

SUPREME COURT OF THE STATE OF NEW YORK  
COUNTY OF NEW YORK, PART 62

-----X

PEOPLE OF THE STATE OF NEW YORK,

- against -

ALI MOALAWI and RICKY MOORE,

Defendants.

-----X

Indictment No. 5652/2014  
Hon. Melissa C. Jackson, J.  
People's Response to the  
Suppression Motion Due:  
July 1, 2015  
Decision Scheduled for:  
July 22, 2015

**BRIEF OF AMICI CURIAE THE NEW YORK CIVIL LIBERTIES UNION, THE  
AMERICAN CIVIL LIBERTIES UNION, THE BRENNAN CENTER FOR JUSTICE,  
AND THE ELECTRONIC FRONTIER FOUNDATION IN SUPPORT OF DEFENDANT  
ALI MOALAWI'S MOTION TO SUPPRESS CELL PHONE LOCATION HISTORY**

Michael Price  
Rachel Levinson-Waldman, *pro hac vice*  
Brennan Center for Justice  
at NYU School of Law  
161 Avenue of the Americas, 12th Floor  
New York, NY 10013  
Tel: (646) 292-8335  
Fax: (212) 463-7308  
Email: michael.price@nyu.edu  
rachel.levinson.waldman@nyu.edu

Mariko Hirose  
Christopher Dunn  
New York Civil Liberties Union Foundation  
125 Broad St., Floor 19  
New York, NY 10004  
Tel: (212) 607-3300  
Fax: (212) 607-3318  
Email: mhirose@nyclu.org

Nathan Freed Wessler  
American Civil Liberties Union Foundation  
125 Broad Street, 18th Floor  
New York, NY 10004  
Tel: (212) 549-2500  
Fax: (212) 549-2654  
Email: nwessler@aclu.org

Dated: New York, NY  
June 12, 2015

*Counsel for Amici New York Civil Liberties  
Union, American Civil Liberties Union,  
Brennan Center for Justice, and the Electronic  
Frontier Foundation*

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## PRELIMINARY STATEMENT

This case raises an important question for all New Yorkers who own a cell phone: whether the government may, without a warrant, learn of people's comings and goings over time by compelling cell phone service providers to turn over their customers' location history. In this case, the prosecution warrantlessly obtained over half a year of Mr. Ali Moalawi's cell phone location history—revealing 10,438 data points about Mr. Moalawi's location for the six-and-a-half month period, or an average of one location point approximately every half hour. The records that the prosecution obtained paint a highly private profile of Mr. Moalawi, including the nights that he spent at his home in Huntington Station, the nights that he spent at his fiancée's home in Sea Gate, the days that he most likely did not work, and the patterns of his late-evening outings in Prospect Heights.

*Amici*, organizations dedicated to defending the right to privacy in the digital age,<sup>1</sup> argue that this cell phone location history must be suppressed because the New York State Constitution requires law enforcement to obtain a warrant prior to acquiring such intimately revealing records. In *People v. Weaver*, the New York Court of Appeals held that New Yorkers have a reasonable expectation of privacy in their location history captured by two months of GPS surveillance of a car, which readily reveals private trips and activities as well as political, religious, amicable, and amorous associations. 12 N.Y.3d 433 (2009). The record in this case demonstrates that cumulative cell phone location history reveals precisely the type of intimate inferences about Mr. Moalawi's life that *Weaver* protects—and that indeed it is more intrusive than GPS surveillance because it reveals information about a person's travels and presence in places a car might not go.

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<sup>1</sup> The statements of interest of *Amici Curiae* the New York Civil Liberties Union, the American Civil Liberties Union, the Brennan Center for Justice, and the Electronic Frontier Foundation are attached as Appendix A.

This Court should therefore hold that *Weaver* protects the right to privacy in cell phone location history, and that the right is not undermined by the so-called “third-party doctrine.” The third-party doctrine, which developed in the 1970s, withholds privacy protections from certain simple business records kept by third-party businesses. But the doctrine is inapposite to cell phone location history, which reveals a breathtaking quality and quantity of personal information incomparable to what could be gleaned from the simple business records of the past, with the primitive technology of the past. Cell phone location history should instead be compared to other highly sensitive and private records that have received constitutional protection regardless of whether they are in the hands of third parties.

*Weaver* instructed that the right to privacy in the State Constitution must be interpreted to protect the public from law enforcement’s unbridled use of emerging surveillance technologies. This Court should suppress the cell phone location history in this case and hold that under the State Constitution, the government must obtain a warrant before conducting location surveillance on New Yorkers through the acquisition of cell phone location history.

### **FACTUAL BACKGROUND**

Cell phones are now a “pervasive and insistent” part of American daily life—so much so that the United States Supreme Court has postulated that “the proverbial visitor from Mars might conclude they were an important feature of human anatomy.” *Riley v. California*, 134 S. Ct. 2473, 2484 (2014) (holding that given the prominent role cell phones play in people’s lives and the amount of private information they contain, law enforcement must presumptively obtain a warrant to search their contents). As of last year, 90% of American adults owned a cell phone. *See Mobile Technology Fact Sheet*, Pew Research Ctr. (Oct. 2014).<sup>2</sup> By mid-2014, approximately 44% of American households relied only on their cell phones for phone service,

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<sup>2</sup> Available at <http://www.pewinternet.org/fact-sheets/mobile-technology-fact-sheet/>.

see Stephen J. Blumberg & Julian V. Luke, Nat'l Ctr. for Health Statistics, *Wireless Substitution: Early Release of Estimates from the National Health Interview Survey, January-June 2014*, at 2 (Dec. 2014),<sup>3</sup> and “a significant majority of American adults” were using “smart phones” not only for phone calls but to transmit data—including sending emails and browsing the Internet. *Riley*, 134 S. Ct. at 2484, 2489 (citing A. Smith, Pew Research Center, *Smartphone Ownership—2013 Update* (June 5, 2013)).

The service provided by these cell phones, carried by almost all Americans almost everywhere they go, generates a digital trail of location information. This is because every few seconds whenever cell phones are on, as well as in response to incoming and outgoing calls and data, cell phones automatically connect with their carriers' network using radio signals sent to nearby base stations, or “cell sites.” See *In re U.S. for an Order Authorizing the Release of Historical Cell-Site Info.*, 809 F. Supp. 2d 113, 115 (E.D.N.Y. 2011) (hereinafter “*In re Historical Cell-Site Info., E.D.N.Y.*”) (describing cell-site location technology); *Commonwealth v. Augustine*, 467 Mass. 230, 237 (2014); *State v. Earls*, 214 N.J. 564, 576 (2013); see also *The Electronic Communications Privacy Act (ECPA), Part 2: Geolocation Privacy and Surveillance: Hearing Before the Subcomm. on Crime, Terrorism, Homeland Sec. & Investigations of the H. Comm. on the Judiciary*, 113th Cong. 6 (2013) (statement of Matt Blaze, Associate Professor, University of Pennsylvania) (hereinafter, “Blaze Testimony 2013”).<sup>4</sup> Cell phone companies have varying practices on retaining records of these connections. Companies have historically retained the records of connections at the beginning and end of each call, but it is also possible to retain records of connections whenever phones send or receive text messages, e-mail, or other

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<sup>3</sup> Available at <http://www.cdc.gov/nchs/data/nhis/earlyrelease/wireless201412.pdf>.

<sup>4</sup> Available at [http://judiciary.house.gov/\\_files/hearings/113th/04252013/Blaze%2004252013.pdf](http://judiciary.house.gov/_files/hearings/113th/04252013/Blaze%2004252013.pdf). The prosecution, the defense, and courts have all relied on Professor Blaze's testimony in setting forth details of cell phone technology. See, e.g., *Augustine*, 467 Mass. at 237 n.17; *Earls*, 214 N.J. at 576.



forms of data, and even every periodic connection with the cell site regardless of whether the phone is being used. *See, e.g., Augustine*, 467 Mass. at 239-40 (describing acquisition of cell site connection records for phone calls); *Earls*, 214 N.J. at 577 (explaining that a log of cell site connections is ordinarily created each time a call is made or data downloaded); *see also* Blaze Testimony 2013 at 13-14 (“Creating and maintaining detailed records about the locations of cell phones as they move from place to place makes good engineering sense, and we should expect the trend toward more, and more precise, location data collection to continue . . .”).

A cell phone’s connection with a cell site reveals information about the location of the cell phone in at least four ways. First, “[i]f a user’s cell phone has communicated with a particular cell-site, this strongly suggests that the user has physically been within the particular cell-site’s geographical range.” *In re Historical Cell-Site Info.*, E.D.N.Y., 809 F. Supp. 2d at 115; *see also* Thomas A. O’Malley, *Using Historical Cell Site Analysis Evidence in Criminal Trials*, U.S. Att’y’s’ Bull., Nov. 2011, at 16, 19.<sup>5</sup> Second, the cell phone connects to the cell site with the strongest radio signal, which is typically the cell site closest to the cell phone or one that is in direct line of sight of a cell phone if the cell phone is within the geographic range of several cell sites. *See Earls*, 214 N.J. at 576 (citing *ECPA Reform and the Revolution in Location Based Technologies and Services: Hearing Before the Subcomm. on the Constitution, Civil Rights, and Civil Liberties of the H. Comm. on the Judiciary*, 111th Cong. 12-30 (2010) (statement of Prof. Matt Blaze) (hereinafter, “Blaze Testimony 2010”)); *United States v. Davis*, No. 12-12928, 2015 WL 2058977, at \*4 (11th Cir. May 5, 2015) (citing testimony at trial from prosecution’s witness that “when a cellular phone user makes a call, the user’s cell phone sends a signal to a nearby cell tower, which is typically but not always the closest tower to the phone”). Third, the geographic range of the cell site is often divided into three or more directional “sectors,” and

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<sup>5</sup> Available at [http://www.justice.gov/usao/eousa/foia\\_reading\\_room/usab5906.pdf](http://www.justice.gov/usao/eousa/foia_reading_room/usab5906.pdf).

information about the sector of the cell site with which the phone is connecting further narrows the probable location of the cell phone by indicating the direction from which the cell phone is connecting to the cell site. *See Augustine*, 467 Mass. at 237-39 (citing Blaze Testimony 2013); *Davis*, 2015 WL 2058977, at \*4 (citing testimony that “[e]ach cell phone tower has a circular coverage of radius, and the ‘coverage pie’ for each tower is further divided into either three or six parts, called sectors”); O’Malley, U.S. Att’ys’ Bull. at 19. Fourth, some cell phone carriers can estimate the location of the cell phone with further accuracy by calculating and logging the phone’s distance from the cell site. *See Augustine*, 467 Mass. at 238 n.19 (noting that cell phone location records may currently include the cell phone user’s latitude and longitude); Verizon Wireless, *Law Enforcement Resource Team* 21, 25 (2009).<sup>6</sup>

The precision of this cell site location information varies, but is improving rapidly so that the technology available for this form of location tracking can sometimes “place a particular [cell phone] within a [geographic] range approaching the accuracy of GPS.” *In re U.S. for an Order Authorizing Disclosure of Location Info. of a Specified Wireless Telephone*, 849 F. Supp. 2d 526, 534 (D. Md. 2011) (hereinafter, “*In re Location Info., D. Md.*”) (citing Blaze Testimony 2010). One factor driving increased accuracy has been government regulations designed to improve 911 emergency response services. Current law requires cell phone providers to improve location tracking accuracy so that by 2016 the providers will be able to locate phones in real time to within 100 meters for 67% of all calls. *See* 47 C.F.R. § 20.18(h)(1)(i)(C)(2015). New rules from the Federal Communications Commission require even greater precision, including the ability to determine which floor of a building the phone is located on. *In re Wireless E911 Location*

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<sup>6</sup> Available at <https://info.publicintelligence.net/VerizonLawEnforcementResourceTeam.pdf>.

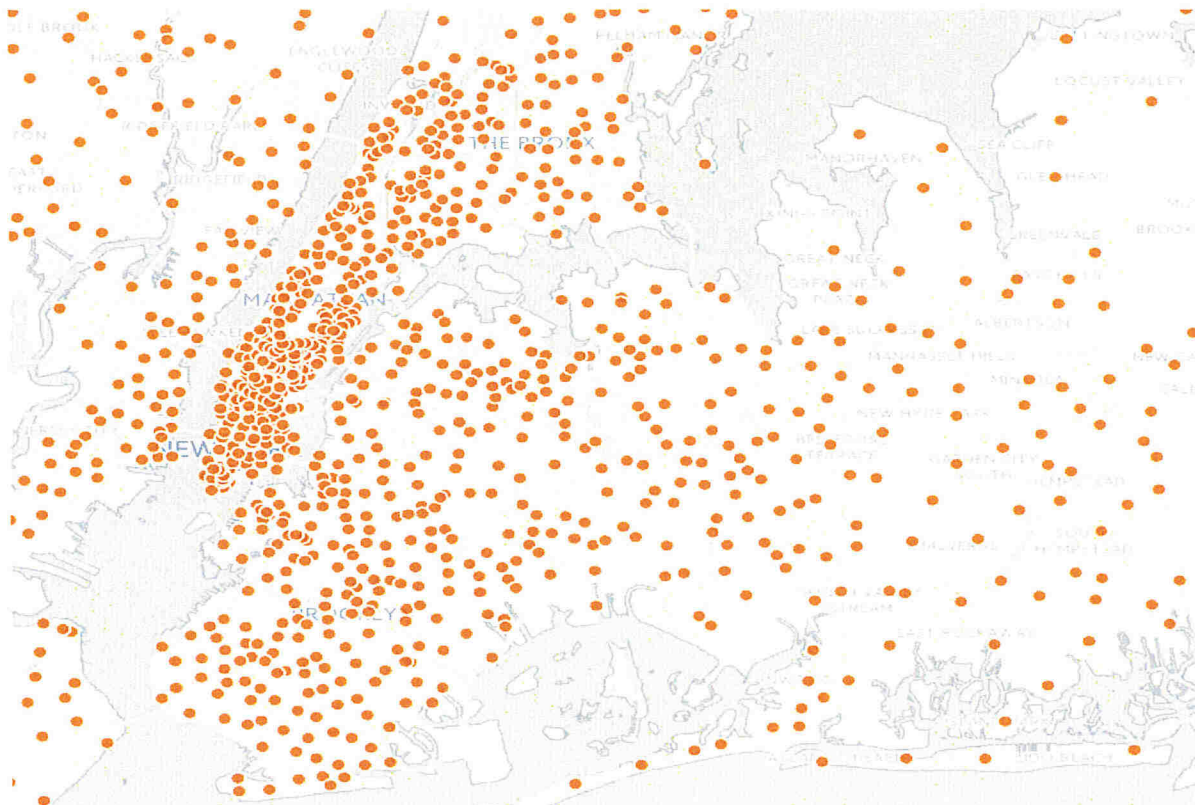
*Accuracy Requirements*, PS Docket No. 07-114, Fourth Report and Order at 1-5 (F.C.C. Jan. 29, 2015).<sup>7</sup>

Another factor driving accuracy is the increasing demand for cell phone ownership and data service. *See Augustine*, 467 Mass. at 239; *Earls*, 214 N.J. at 577-78. Cell phone carriers have responded to this demand by operating more cell sites, *see Augustine*, 467 Mass. at 239; *Earls*, 214 N.J. at 577-78, so that between 2003 and 2013, the number of cell sites in the United States more than doubled from 139,338 to 304,360, *see* CTIA – The Wireless Ass’n, *Wireless Industry Survey* 11 (2014).<sup>8</sup> Carriers have also deployed “microcells” and other such smaller cellular base stations that may cover only individual rooms or floors within buildings. *See Earls*, 214 N.J. at 577-78; Blaze Testimony 2013 at 9-12. These actions have increased the density of the cell sites, resulting in a smaller geographic coverage area for each cell site and an increase in the accuracy of the cell site location information. *See Augustine*, 467 Mass. at 239; *Earls*, 214 N.J. at 577-78. In urban areas like New York City, cell sites are densely packed and therefore more likely to produce accurate location data—accuracy that will only continue to improve. *See Davis*, 2015 WL 2058977, at \*4 (citing testimony at trial that “the density of cell towers in an urban area like Miami would make the coverage of any given tower smaller,” though there was no testimony on the actual coverage area); *Earls*, 214 N.J. at 578 (“In dense urban areas and environments that use ‘microcells’ . . . a sector’s coverage area can be ‘quite small indeed.’” (quoting Blaze Testimony 2013)).

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<sup>7</sup> Available at [https://apps.fcc.gov/edocs\\_public/attachmatch/FCC-15-9A1.pdf](https://apps.fcc.gov/edocs_public/attachmatch/FCC-15-9A1.pdf).

<sup>8</sup> Available at [http://www.ctia.org/docs/default-source/Facts-Stats/ctia\\_survey\\_ye\\_2013\\_graphics-final.pdf?sfvrsn=2](http://www.ctia.org/docs/default-source/Facts-Stats/ctia_survey_ye_2013_graphics-final.pdf?sfvrsn=2).



**MAP 1:** Cell sites operated by Sprint, Mr. Moalawi’s carrier, in the New York City area, 2014.<sup>9</sup>

“The implication of these facts”—the ubiquity of cell phones and the increasing accuracy of the location information generated by their connections with their networks —“is that cellular service providers have records of the geographic location of almost every American at almost every time of day and night.” *In re Historical Cell-Site Info., E.D.N.Y.*, 809 F. Supp. 2d at 115. The government may take advantage of this either by compelling provider cooperation to track a cell phone’s cell site connections in real time or, as it did here, by obtaining access to the database of historical cell site location information. *See Augustine*, 467 Mass. at 240 n.24; *Earls*, 214 N.J. at 577. The question presented in this case is whether the government must obtain a warrant before tapping into this historical database of people’s cell phone location information.

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<sup>9</sup> For descriptions of how maps in this brief were created, and for larger versions of the maps, see the affidavit of Rebecca Anne Cadoff attached as [Appendix B](#).

## ARGUMENT

In holding in *People v. Weaver* that GPS surveillance requires a warrant, the Court of Appeals made clear that this State’s Constitution protects the public from law enforcement’s unbridled use of “sophisticated technological means” that infringe on people’s reasonable expectations of location privacy. 12 N.Y.3d at 445. This Court should apply *Weaver* to law enforcement’s acquisition of cell phone location history, joining the courts around the country—including the highest courts of three states—that have adopted *Weaver*’s reasoning to find constitutional protection against warrantless cell phone location surveillance. *See, e.g., Augustine*, 467 Mass. at 231, 248; *Earls*, 214 N.J. at 588; *Tracey v. State*, 152 So. 3d 504, 525-26 (Fla. 2014); *United States v. Cooper*, No. 13-cr-00693-SI-1, 2015 WL 881578, at \*6-8 (N.D. Cal. 2015); *In re Historical Cell-Site Info., E.D.N.Y.*, 809 F. Supp. 2d at 115; *In re Location Info., D. Md.*, 849 F. Supp. 2d at 539-43.<sup>10</sup>

### **I. CELL PHONE LOCATION HISTORY IMPLICATES NEW YORKERS’ REASONABLE EXPECTATIONS OF PRIVACY IN LOCATION HISTORY.**

In *Weaver*, the Court of Appeals recognized that New Yorkers have reasonable expectations of privacy in their location history under Article I, § 12 of the State Constitution. *See* 12 N.Y.3d at 444-45. *Weaver* involved law enforcement’s use of a GPS device to track a person’s location over a 65-day period. *Id.* at 436. Such location monitoring, the Court recognized, reveals “[t]he whole of a person’s progress through the world, into both public and private spatial spheres,” including trips of “indisputably private nature.” *Id.* at 441. Moreover, the “highly detailed profile” that could be built by aggregating records of such trips reveals not

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<sup>10</sup> Warrantless cell phone location surveillance also violates the Fourth Amendment, but *Amici*’s submission focuses on the State Constitution because the State Constitution is at least as protective as, and often more protective than, the Federal Constitution. *See Weaver*, 12 N.Y.3d at 445. While similar privacy concerns apply to various forms of cell phone location surveillance, including real-time tracking of cell phones, this brief focuses on the acquisition of cell phone location history that is at issue in the Defendant’s Motion to Suppress.

only “where we go, but by easy inference, . . . our associations—political, religious, amicable and amorous, to name only a few—and . . . the pattern of our professional and avocational pursuits.” *Id.* at 442. Presented with the reality of a “sophisticated and powerful technology that is easily and cheaply deployed and has virtually unlimited and remarkably precise tracking capability,” the court found it “obvious” that it would not be “compatible with any reasonable notion of personal privacy or ordered liberty” to allow the warrantless use of GPS surveillance. *Id.* at 441 (applying the framework of *Katz v. United States*, 389 U.S. 347 (1967), which grants constitutional privacy protection when an individual has a subjective expectation of privacy that society would accept as reasonable).<sup>11</sup>

*Weaver* correctly contemplated that the same type of intrusion into privacy would be possible with cell phones as with GPS devices attached to cars. *See Weaver*, 12 N.Y.3d at 444 (“[W]ith GPS becoming an increasingly routine feature in cars and cell phones, it will be possible to tell from the technology with ever increasing precision who we are and are not with, when we are and are not with them, and what we do and do not carry on our persons—to mention just a few of the highly feasible empirical configurations.”). Indeed, as explained below, location surveillance accomplished through cell phone location history is at least as intrusive of privacy as GPS surveillance—in fact even more intrusive because it reveals the whereabouts of a person rather than a car. The record here establishes that *Weaver* should apply to prohibit warrantless access to cumulative cell site location history, distinguishing this case from *People v. Hall*, 86 A.D.3d 450, 452 (1st Dep’t 2011), where the defendant had not

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<sup>11</sup> Three years later, the Supreme Court held that the attachment of a GPS device to a car for surveillance purposes is a trespass on property that constitutes a “search” under the Fourth Amendment. *See United States v. Jones*, 132 S. Ct. 945, 949 (2012). *Weaver*’s reasoning, which did not depend on the trespass theory, was adopted by five justices in concurrences in *Jones*. *See, e.g., id.* at 955 (Sotomayor, J., concurring) (citing *Weaver*); *id.* at 964 (Alito, J., concurring in judgment) (“[S]ociety’s expectation has been that law enforcement agents and others would not—and indeed, in the main, simply could not—secretly monitor and catalogue every single movement of an individual’s car for a very long period.”).

preserved his argument for privacy under *Weaver* and the court upheld a denial of a motion to suppress three days of cell phone location history.<sup>12</sup>

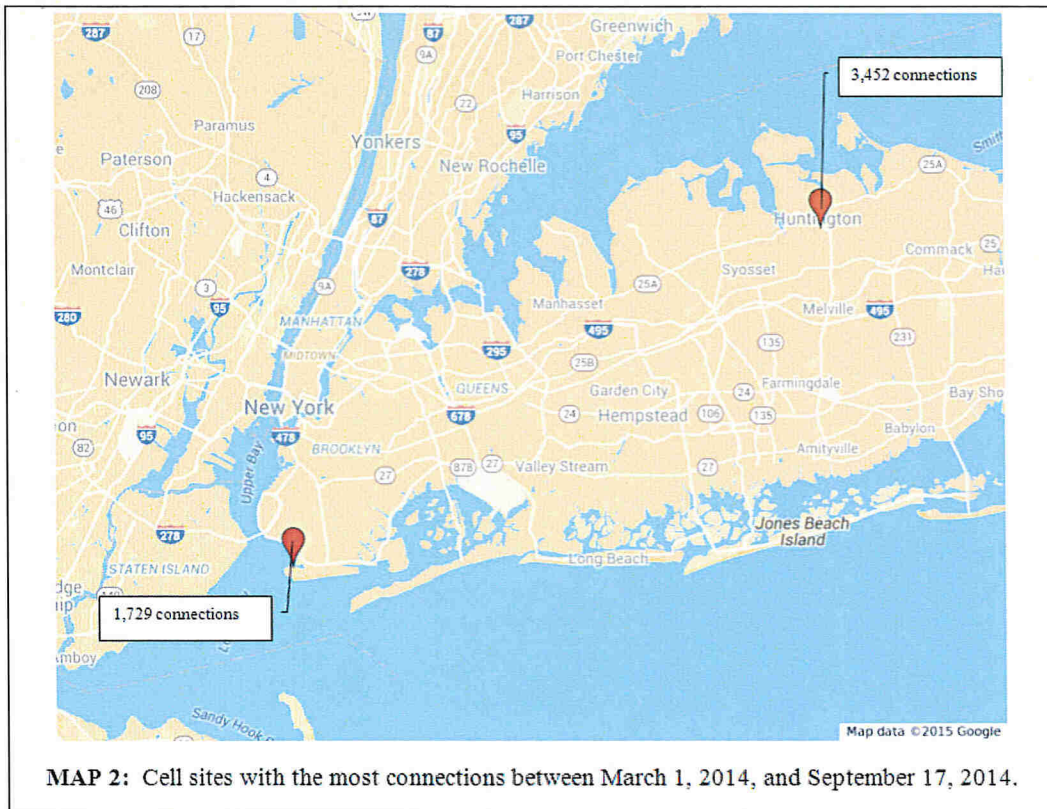
**A. Cell Phone Location Surveillance, Like GPS Surveillance, Reveals a Highly Intimate Profile of a Person’s Location History.**

The prosecution in this case obtained over six-and-a-half months of cell phone location records from Sprint, Mr. Moalawi’s cell phone carrier, presumably for the precise purpose of learning about Mr. Moalawi’s movements. These Sprint records include the phone numbers and the dates and times of phone calls and texts sent or received by Mr. Moalawi’s phone between March 1, 2014, and September 17, 2014, as well as 10,438 location data points (cell site and sector information) associated with the phone calls. (Affidavit of Rebecca Anne Cadoff, June 11, 2015, Appendix B ¶ 8.) This averages to 51.9 location points per day, or one location point approximately every half an hour. (*Id.*) During these months, Mr. Moalawi’s phone connected most frequently to the cell site at 39 Semon Road in Huntington, New York, approximately half a mile away from his home—and almost exclusively to the southeast-facing sector which faces his home. (*Id.*) The cell phone connected second most frequently to the cell site at 2675 W 36<sup>th</sup> Street in Seagate, Brooklyn, approximately half a mile away from his fiancée’s home at the time, and specifically the west and southwest-facing sectors which face his fiancée’s home. (*Id.*)<sup>13</sup>

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<sup>12</sup> Other cases in New York raising the constitutionality of cell phone location surveillance involved an even shorter period of surveillance than *Hall*—a one-time “pinging” of the cell phone to locate the user in real-time. *See, e.g., People v. Wells*, 45 Misc. 3d 793, 796-97 (Sup Court, Queens County 2014); *People v. Moorer*, 39 Misc. 3d 603, 605-06 (Sup Court, Monroe County 2013). Although such “pinging” initiated at the request of law enforcement raises significant concerns, it does not reveal the same level of detail about a person’s life as longer-term location surveillance.

<sup>13</sup> The records referenced in the Cadoff Affidavit and the locations of Mr. Moalawi’s home and his fiancée’s home will be submitted for the record as part of the Defendant’s Motion to Suppress.



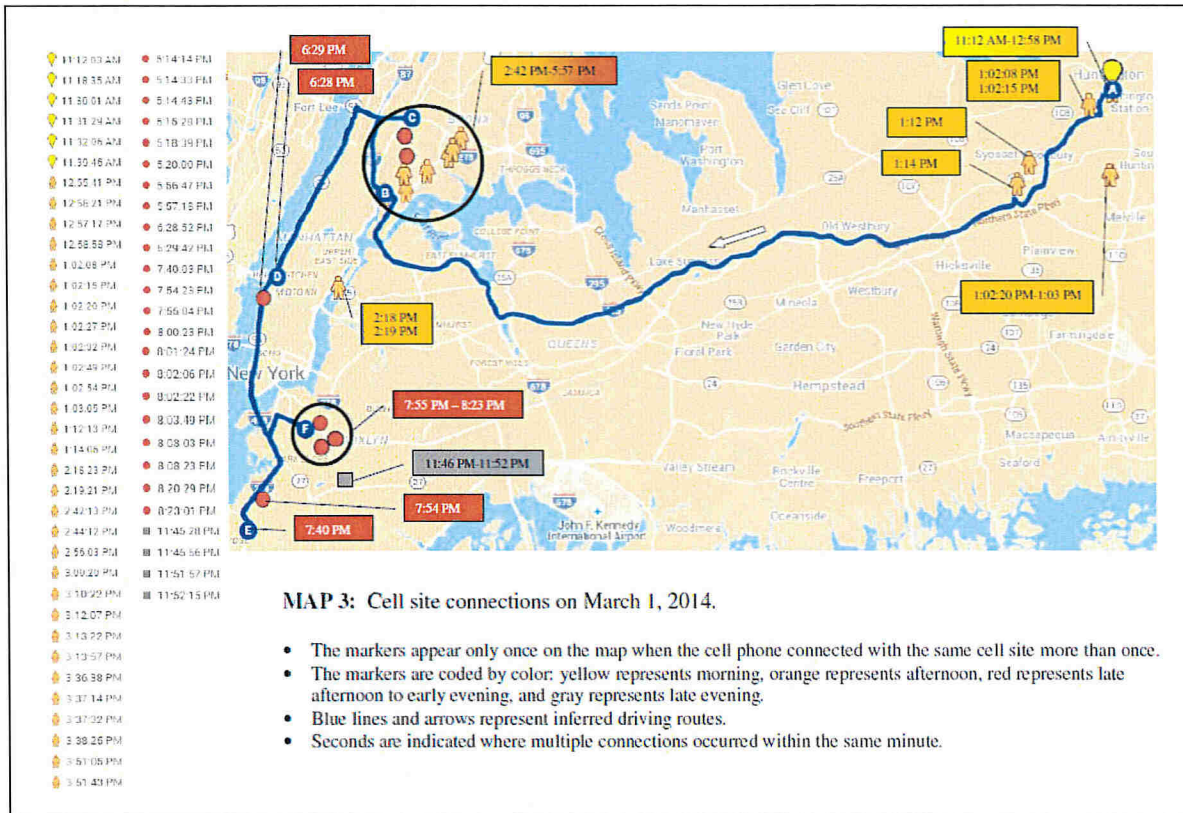
These cell site records paint an intimate portrait of Mr. Moalawi, including his stays in “private spatial spheres,” trips of “indisputably private nature,” his “avocational pursuits,” and “amicable and amorous relationships.” *Weaver*, 12 N.Y.3d at 441-42. Even a cursory review of data from the week of March 1, 2014—a week having nothing to do with any crimes alleged—reveals the following about Mr. Moalawi’s life:

- **Saturday, March 1: Afternoon outing to the Bronx, and evening in Prospect Heights.**

On Saturday, March 1, Mr. Moalawi’s cell phone connected several times with his home cell site until 12:58 P.M. At 1:02 P.M., the cell phone began connecting with cell sites to the west of his home, until at 2:42 P.M., when it began connecting to cell sites in the South Bronx. The cell phone continued to connect with cell sites in the Bronx until 5:57 P.M., then connected with cell sites on Manhattan’s West Side Highway before connecting with the cell sites around



Prospect Heights in Brooklyn starting at 7:55 P.M. Between 11:46 P.M. to 11:52 P.M., Mr. Moalawi's cell phone was connecting with a cell site in Prospect Lefferts Gardens.



From these data, it appears that Mr. Moalawi was at or near his home until around 1 P.M. on this day. At around 1 P.M., Mr. Moalawi left his home and drove to the Bronx, where he stayed until about 6 P.M. He then drove down the West Side Highway to end up at Prospect Heights, perhaps for dinner, and then in Prospects Lefferts Gardens until at least around midnight.

• **Sunday, March 2: A lazy Sunday near home.**

On Sunday, March 2, Mr. Moalawi's cell phone consistently connected to his home cell site between 11:23 A.M. and 7:10 P.M for all calls. (Cadoff Aff. ¶ 12.) It appears that Mr. Moalawi had a lazy Sunday at or near his home on that day.

- **Monday, March 3: Afternoon at Stony Brook University, sleeping over at fiancée’s.**

On March 3, Mr. Moalawi’s cell phone connected with his home cell site through the morning and until 1:22 P.M. At 2 P.M., the cell phone connected to a cell site near Stony Brook University, to the east of his home, and continued to connect to cell sites in the area until 5:14 P.M. At 6:21 P.M., and for about 20 minutes after that, the cell phone connected to a cell site between Smithtown and Centereach. The cell phone then connected to several sectors to the west until he reached his home cell site at 8:02 P.M. After several connections with his home cell site, at 9:52 P.M., the cell phone connected to a cell site just west of his home. At 10:23 P.M., the cell phone connected to a cell site near Forest Hills; at 10:31 P.M., a cell site on the Belt Parkway near Howard Beach; at 10:35 P.M. a cell site further west on the Belt Parkway; and at 10:49 P.M., a cell site in Sea Gate, Brooklyn. The last recorded connection of that night was to his fiancée’s cell site, as was the first connection the next morning (Cadoff Aff. ¶ 13).



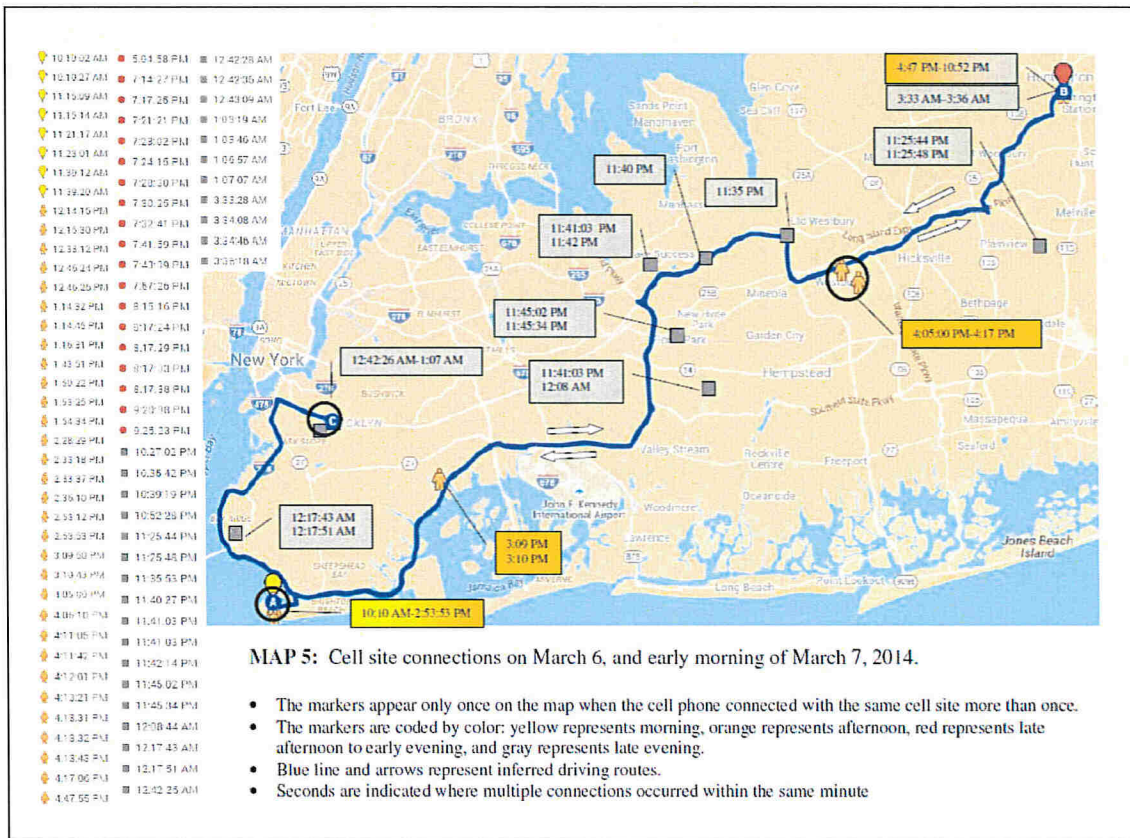
From this set of data, it appears that Mr. Moalawi was at or near his home until about 1:22 P.M. on this day, and then drove to Stony Brook University, arriving at around 2 P.M. He stayed in Stony Brook for a few hours, most likely at the university, and then for some time in the area between Smithtown and Centereach. He then went home for approximately two hours, before leaving home before 10 P.M. to drive for approximately one hour, most likely taking the Grand Central Parkway to the Belt Parkway to his fiancée's home, where he stayed the night.

- **Tuesday, March 4 – Wednesday, March 5: Two days at his fiancée's.**

On March 4 and 5, Mr. Moalawi's cell phone consistently connected throughout both days with the cell site near his fiancée's apartment for all calls. (Cadoff Aff. ¶ 13.) This implies that Mr. Moalawi was most likely at or near his fiancée's apartment during those two weekdays.

- **Thursday, March 6: Home in the afternoon, late night out in Prospect Heights.**

On March 6, Mr. Moalawi's cell phone connected with cell sites near his fiancée's apartment throughout the morning, and until 2:53 P.M. Then at 3:09 P.M., it connected with a cell site near the Belt Parkway in East New York; between 4:05 P.M. and 4:17 P.M., cell sites near Westbury; and at 4:47 P.M., his home cell site. The phone connected consistently with his home cell site until 10:52 P.M., then at 11:25 P.M., it began connecting to various cell sites to the west. Between 12:42 A.M. and 1:07 A.M., the phone was connecting with cell sites in Prospect Heights. The phone connected to his home cell site again at 3:33 A.M.

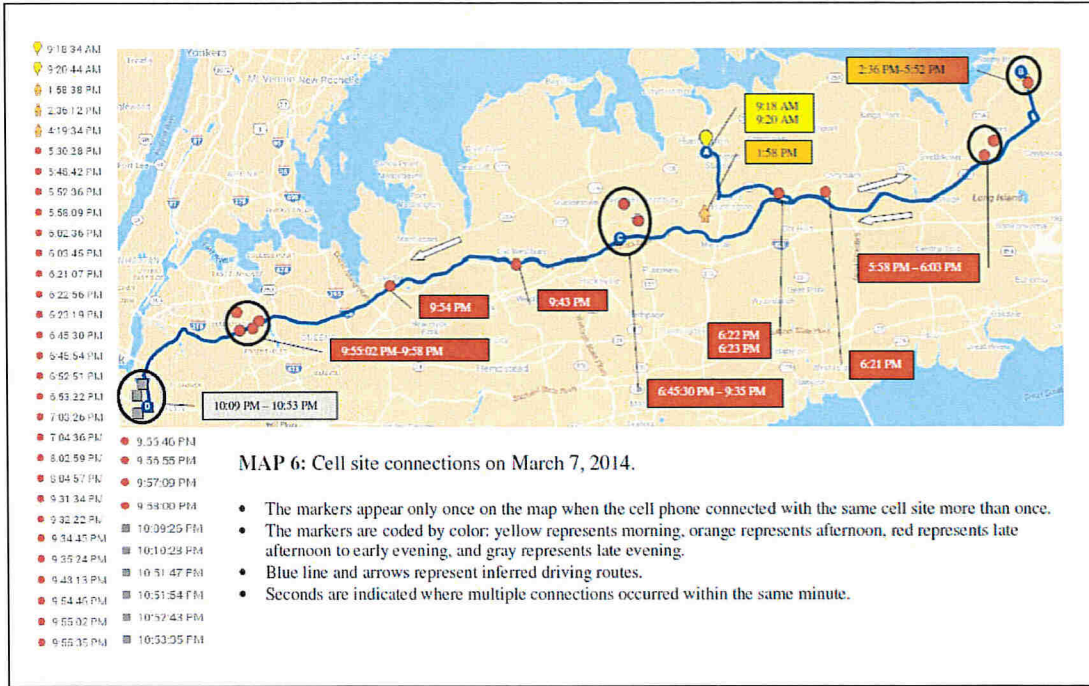


From these data, it appears that Mr. Moalawi was at or near his fiancée’s home until about 3 P.M. on March 7. Then, having spent three nights at his fiancée’s place, Mr. Moalawi drove home for the early evening and dinner. It then appears that Mr. Moalawi left home sometime after 10:52 P.M. for a late night outing in Prospect Heights, possibly taking the Belt Parkway to pick up his fiancée as he passed Sea Gate. He was at home by around 3:30 A.M.

- **Friday, March 7: Out to Stony Brook, then another night out in Prospect Heights.**

Mr. Moalawi’s cell phone connected to his home cell site at 3:36 A.M. and at 9:18 A.M. on March 7. The cell phone then connected to a cell site to the south of his home at 1:58 P.M., and then to the cell site near Stony Brook University at 2:36 P.M. The cell phone connected to cell sites at Stony Brook University until 5:52 P.M, then to cell sites along route 347 and Northern State Parkway beginning at 5:58 P.M., and then connected to cell sites near Syosset

from 6:45 to 9:35 P.M. At 9:43 P.M, the cell phone connected to cell sites to the west again along the Long Island Expressway and finally connected to cell sites in the Prospect Heights area at 10:52 P.M.



These data indicate that Mr. Moalawi slept at home on the night of March 6. He then went out to Stony Brook University, to the same area that he was in on Monday. Perhaps he takes classes or attends meetings there. He likely ate dinner in Syosset, and then headed out again to Prospect Heights for after-dinner socializing.

Just one week’s worth of data, reviewed in isolation and without sophisticated analytical tools, and without even analyzing the directional sector with which the cell phone connected, paints a rich picture of Mr. Moalawi that—much like GPS surveillance—reveals far more than a single location point or an individual trip. See *Weaver*, 12 N.Y.3d at 440-42; *United States v. Jones*, 132 S. Ct. 945, 955 (2012) (Sotomayor, J., concurring) (citing *Weaver* and stating that even cases of short-term location monitoring may raise concerns of revealing “a precise,

comprehensive record of a person's public movements that reflects a wealth of detail about [a person's] familial, political, professional, religious, and sexual associations"); *United States v. Maynard*, 615 F.3d 544, 561-62 (D.C. Cir. 2010) (holding that a warrant is required for GPS surveillance because "[t]he whole of one's movements over the course of a month . . . reveals far more than the individual movements it comprises"), *aff'd on different grounds sub nom. United States v. Jones*, 132 S. Ct. 945 (2012). It appears from these data, for example, that Mr. Moalawi does not have a consistent daily schedule: he does not have a 9 A.M.-5 P.M. job in an office environment; he does not attend the same house of worship on a daily basis; and he does not even sleep in the same place every night. He tends to be at or near home (or his fiancée's home) before noon on most days and appears to like going out to Prospect Heights at night, during or after dinner. Possibly he has a close friend who lives there.

It is easy to imagine the array of other information that might be revealed about people from reviewing this type of location data. For those who lead more consistent daily lives than Mr. Moalawi, the map of their lives might reveal weekly attendance at a particular church or daily attendance at a particular mosque. It might also reveal certain deviations from their daily patterns, like affairs at a lover's home or doctor's visits in the middle of a work day. It might reveal that the person crossed the Brooklyn Bridge at the same time as a Black Lives Matter protest did, or that the person followed the parade route through Manhattan during the Pride Day march.

The portrait that emerges from cell phone location history would be even more intrusive with a review of more than the week of records reviewed here, the employment of a more sophisticated analytical tool, and/or the merger of the data with other records such as automatic license plate reader information and surveillance camera footage. *See, e.g., O'Malley, U.S.*

Att'ys' Bull. at 24 (describing the FBI's Cellular Analysis Survey Team, which receives an intense four-week training, including on software mapping tools); Arvind Thiagarajan et al. *Accurate, Low-Energy Trajectory Mapping for Mobile Devices* (2011) (describing an algorithm for accurate trajectory interpolation using cell site information).<sup>14</sup> *Weaver* should apply to protect the right to privacy in this intimate location history, which is at least as intrusive as GPS location surveillance. *See Weaver*, 12 N.Y.3d at 441-42.

**B. Cell Phone Location Surveillance Is More Intrusive Than GPS Surveillance.**

In many ways, cell phone location surveillance presents a greater threat to the right to privacy than GPS surveillance of a car. Unlike GPS surveillance that is most often conducted using devices attached to cars and that loses accuracy indoors, Blaze Testimony 2013 at 17, cell phone location surveillance follows a person into any private indoor space and monitors his or her presence inside—as illustrated by the above analysis of Mr. Moalawi's cell phone location history from which one can infer the times that he was at home or at his fiancée's home. *See supra* Part I.A; *see also In re Application of the U.S. for an Order Directing a Provider of Elec. Comm'n Serv. to Disclose Records to the Gov't*, 620 F.3d 304, 311-12 (3d Cir. 2010) (hereinafter, *In re Records, Third Circuit*) (“[T]he Government has asserted in [this and] in other cases that a jury should rely on the accuracy of the cell tower records to infer that an individual, or at least her cell phone, was at home.”). It is well-established, however, that people have a right to privacy in their presence inside a home and other constitutionally protected places shielded from visual surveillance. *See United States v. Karo*, 468 U.S. 705, 714-15 (1984) (right to privacy in the home); *see also, e.g., Minnesota v. Olson*, 495 U.S. 91, 98 (1990) (same in a home at which a person is an overnight guest); *See v. City of Seattle*, 387 U.S. 541, 543 (1967) (same in business premises); *Stoner v. California*, 376 U.S. 483, 486-88 (1964) (same inside

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<sup>14</sup> Available at <http://db.csail.mit.edu/pubs/ctrack-cr.pdf>.

hotel room). The Supreme Court held in *Karo* that law enforcement violated this well-established principle by warrantlessly attaching a beeper to a container of chemicals and monitoring its presence inside a home. 468 U.S. at 715. Using cell phone location history to infer a person’s presence in a home is indistinguishable from the surveillance in *Karo*, in which the Court warned law enforcement against warrantlessly determining “by means of an electronic device . . . whether a particular article—or a person, for that matter—is in an individual’s home at a particular time.” *Id.* Thus, cell phone location surveillance more directly implicates the right to privacy under *Karo* than GPS surveillance of a car.

In a similar vein, a cell phone is much more likely to be with a person at all times than a car, which might be shared by a family or, in a place like New York City, not used at all.<sup>15</sup> The Court of Appeals has recognized that “[p]eople have a greater expectation of privacy in the location of their bodies, and the clothing and accessories that accompany their bodies, than in the location of their cars.” *Cunningham v. N.Y. State Dep’t of Labor*, 21 N.Y.3d 515, 521 (2013) (stating, in a case rejecting warrantless GPS monitoring of a state worker during off-work hours, that attaching a GPS device to an employee’s shoe or purse would implicate greater privacy interests than GPS surveillance of a car). A cell phone is undoubtedly an accessory that most people carry with them at a close range, at all times. According to one poll cited by the Supreme Court, “nearly three-quarters of smart phone users report being within five feet of their phones most of the time, with 12% admitting that they even use their phones in the shower.” *Riley*, 134 S. Ct. at 2485 (citing Harris Interactive, *2013 Mobile Consumer Habits Study* (June 2013)); see also *In re Historical Cell-Site Info.*, E.D.N.Y., 809 F. Supp. 2d at 115 (“For many Americans, there is no time in the day when they are more than a few feet away from their cell phones.”).

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<sup>15</sup> According to a study by the University of Michigan, more than half of the households in New York City did not have a car in 2012. See U. Mich., *Hitchin’ a Ride: Fewer Americans Have Their Own Vehicle*, Mich. News (Jan. 23, 2014), <http://ns.umich.edu/new/releases/21923-hitchin-a-ride-fewer-americans-have-their-own-vehicle>.



Finally, much more so than GPS surveillance, cell phone location surveillance raises concerns of a cheap opportunity for prolonged, retrospective mass surveillance that was impossible in the past. *Cf. Weaver*, 12 N.Y.3d at 441 (noting that GPS is a “sophisticated and powerful technology that is easily and cheaply deployed”); *Jones*, 132 S. Ct. at 963 (Alito, J., concurring) (reasoning that society has a reasonable expectation of privacy against prolonged surveillance because “[t]raditional surveillance for any extended period of time was difficult and costly and therefore rarely undertaken”). GPS surveillance of a car, while offering a much cheaper way of long-term monitoring of people than previously available investigative methods, *Weaver*, 12 N.Y.3d at 441, still requires the police as a practical matter to identify the person whose movement the police wants to track prospectively, attach the GPS device, and, depending on the duration of the surveillance, periodically change its batteries. Cell phone location surveillance, by contrast, provides a way for the government to spy on the locations of the 90% of American adults who have a cell phone by simply obtaining the records from the cell phone provider. Cell phone location history that allows law enforcement to reconstruct a person’s past movements, in particular, is “a category of information that *never* would be available through the use of traditional law enforcement tools of investigation.” *Augustine*, 467 Mass. at 254 (emphasis in original). But it only cost the government \$50 to access this information here, and learn retrospectively how Mr. Moalawi spent half of 2014. (*See* Sprint Subpoena Compliance, submitted with Defendant’s Motion to Suppress.)

That cell phone location surveillance is more intrusive than GPS surveillance in these ways only confirms that the right to privacy recognized in *Weaver* should apply to cell phone location surveillance. The protection in *Weaver* would be meaningless if it did not also protect New Yorkers from cell phone location surveillance.

## **II. THE THIRD-PARTY DOCTRINE DOES NOT APPLY TO UNDERMINE THE REASONABLE EXPECTATION OF PRIVACY IN CELL PHONE LOCATION HISTORY.**

The so-called “third-party” doctrine does not apply to undermine the reasonable expectation of privacy in cell phone location history described above. This doctrine was developed in the 1970s in *Smith v. Maryland*, 442 U.S. 735 (1979), and *United States v. Miller*, 425 U.S. 435 (1976), which held that phone dialing records from a landline phone and paper bank records, respectively, are not entitled to constitutional protection under the *Katz* analysis of the reasonable expectations of privacy because they are records of third-party businesses. *See Smith*, 442 U.S. at 742-44; *Miller*, 425 U.S. at 442-43; *People v. DiRaffaele*, 55 N.Y.2d 234, 241-42 (1982) (adopting *Smith* under New York law). Courts—including the highest courts of three states—have rejected the application of the third-party doctrine to cell phone location surveillance, recognizing the significant intrusion on privacy possible with this new technology. *See Tracey*, 152 So. 3d at 525-26; *Augustine*, 467 Mass. at 249-52; *Earls*, 214 N.J. at 584; *see also Cooper*, 2015 WL 881578, at \*6; *In re Historical Cell-Site Info.*, E.D.N.Y., 809 F. Supp. 2d at 122, 126.

The views of these courts rejecting the third-party doctrine for cell phone location surveillance align more squarely with the broad protections of the right to privacy under the New York State Constitution than the views of federal courts that have applied the third-party doctrine without taking into account the technological progress of the past few decades. *Cf. Davis*, 2015 WL 2058977 at \*11-12; *In re Application of the U.S. for Historical Cell Site Data*, 724 F.3d 600, 612-15 (5th Cir. 2013). In instructing in *Weaver* that the New York State Constitution must keep up with advances in technology, the Court of Appeals distinguished GPS surveillance from past legal doctrine permitting warrantless visual surveillance of a single trip on a street assisted by a

rudimentary beeper, acknowledging that the world of primitive tracking devices is long gone. *Weaver*, 12 N.Y.3d at 441 (distinguishing *United States v. Knotts*, 460 U.S. 276 (1983)). Similarly, in holding that the search-incident-to-arrest doctrine does not extend to contents of a cell phone, the Supreme Court rejected a comparison of searches of contents of a pocket to searches of contents of a cell phone, stating that ignoring the distinction between the two would be “like saying a ride on horseback is materially indistinguishable from a flight to the moon.” *Riley*, 134 S. Ct. at 2488.

The vast difference between the records at issue in *Miller* and *Smith*, and the technology available at the time, on the one hand, and the cell phone location history and technology of today on the other, likewise belies the claim that the third-party doctrine of those cases should apply. *See Cooper*, 2015 WL 881578, at \*6 (citing *Riley* and holding that *Smith* does not answer the question whether people have the reasonable expectation of privacy in their cell phone location information). In rejecting the claim to privacy in *Smith*, the Court cited the “limited capabilities” of the pen register, the device that records phone numbers dialed from a landline, highlighting its inability to determine even whether a communication existed or a call was completed. 442 U.S. at 741-42. In *Smith*, this primitive device was used only to obtain these limited records from one criminal suspect for several days, *see id.* at 737, not to aggregate detailed records over a lengthy period of time, as law enforcement is now able to do easily with cell phone location history. And even though a pen register revealed that *someone* was at home when it captured a phone number dialed through a home landline, *see Davis*, 2015 WL 2058977, at \*11-12, that information was less likely to reveal the identity of the person present than records of cell phones which typically belong to a single person. Back in the 1970s when *Smith* was decided, mobile location data that could assemble a comprehensive picture of a person’s

movements not only in the home but everywhere, and the technology to easily analyze the data to glean the highly private information protected by *Weaver*, simply did not exist.

Cell phone location history of today is most comparable not to the limited records and technology the Court analyzed in *Miller* and *Smith*, but rather to those records—like phone conversations, letters, emails, and medical records—that are protected by the constitutional right to privacy despite being retained by or accessible to third-party businesses. *See, e.g., United States v. Jacobsen*, 466 U.S. 109, 114 (1984) (letters); *Katz*, 389 U.S. at 352 (phone conversations); *United States v. Warshak*, 631 F.3d 266, 285-86 (6th Cir. 2010) (e-mails); *R.S. ex rel. S.S. v. Minnewaska Area Sch. Dist. No. 2149*, 894 F. Supp. 2d 1128, 1142 (D. Minn. 2012) (Facebook messages); *see also Ferguson v. City of Charleston*, 532 U.S. 67, 78 (2001) (“The reasonable expectation of privacy enjoyed by the typical patient undergoing diagnostic tests in a hospital is that the results of those tests will not be shared with nonmedical personnel without her consent.”). Like these records, cell phone location history, as with location history generally, is capable of revealing our affiliations, beliefs, and interests. *See supra* Part I; *Weaver*, 12 N.Y.3d at 442. As with these records, courts have recognized that the information—location history—is objectively highly private. *See id.*; *In re Historical Cell-Site Info., E.D.N.Y.*, 809 F. Supp. 2d at 126 (rejecting application of third-party doctrine to cell phone location surveillance because it “would permit governmental intrusion into information which is objectively recognized as highly private”). A recent poll shows that 82% of adults “feel as though the details of their physical location gathered over a period of time” is “very sensitive” or “somewhat sensitive”—even more than the percentage of adults who feel the same way about the details of their health or medications that they take, contents of phone conversations, or contents of email messages.

Mary Madden, Pew Research Ctr., *Privacy and Security in the Post-Snowden Era* 7 (2014) (response to question relating to sensitivity of GPS location information on cell phones).<sup>16</sup>

As with these other highly sensitive pieces of information that are kept by and/or accessible to third parties, society's reasonable expectation of privacy in cell phone location history does not depend on whether individuals *know* that these records are being kept by their cell phone providers for the purpose of routing calls and other business purposes. *Cf. Davis*, 2015 WL 2058977, at \*11.<sup>17</sup> *Smith* itself recognized that the government could not undermine reasonable expectations of privacy by simply putting people on notice that their privacy could be violated, and noted that the *Katz* analysis of reasonable expectations of privacy should include a normative inquiry. *Smith*, 442 U.S. at 740 n.5 (explaining that government announcement that all homes are subject to warrantless entry would not eviscerate actual expectations of privacy). A sweeping view of the third-party doctrine that eviscerates privacy protections whenever there is notice or knowledge of any third-party access would undermine privacy in this digital world, where an increasing amount of sensitive information is kept by third-party businesses. *See Jones*, 132 S. Ct. at 957 (Sotomayor, J., concurring) (expressing doubt over a broad third-party doctrine given that "people reveal a great deal of information about themselves to third parties in the course of carrying out mundane tasks"). The decision to participate in this digital world by using a cell phone—which courts have recognized are essential to American life, *see Riley*, 134 S. Ct. at 2484—cannot be equated to a voluntary exposure of sensitive, private information for any purpose. *See Tracey*, 152 So.3d at 523 ("Requiring a cell phone user to turn off the cell

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<sup>16</sup> Available at [http://www.pewinternet.org/files/2014/11/PI\\_PublicPerceptionsofPrivacy\\_111214.pdf](http://www.pewinternet.org/files/2014/11/PI_PublicPerceptionsofPrivacy_111214.pdf).

<sup>17</sup> There are certainly some people who do not realize that their location information is being recorded by their cell phone carrier, as cell phone location data is automatically generated by the cell phone service and not tangible or visible to the user like the bank records in *Miller* or phone numbers dialed in *Smith*. *See Augustine*, 467 Mass. at 250; *In re Records, Third Circuit*, 620 F.3d at 317 ("[I]t is unlikely that cell phone customers are aware that their cell phone providers *collect* and store historical location information").

phone just to assure privacy from government intrusion that can reveal a detailed and intimate picture of the user's life places an unreasonable burden on the user to forego necessary use of his cell phone, a device now considered essential by much of the populace."); *In re Historical Cell-Site Info.*, E.D.N.Y., 809 F. Supp. 2d at 127 ("The fiction that the vast majority of the American population consents to warrantless government access to the records of a significant share of their movements by 'choosing' to carry a cell phone must be rejected.").

Given the State Constitution's broad protections for privacy, particularly in the search-and-seizure area, this Court should hold that the third-party doctrine does not undermine society's reasonable expectation of privacy in cell phone location history. *Weaver* made clear that the New York State Constitution should be interpreted to protect the rights of New Yorkers against law enforcement use of "sophisticated" technology that presents an "unacceptable risk of abuse" if employed without judicial oversight. *Weaver*, 12 N.Y.3d at 447. Cell phone location surveillance is another such technology against whose abuse the State Constitution must protect.

### **III. CELL PHONE LOCATION HISTORY SHOULD BE SUPPRESSED BECAUSE OF THE FAILURE TO OBTAIN A WARRANT.**

Where law enforcement seeks to invade a reasonable expectation of privacy, Article I, § 12 of the State Constitution presumptively requires law enforcement to obtain a warrant based on probable cause. *See Weaver*, 12 N.Y.3d at 447. Here, the prosecution obtained the cell phone location history on far less than a showing of probable cause, showing instead only that the records were "relevant and material to an ongoing criminal investigation" under section 2703(d) of the Stored Communications Act. 18 U.S.C. § 2703(d). Because the prosecution failed to obtain a warrant, and there are no apparent justifications for the failure, the Court should grant the Defendant's motion to suppress historical cell phone location history. *See Weaver*, 12 N.Y.3d at 447 (ordering that the motion to suppress GPS evidence should be granted).

## CONCLUSION

For the reasons stated above, this Court should grant Defendant's motion to suppress his cell phone location history.

Dated: June 12, 2015  
New York, N.Y.

Respectfully submitted,



Mariko Hirose  
Christopher Dunn  
New York Civil Liberties Union Foundation  
125 Broad St., Floor 19  
New York, NY 10004  
Tel: (212) 607-3300  
Fax: (212) 607-3318  
Email: mhirose@nyclu.org

Nathan Freed Wessler  
American Civil Liberties Union Foundation  
125 Broad Street, 18th Floor  
New York, NY 10004  
Tel: (212) 549-2500  
Fax: (212) 549-2654  
Email: nwessler@aclu.org

Michael Price  
Rachel Levinson-Waldman, *pro hac vice*  
Brennan Center for Justice  
at NYU School of Law  
161 Avenue of the Americas, 12th Floor  
New York, NY 10013  
Tel: (646) 292-8335  
Fax: (212) 463-7308  
Email: michael.price@nyu.edu  
rachel.levinson.waldman@nyu.edu

*Counsel for Amici New York Civil Liberties Union,  
American Civil Liberties Union, Brennan Center for  
Justice, and the Electronic Frontier Foundation*

APPENDIX A



## INTEREST OF *AMICI CURIAE*

*Amici curiae* the New York Civil Liberties Union (“NYCLU”), the American Civil Liberties Union (“ACLU”), the Brennan Center for Justice, and the Electronic Frontier Foundation (“EFF”) are civil rights and civil liberties organizations that have been involved in seminal New York State and federal cases about the right to location privacy. *See, e.g., People v. Weaver*, 12 N.Y.3d 433 (2009) (NYCLU appearing as *amicus curiae* in case establishing that law enforcement must obtain a warrant as a presumptive matter before engaging in GPS surveillance of 65 days); *Cunningham v. N.Y. State Dep’t of Labor*, 21 N.Y.3d 515 (2013) (attorneys from NYCLU Foundation representing state employee who was monitored secretly through use of GPS surveillance); *United States v. Jones*, 132 S. Ct. 945 (2012) (ACLU, Brennan Center, and EFF appearing as *amici curiae* in a case holding that attachment of a GPS device to a vehicle constitutes a search under the Fourth Amendment). *Amici* have submitted briefs in cases around the country raising the question at issue in this case: whether the constitutional right to privacy protects cell phone location history. *See, e.g., United States v. Carpenter*, No. 12-20218, 2013 WL 6385838 (E.D. Mich. 2013), *appeal docketed*, No. 14-1805 (6th Cir. Jun. 24, 2014) (ACLU, Brennan Center, and EFF appearing as *amici*); *United States v. Davis*, 754 F.3d 1205 (11th Cir. 2014) (ACLU and EFF appearing as *amici*, with ACLU presenting oral argument), *rev’d*, 2015 WL 2058977 (11th Cir. 2015) (en banc) (ACLU and EFF appearing as *amici*); *In re Application of the U.S. for Historical Cell Site Data*, 724 F.3d 600 (5th Cir. 2013) (ACLU and EFF appearing as *amici*, with EFF presenting oral argument); *United States v. Graham*, 846 F. Supp. 2d 384 (D. Md. 2012), *appeal pending*, No. 12-4659 (4th Cir.) (ACLU and EFF appearing as *amici*); *In re Application of the U.S. for an Order Directing a Provider of Elec. Comm’n Serv. to Disclose Records to the Gov’t*, 620 F.3d 304 (3d Cir. 2010) (ACLU and EFF appearing

as *amici*, with EFF presenting oral argument); *Commonwealth v. Augustine*, 4 N.E.3d 846 (Mass. 2014) (attorneys for ACLU and ACLU of Massachusetts representing defendant on appeal and EFF appearing as *amicus*).

#### NYCLU & ACLU

The NYCLU is the New York State affiliate of the ACLU. Both organizations are non-profit, non-partisan public interest organizations dedicated to the defense and protection of the civil rights and civil liberties guaranteed by the Constitution. Among the most fundamental of these rights is the right to privacy enshrined in the Fourth Amendment of the federal Constitution and Article I, Section 12 of the New York State Constitution. The NYCLU and the ACLU have been at the forefront of numerous state and federal cases addressing the right to privacy.

#### BRENNAN CENTER FOR JUSTICE

The Brennan Center for Justice at NYU School of Law is a non-partisan public policy and law institute focused on fundamental issues of democracy and justice, including access to the courts and constitutional limits on the government's exercise of power. The Center's Liberty and National Security (LNS) Program uses innovative policy recommendations, litigation, and public advocacy to advance effective national security policies that respect the rule of law and constitutional values. The LNS Program is particularly concerned with domestic counterterrorism policies, including the dragnet collection of Americans' communications and personal data, and the concomitant effects on privacy and First and Fourth Amendment freedoms. The Brennan Center's views as *amicus curiae* in this case do not and will not purport to represent the position of NYU School of Law.

## EFF

The EFF is a member-supported civil liberties organization based in San Francisco, California and works to protect innovation, free speech, and privacy in the digital world. With over 25,000 active donors and dues-paying members nationwide, EFF represents the interests of technology users in both court cases and in broader policy debates surrounding the application of law in the digital age. As part of its mission, EFF has served as amicus curiae in landmark state and federal cases addressing Fourth Amendment issues raised by emerging technologies, including location-based tracking technologies like GPS and cell-site tracking.

APPENDIX B

SUPREME COURT OF THE STATE OF NEW YORK  
COUNTY OF NEW YORK, PART 62

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PEOPLE OF THE STATE OF NEW YORK,

- against -

Indictment No. 5652/2014

ALI MOALAWI and RICKY MOORE,

Defendants.

-----X

**AFFIDAVIT OF REBECCA ANNE CADOFF**

REBECCA ANNE CADOFF subscribes and affirms under the penalty of perjury as follows:

1. I am employed as a Data and Policy Analyst at the New York Civil Liberties Union Foundation (“NYCLU”), located at 125 Broad Street, New York, New York 10004.
2. I have personal knowledge as to how the maps attached to this Affidavit were created.
3. In creating the maps attached to this Affidavit, I reviewed Excel files named “email-3918891-2014-238773-906816,” “email-3918891-2014-238773-907030,” “email-3918891-2014-238773-907032,” “email-3918891-2014-238773-907033,” “email-3918891-2014-238773-907035,” “email-3918891-2014-238773-907037,” “email-3918891-2014-238773-907039,” “email-3918891-2014-238773-907041,” and “email-3918891-2014-238773-907044.” I also reviewed a RTF document named “email-3918891-2014-238773-907052,” which begins with a section called “Key to Understanding CDMA Call Detail Reports” (hereinafter, “Sprint Key”). I further reviewed a PDF document named “Mowali Subscriber Info” (sic) which indicates Mr. Moalawi’s cell phone number. My understanding is that Mr. Moalawi’s counsel, John W. Mitchell, received these documents from the prosecution in the course of this case, that

he forwarded the documents to the NYCLU, and that he will submit them for the record as part of Defendant Moalawi's motion to suppress.

4. My understanding is that the Excel sheet named "email-3918891-2014-238773-906816" (hereinafter, "Defendant Location Records") contains Mr. Moalawi's cell site location records. The Defendant Location Records contained 10,438 location data points (identifying cell site and sector) associated with phone calls made or received by Mr. Moalawi's phone over the course of 201 days, from March 1, 2014 to September 17, 2014. This averaged to 51.9 location points per day, or one location point approximately every half an hour. These figures were calculated by totaling the number of call beginnings and call endings where the cell site location data were available (i.e., had a value higher than zero), and dividing by the number of days to find the number of calls per day. The number of calls per day was then divided into the number of minutes per day, giving the average number of minutes between each call.

5. My understanding is that the Excel sheets named "email-3918891-2014-238773-907030," "email-3918891-2014-238773-907032," "email-3918891-2014-238773-907033," "email-3918891-2014-238773-907035," "email-3918891-2014-238773-907037," "email-3918891-2014-238773-907039," "email-3918891-2014-238773-907041," and "email-3918891-2014-238773-907044," contain information about cell sites with which Mr. Moalawi's phone may have connected during this time period, including the location of the cell site and sector information (hereinafter, "Sprint Cell Site Records").

6. The maps attached to this Affidavit are fair visual representations of data contained in the Defendant Location Records and Sprint Cell Site Records.

7. Map 1 is a fair representation of all of the cell sites operated by Sprint in the New York City area as of mid-2014, as listed in the Sprint Cell Site Records. To create this map, I

uploaded the geographic coordinates of every cell site listed in the Sprint Cell Site Records into a mapping software called CartoDB, and zoomed in on the New York City area.

8. Map 2 is a fair representation of the location of cell sites with which Mr. Moalawi's cell phone connected most often in the Defendant Location Records. I used statistical analysis software (Stata version 12, using the tab command) to separate the sector information (first digit) and cell site information (remaining digits) of "1st Cell" and "Last Cell" provided in the Defendant Location Records to determine the cell sites and sectors that Mr. Moalawi's cell phone connected to most frequently. There were two cell sites that Mr. Moalawi's cell phone connected to over one thousand times in the Defendant Location Records: NEID 30, Cell Site 764 (connected 3,452 times) and NEID 158, Cell Site 936 (connected 1,729 times). The next most frequent site was considerably lower, at 200 connections, so I focused on the two most frequent sites. I determined the geographic coordinates of these two cell sites using the Sprint Cell Site Records, and uploaded the coordinates into GoogleMaps to determine the street addresses of these cell sites. Mr. Moalawi's cell phone connected 3,452 times to a cell site at 39 Semon Road in Huntington, New York. Specifically, his phone connected almost exclusively to the Beta sector of the cell site, which according to the directional information provided in the Sprint Cell Site Records (specifically, "email-3918891-2014-238773-907044") faces southeast. Mr. Moalawi's phone connected 1,729 times to a cell site at 2675 W. 36th Street in Seagate, Brooklyn. Specifically, his phone connected to the Beta and Gamma sectors of the cell site, which according to the directional information provided in the Sprint Cell Site Records (specifically, "email-3918891-2014-238773-907032") face west and southwest. I determined the direction of the sectors using the cardinal direction indicated by the "Azimuth" column of the Sprint Cell Site Records, and the description of Sector Layout described in the Sprint Key.

9. Maps 3-6 contain fair representations of the locations of cell sites to which Mr. Moalawi's cell phone connected on various days between March 1 and March 7, 2014. In order to create these maps, I selected the records for March 1 through 7, 2014, from the Defendant Location Records. I removed any record that did not explicitly include Mr. Moalawi's phone number, and any record that did not have cell site location information associated with it. For the "1<sup>st</sup> cell" and "last cell" columns, I separated out the sector information (first digit) from the cell site information (the remaining digits). I then looked up the geographic coordinates (latitude, longitude) corresponding to each cell site in the Sprint Cell Site Records by using the VLOOKUP function. I then created an Excel sheet that listed the date/time and geographic coordinates for each time the records reflected that the phone connected with a cell site at the beginning or end of a call, and ordered them chronologically. I divided this master list into separate Excel spreadsheets according to each logical day (e.g., if Mr. Moalawi's cell phone connected with a cell site at 00:12:14 – or just after midnight – that call was associated with the previous day), and uploaded each spreadsheet into GoogleMaps. The maps therefore contain the geographic coordinates for each cell site with which Mr. Moalawi's phone connected during each day, color coded by time of day. Where there was overlap, the individual points are not visually distinguishable.

10. Additional text labeling the time of each connection to cell sites was added to Maps 3-6 for clarification. I reviewed the text to ensure that the additional text fairly describes the connection to cell sites appearing on the map.


11. The blue lines were added to Maps 3-6 in GoogleMaps to display inferences of driving routes based on the cell sites with which Mr. Moalawi's phone connected at certain times. I reviewed these driving routes and believe that they represent fair inferences.



12. On March 2, 2014, Mr. Moalawi's cell phone consistently connected with the cell site at 39 Semon Road in Huntington, New York. It connected with that cell site 22 times between 11:23 A.M. and 7:12 P.M.

13. On March 4 and 5, 2014, Mr. Moalawi's cell phone consistently connected with the cell site at 2675 W. 36th Street in Seagate, Brooklyn. On March 4, 2014, Mr. Moalawi's cell phone connected with that cell site 38 times between 10:15 A.M. and 7:45 P.M. On March 5, 2014, Mr. Moalawi's cell phone connected with that cell site 60 times between 9:37 A.M. and 9:10 P.M.

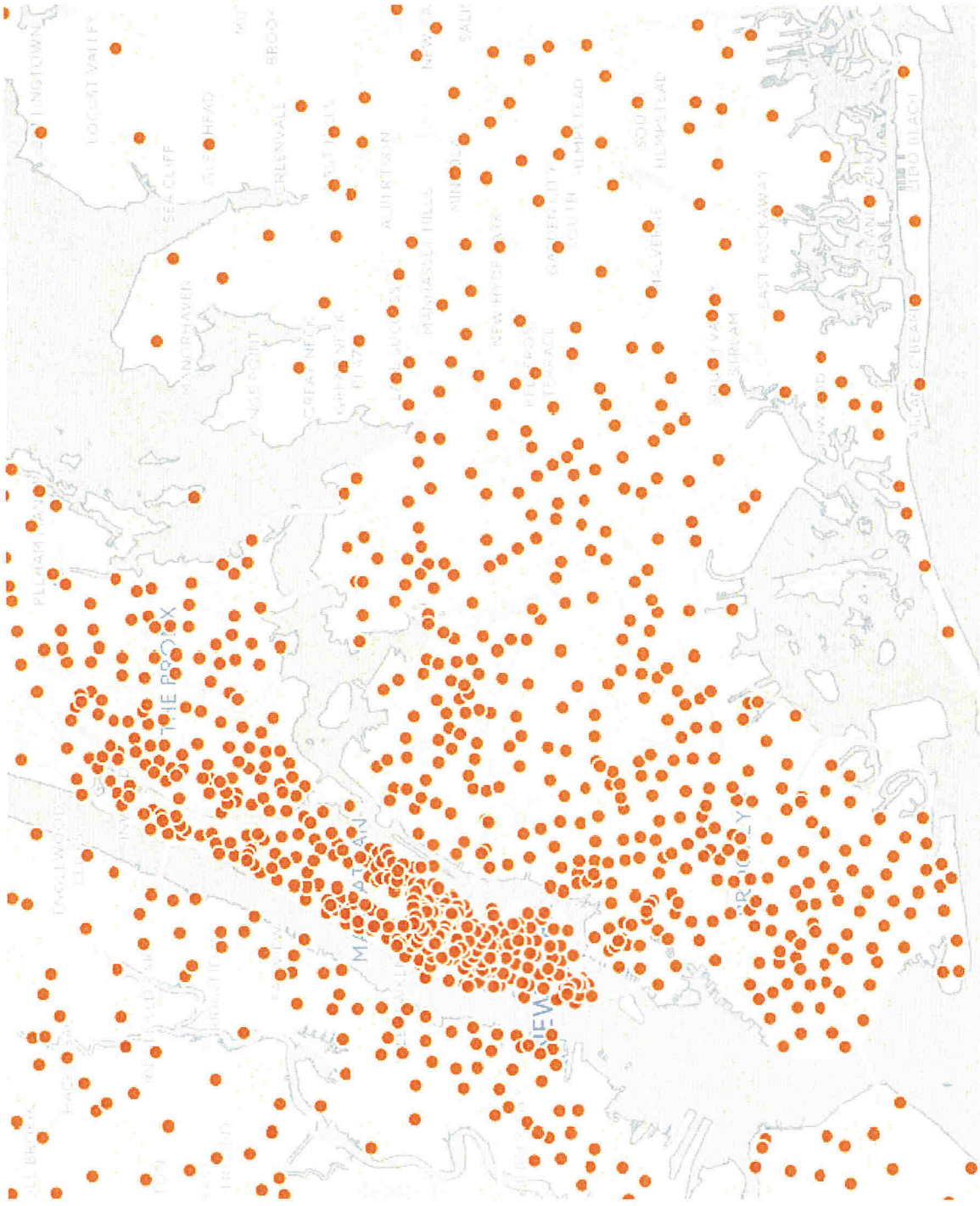
Dated: June 11, 2015

  
REBECCA ANNE CADOFF

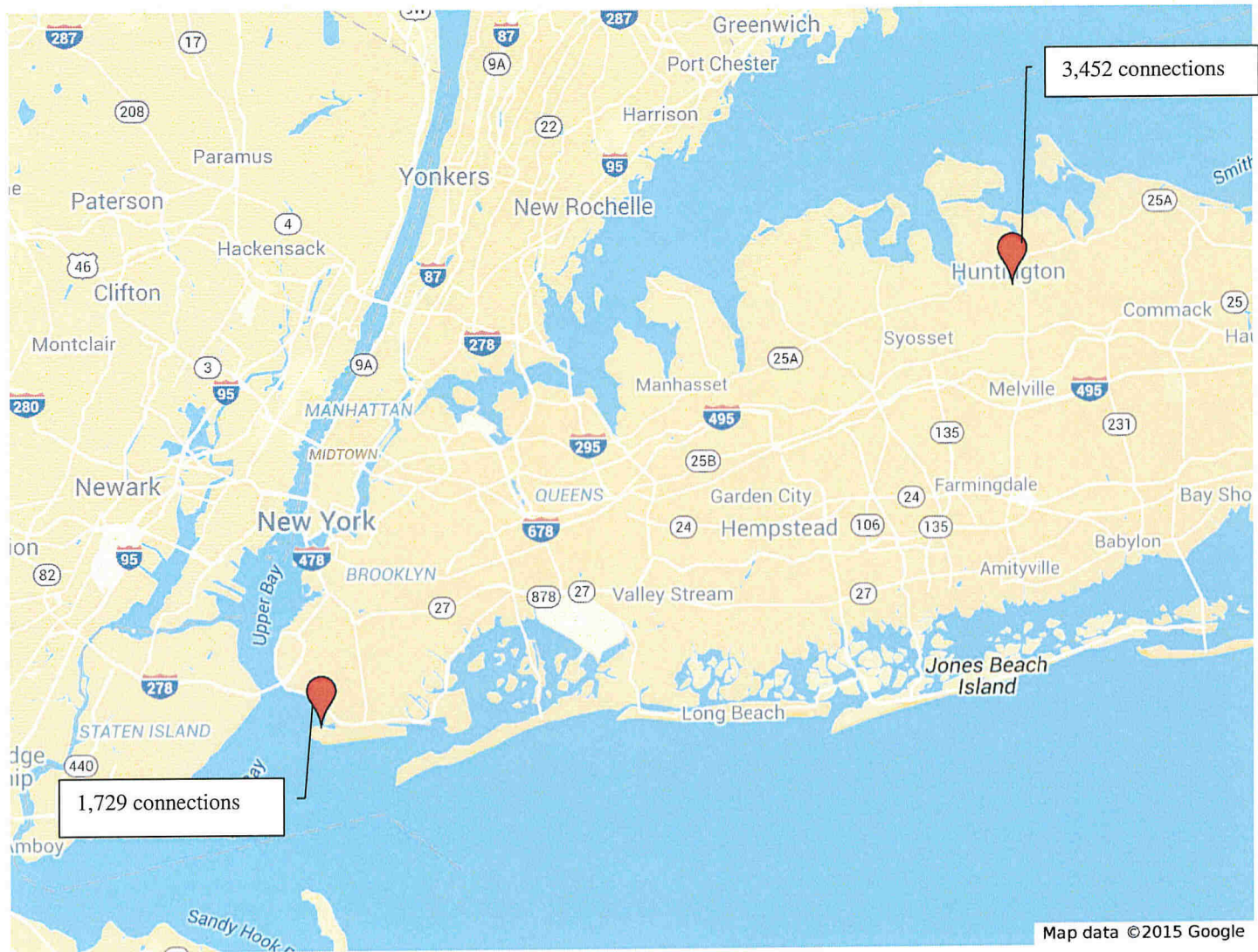
Sworn to before me this  
11<sup>th</sup> day of June, 2015

  
NOTARY PUBLIC

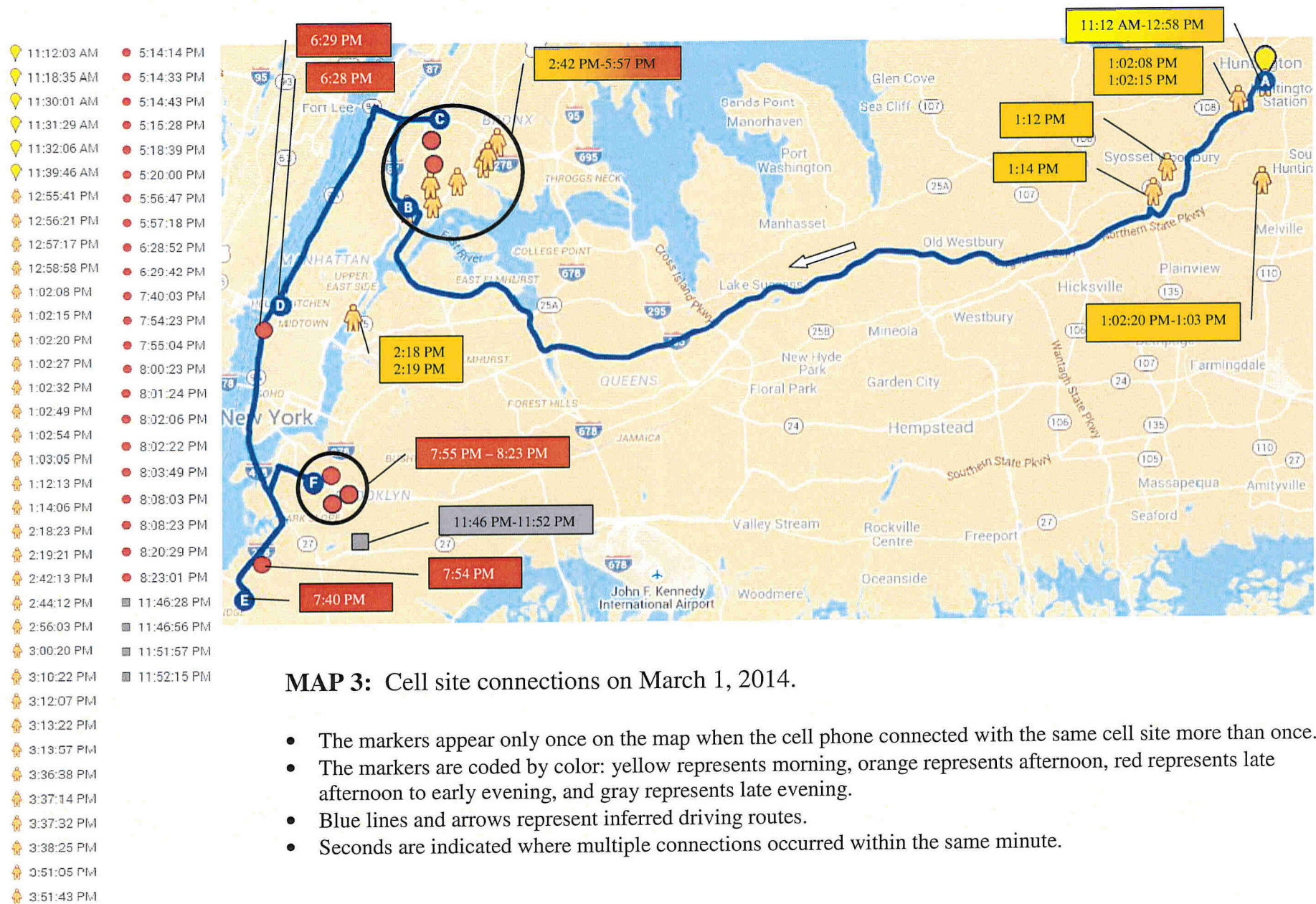
**JESSICA GRACEANN PERRY**  
Notary Public, State of New York  
No. 01PE6279507  
Qualified in New York County  
Commission Expires 04/08/2017



MAP 1: Cell sites operated by Sprint in the New York City area, 2014.



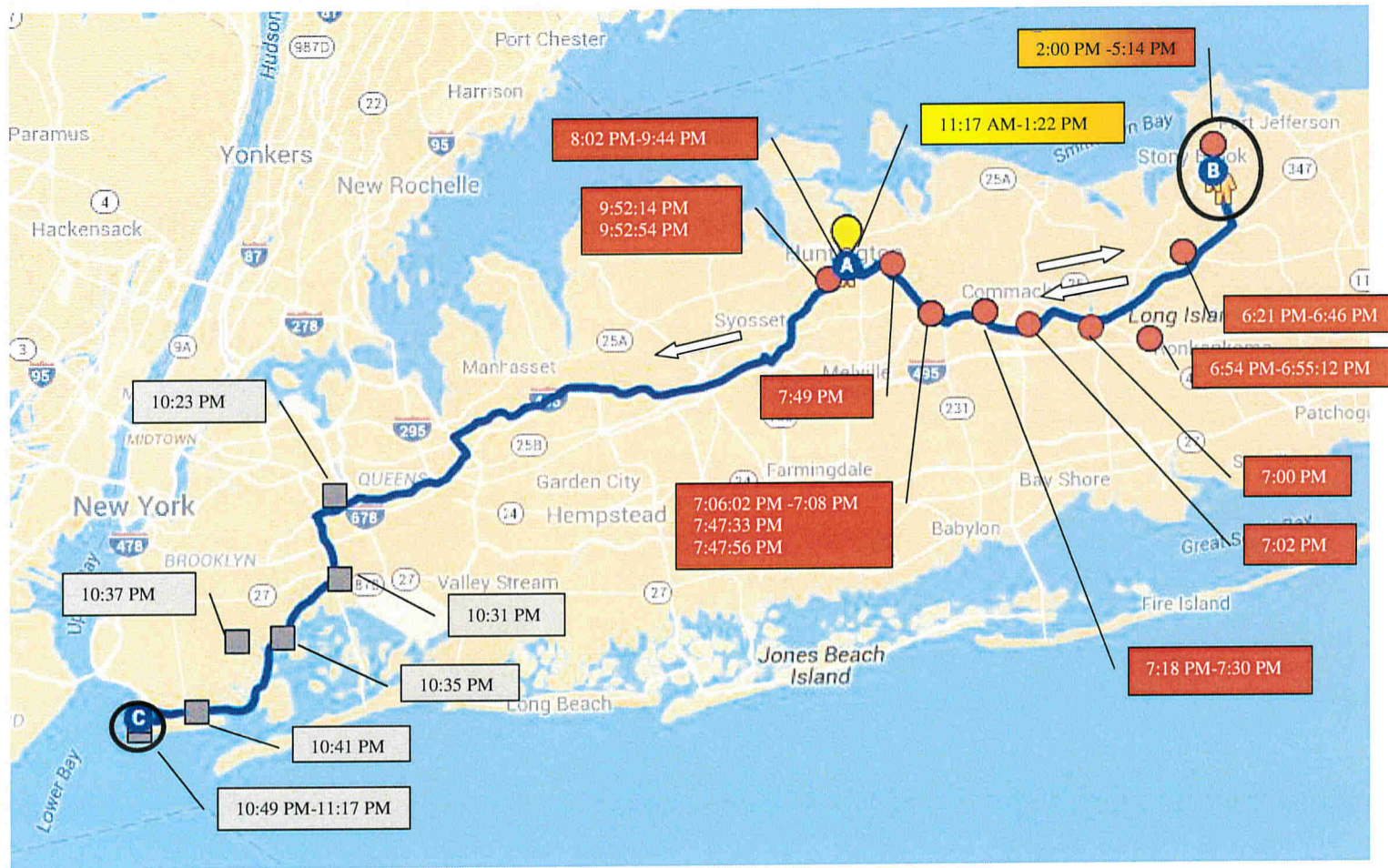
**MAP 2:** Cell sites with the most connections between March 1, 2014, and September 17, 2014.



**MAP 3: Cell site connections on March 1, 2014.**

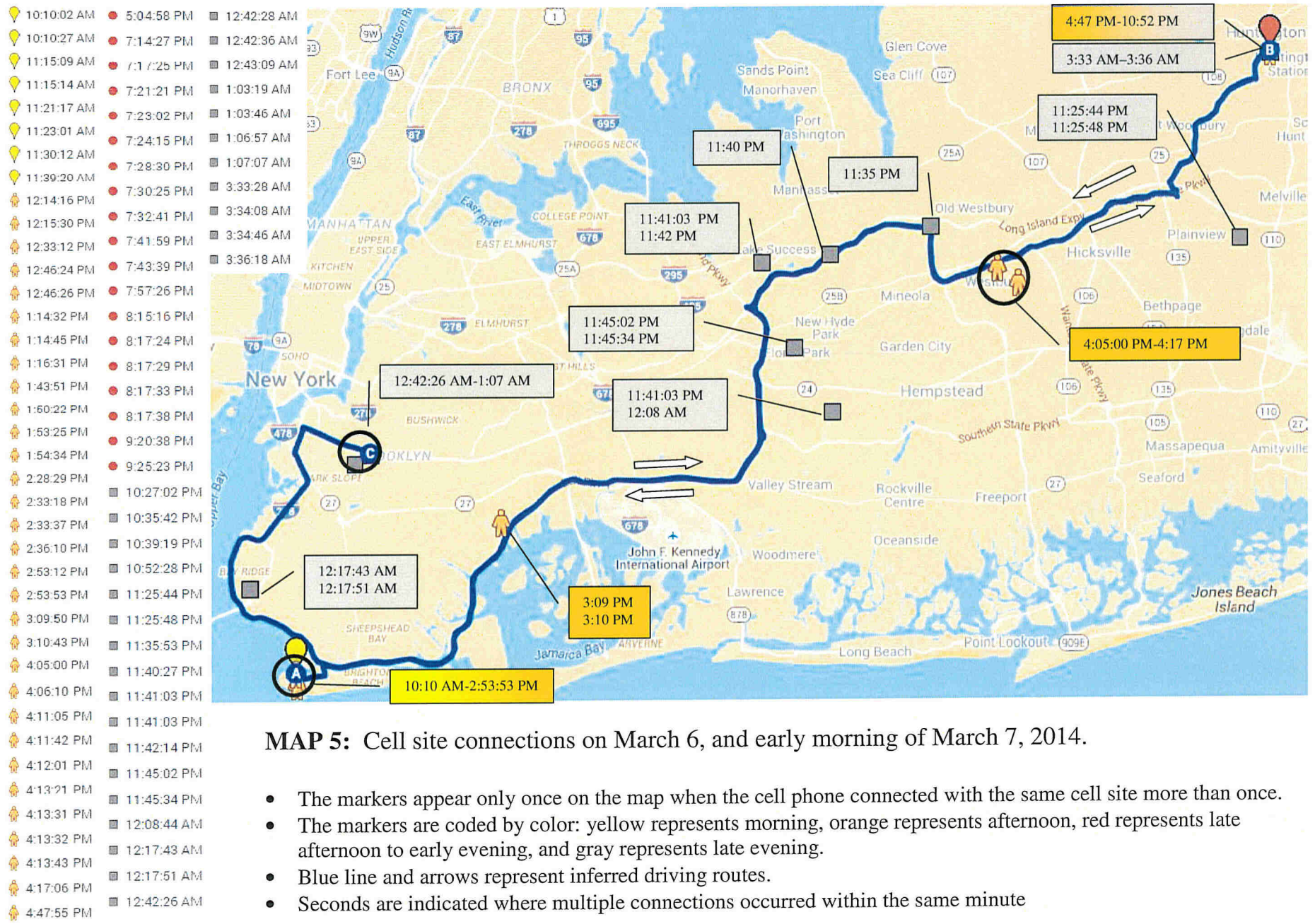
- The markers appear only once on the map when the cell phone connected with the same cell site more than once.
- The markers are coded by color: yellow represents morning, orange represents afternoon, red represents late afternoon to early evening, and gray represents late evening.
- Blue lines and arrows represent inferred driving routes.
- Seconds are indicated where multiple connections occurred within the same minute.

- 11:17:46 AM ● 7:29:00 PM
- 11:18:08 AM ● 7:29:56 PM
- 11:28:19 AM ● 7:30:58 PM
- 11:45:52 AM ● 7:47:33 PM
- 12:06:50 PM ● 7:47:56 PM
- 12:11:52 PM ● 7:49:05 PM
- 1:19:44 PM ● 8:02:51 PM
- 1:22:10 PM ● 8:48:13 PM
- 2:00:25 PM ● 8:49:05 PM
- 2:07:23 PM ● 8:49:25 PM
- 3:59:25 PM ● 8:49:49 PM
- 4:00:29 PM ● 9:17:28 PM
- 4:36:34 PM ● 9:18:51 PM
- 4:37:28 PM ● 9:37:12 PM
- 5:01:30 PM ● 9:37:12 PM
- 5:02:06 PM ● 9:44:02 PM
- 5:03:37 PM ● 9:52:14 PM
- 5:03:55 PM ● 9:52:54 PM
- 5:12:40 PM ■ 10:23:33 PM
- 5:14:35 PM ■ 10:31:29 PM
- 6:21:17 PM ■ 10:35:40 PM
- 6:23:30 PM ■ 10:37:33 PM
- 6:29:13 PM ■ 10:41:32 PM
- 6:29:48 PM ■ 10:49:06 PM
- 6:31:56 PM ■ 10:49:54 PM
- 6:32:17 PM ■ 10:50:31 PM
- 6:39:07 PM ■ 10:50:36 PM
- 6:46:16 PM ■ 10:51:16 PM
- 6:54:08 PM ■ 10:51:19 PM
- 6:55:05 PM ■ 10:51:54 PM
- 6:55:12 PM ■ 11:04:24 PM
- 7:00:08 PM ■ 11:05:30 PM
- 7:02:19 PM ■ 11:16:16 PM
- 7:06:02 PM ■ 11:17:07 PM
- 7:06:16 PM
- 7:08:33 PM
- 7:18:37 PM



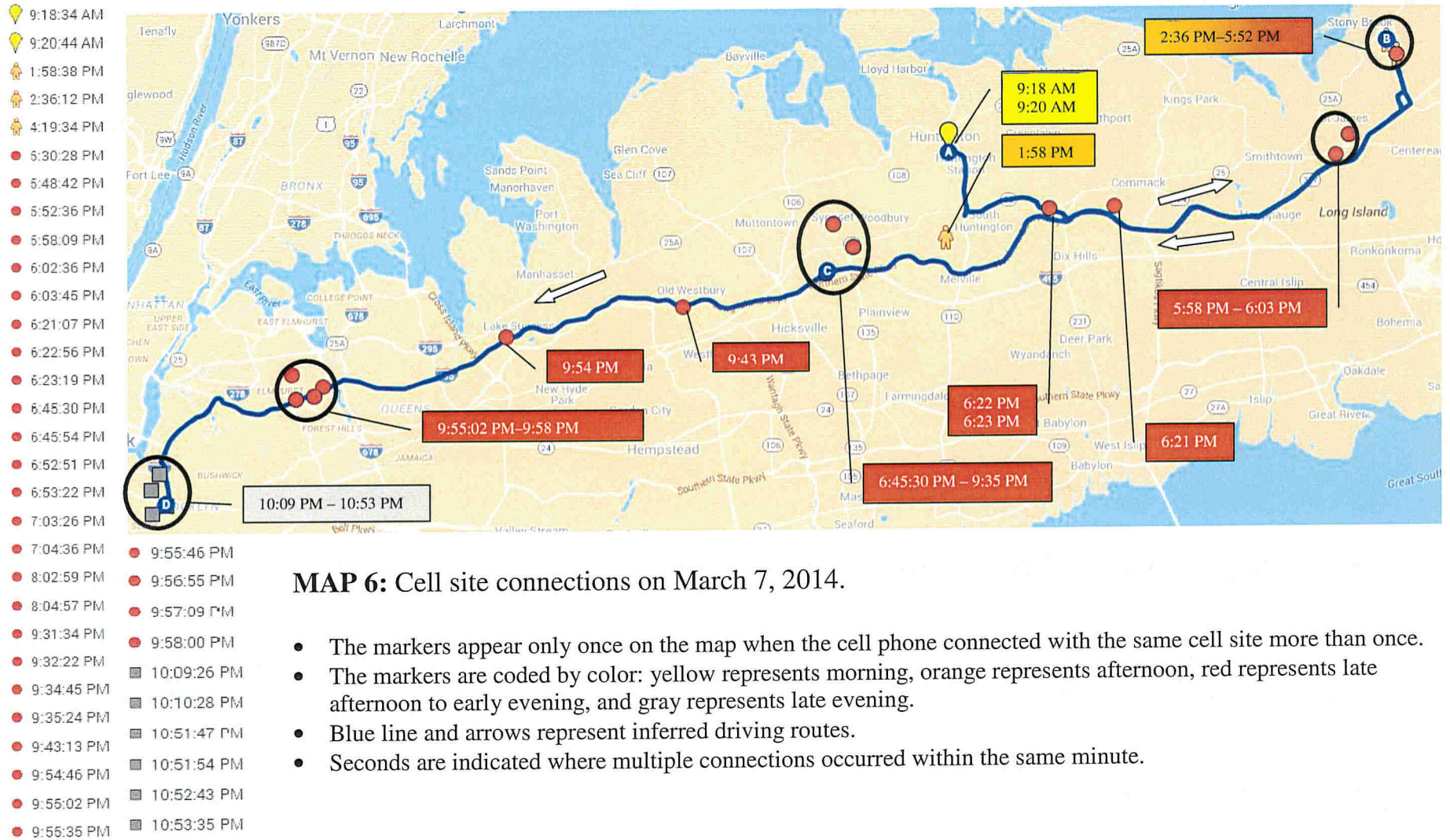
**MAP 4:** Cell site connections on March 3, 2014.

- The markers appear only once on the map when the cell phone connected with the same cell site more than once.
- The markers are coded by color: yellow represents morning, orange represents afternoon, red represents late afternoon to early evening, and gray represents late evening.
- Blue line and arrows represent inferred driving routes.
- Seconds are indicated where multiple connections occurred within the same minute.



**MAP 5:** Cell site connections on March 6, and early morning of March 7, 2014.

- The markers appear only once on the map when the cell phone connected with the same cell site more than once.
- The markers are coded by color: yellow represents morning, orange represents afternoon, red represents late afternoon to early evening, and gray represents late evening.
- Blue line and arrows represent inferred driving routes.
- Seconds are indicated where multiple connections occurred within the same minute



**MAP 6:** Cell site connections on March 7, 2014.

- The markers appear only once on the map when the cell phone connected with the same cell site more than once.
- The markers are coded by color: yellow represents morning, orange represents afternoon, red represents late afternoon to early evening, and gray represents late evening.
- Blue line and arrows represent inferred driving routes.
- Seconds are indicated where multiple connections occurred within the same minute.