level, several scans were performed while pointing towards LaHarpe Water Tower, North Iola Water Tower, and Iola Water Tower. The same tests were performed on the roof at the east end. No KwiKom SSIDs were identified.

The M2 was not used because there were not any 2.4GHz SSIDs identified on any transmitter locations in the area.

3.11. 1816 2800TH STREET, LAHARPE, KS 66751



Using the M5 mounted on a 15’ pole and standing on the peak of the roof, tests were performed while pointing toward Moran, LaHarpe Water Tower, and Iola. A KwiKom SSID appeared in the scan results and identified as a backhaul link but no SSIDs for an access point (AP) were identified for serving customers. See the screenshot below for the results.

[NanoBridge M5] - Site Survey - Mozilla Firefox

https://192.168.1.20/survey.cgi?mode=tool

Site Survey

Scanned Frequencies:

5.16GHz 5.165GHz 5.17GHz 5.175GHz 5.18GHz 5.185GHz 5.19GHz 5.195GHz 5.2GHz 5.205GHz 5.21GHz 5.215GHz 5.22GHz 5.225GHz 5.23GHz 5.235GHz 5.24GHz 5.265GHz 5.27GHz 5.275GHz 5.28GHz 5.285GHz 5.29GHz 5.295GHz 5.3GHz 5.305GHz 5.31GHz 5.315GHz 5.32GHz 5.5GHz 5.505GHz 5.51GHz 5.515GHz 5.52GHz 5.525GHz 5.53GHz 5.535GHz 5.54GHz 5.545GHz 5.55GHz 5.555GHz 5.56GHz 5.565GHz 5.57GHz 5.575GHz 5.58GHz 5.66GHz 5.665GHz 5.67GHz 5.675GHz 5.68GHz 5.685GHz 5.69GHz 5.695GHz 5.7GHz 5.735GHz 5.74GHz 5.745GHz 5.75GHz 5.755GHz 5.76GHz 5.765GHz 5.77GHz 5.775GHz 5.78GHz 5.785GHz 5.79GHz 5.795GHz 5.8GHz 5.805GHz 5.81GHz 5.815GHz 5.82GHz 5.825GHz 5.83GHz 5.835GHz 5.84GHz

MAC Address	SSID	Device Name	Radio Mode	Encryption	Signal / Noise, dBm	Frequency, GHz / Channel
C8:B3:73:5A:83:77	Kent&Susan		802.11n		-71 / -90	5.745 / 149
00:15:6D:64:81:3B	kwi-kincaid-moran-bh	00156D64813B	802.11a		-89 / -92	5.32 / 64

Scan

4. MAC ADDRESS COMPARISON

The table below details the SSIDs and MAC addresses that were recorded for several of the transmitter locations on field trips made on Sept. 8, 2015 and Sept. 22, 2015. From this table, it is concluded that no equipment upgrades were performed on any of the transmitter towers listed.

Tower	SSID	MAC 9/8/15	MAC 9/22/15
LaHarpe WT	kwi-laharpe-5.4ap-n	00:27:22:44:8A:19	00:27:22:44:8A:19
LaHarpe WT	kwi-laharpe-5.4ap-e	00:27:22:14:B4:21	00:27:22:14:B4:21
LaHarpe WT	kwi-laharpe-5.4ap-sw	24:A4:3C:F0:52:5D	24:A4:3C:F0:52:5D
Elsmore WT	vogel-elsmore-bh	00:0C:42:1F:35:0E	00:0C:42:1F:35:0E
Elsmore WT	kwi-elsmore-5ghz-ap-e	02:0C:42:1F:35:0E	02:0C:42:1F:35:0E
Elsmore WT	elsmore-baker	00:0C:42:26:DD:73	00:0C:42:26:DD:73
??	kwi-shaw-5.4ap-n	00:27:22:18:96:C9	00:27:22:18:96:C9
Moran	kwi-kincaid-moran-bh	00:15:6D:64:81:3B	00:15:6D:64:81:3B
Moran	kwi-moran-5g-AP-o	44:D9:E7:24:04:D3	44:D9:E7:24:04:D3
Moran Rural WT	elsmore-moran2	DC:9F:DB:30:7B:49	DC:9F:DB:30:7B:49
Iola WT	kwi-iola-oak-5.4-new3	DC:9F:DB:30:7B:D3	DC:9F:DB:30:7B:D3
Iola WT	kwi-iola-oak-5.4-new2	DC:9F:DB:30:7B:23	DC:9F:DB:30:7B:23

5. CONCLUSION

It was observed on September 9, 2015 that the coverage map on KwiKom's website had been changed to show a claimed increase in coverage area where the previous map showed uncertain coverage or no coverage. The areas in the LaHarpe Telephone exchange shown to be without coverage were dramatically reduced on the new map. Comparisons were made between the field test results from Sept. 8, 2015 and Sept. 22-23, 2015. On both trips, SSIDs and the MAC addresses associated with each SSID were identified at each transmitter location. The MAC addresses of the SSIDs from transmitters recorded on Sept. 8, 2015 were the same MAC addresses recorded on Sept. 22, 2015. This indicates there has been no KwiKom upgrade to the transmitter equipment used to provide service to the households, contrary to the coverage claims represented by the changed KwiKom coverage map.

Further signal measurement at a variety of household locations within the LaHarpe Telephone Company study area conducted September 22-23, 2015 showed an absence of KwiKom signal, demonstrating KwiKom's inability to provide voice and 10 Mbps data service to those households. This absence of signal and lack of KwiKom service capability was additionally identified at three locations shown in KwiKom's earlier map to be unserved, but claimed to be served in KwiKom's revised map. The revised KwiKom map is shown by measurement not to be accurate.

Based on the data collected from multiple field tests, KwiKom is not capable of providing service to 100% of the households located with the LaHarpe Telephone study area.