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Update of Receptor Locations for INL National Emissions Standard for Hazardous Air Pollutants (NESHAP) Assessments

May 2023

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EXECUTIVE SUMMARY

This report documents the selection of updated public receptor locations for use in conducting regulatory assessments of radioactive air emissions for Idaho National Laboratory (INL) facilities. The basis for this receptor location analysis is found in 40 CFR 61 Subpart H, "National Emissions Standards for Emissions of Radionuclide Other than Radon from Department of Energy Facilities," where the requirements for identifying National Emission Standards for Hazardous Air Pollutants (NESHAP) receptor locations are outlined.

Receptor locations (residences, schools, businesses, or farm operations) were identified using high-resolution aerial imagery. This assessment identified 31 unique receptor locations for all INL Site facilities, and 30 receptor locations for INL in-town facilities that have the potential to emit radioactive materials. Identification of receptors for each in-town facility is new to this report.

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ACRONYMS

ATR	Advanced Test Reactor
ATRC	Advanced Test Reactor Complex
CAP88-PC	Clean Air Act Assessment Package 1988–Personal Computer
CFA	Central Facilities Area
CFR	Code of Federal Regulations
CITRC	Critical Infrastructure Test Range Complex
EPA	Environmental Protection Agency
INL	Idaho National Laboratory
INTEC	Idaho Nuclear Technology and Engineering Center
IRC	INL Research Complex
MFC	Materials and Fuels Complex
NAIP	National Agriculture Imagery Program
NESHAP	National Emissions Standards for Hazardous Air Pollutants
NRF	Naval Reactors Facility
RRTR	Radiological Response Training Range
NTR	Northern Test Range
NSTR	National Security Test Range
NETP	New Explosive Test Pad
RRTR	Radiological Response Training Range
RTP	Radiological Training Pad
RWMC	Radioactive Waste Management Complex
SMC	Specific Manufacturing Capability
TAN	Test Area North
TREAT	Transient Reactor Test Facility

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Update of Receptor Locations for INL National Emissions Standard for Hazardous Air Pollutants (NESHAP) Assessments

1. INTRODUCTION

This report documents the selection of updated public receptor locations for use in conducting regulatory assessments of radioactive air emissions for Idaho National Laboratory (INL) facilities. The basis for this receptor location analysis and update is found in 40 CFR 61 Subpart H, "National Emissions Standards for Emissions of Radionuclide Other than Radon from Department of Energy Facilities," where the requirements for identifying National Emission Standards for Hazardous Air Pollutants (NESHAP) receptor locations are outlined. While 40 CFR 61 Subpart H does not specify the interval at which receptor location selection must be revisited, it does outline the criteria that locations must meet to be considered a viable NESHAP receptor location. These criteria indicate that the location must be an off-site residential dwelling, school, office, or business that is occupied by a member of the public for any portion of the year in question (2010).

Periodic receptor location updates are necessary to ensure the currently selected locations continue to be occupied by the public and to capture new residences, schools, or offices that were constructed since the last receptor location evaluation. Receptor locations were last updated in 1995 when 62 locations were identified during a helicopter fly-over inspection of the INL Site boundary (Ritter 1997). At that time, all potential receptor locations were identified without specific effort applied to establishing a defensible strategy for selecting points. This resulted in the identification of redundant receptor locations (very close to each other), which unnecessarily complicated the assessment process. This update used much improved high-resolution aerial imagery that was not available in the 1990s to identify suitable receptor locations quickly and easily. The use of aerial imagery instead of in-person helicopter surveys ensures this process can be completed at a reasonable interval and at minimum cost. Additionally, a defensible strategy for identifying receptor locations was established to eliminate selection of redundant receptor locations.

2. METHODOLOGY

2.1. INL Site Facilities

The following criteria were applied to identify potential receptor locations for INL Site facilities.

- A buffer of approximately 13 km (8 mi) surrounding the INL Site boundary was defined as the area to consider for potential receptors. Thirteen km (8 mi) was selected because it is the maximum distance from the INL Site boundary of all previous receptor locations and extension beyond this distance is not likely to identify any additional receptor locations.
- Search areas were identified within the buffered area by superimposing a 16-sector circular pattern aligned with compass directions (e.g., N, NNW, NW, WNW, W, etc.), centered on all major INL Site facilities that emit or have the potential to emit radioactive materials to the atmosphere, which include these:
  - Advanced Test Reactor Complex (ATRC)
  - Central Facilities Area (CFA)
  - Critical Infrastructure Test Range Complex (CITRC)
  - Idaho Nuclear Technology and Engineering Center (INTEC)
  - Materials and Fuels Complex (MFC)
  - Naval Reactors Facility (NRF)
  - National Security Test Range-New Explosive Test Pad (NSTR-NETP)

- National Security Test Range-Radiological Training Pad (NSTR-RTP)
- Radiological Response Training Range-Northern Test Range (RRTR-NTR)
- Radioactive Waste Management Complex (RWMC)
- Specific Manufacturing Capability (SMC)
- Test Area North (TAN)
- Transient Reactor Test Facility (TREAT).

- Points that were located closer to the source facility in each sector were given priority over those that were closer to the Site property boundary but farther from the source facility.
- The residence, school, business, or farm operation nearest each facility in each search area was identified using 2021 National Agriculture Imagery Program (NAIP) imagery (0.6 m spatial resolution).

After the receptor locations were initially identified, all locations were reviewed to eliminate or combine closely positioned or collocated points (e.g., N sector for RWMC and NNW sector for NRF may have a single point that is a viable receptor for both of these facilities). No points farther than 13 km (8 mi) from the INL Site boundary were chosen. Figure 1 through Figure 13 depict the 16-sector overlays used to identify a viable receptor location in each sector relative to each of the 13 INL Site facilities with the potential to emit radioactive material.

Each of the 13 major INL Site facilities served as the center point for the compass-direction circular overlays. Using 2021 NAIP imagery (0.6 m spatial resolution), the nearest potential public receptor was identified and marked in each of the 16 sectors. This process was repeated for each of the above-listed facilities. In the instance where a single location was a viable receptor location for more than one facility, the location is only counted once. This method resulted in 31 unique receptor locations, many of which coincide with the previous 62 receptor locations. This reduction in points greatly reduces the number of model runs while ensuring the receptor locations accurately reflect public habitation.

Atmospheric dispersion and dose modeling of potential radioactive emissions from INL facilities are performed with the Clean Air Act Assessment Package 1988-Personal Computer (CAP88-PC). The CAP88-PC computer model is a set of computer programs, databases, and associated utility programs for estimation of dose and risk from radionuclide emissions to air. The orientation of sectors is important because CAP88-PC uses the same sector geometry to calculate air concentrations and dose for each emission source (EPA 2020). Moreover, a single point within a sector is sufficient because CAP88-PC calculates concentrations at the mid-point of each sector for each receptor distance. The calculation at this distance is repeated in all 16 sectors.

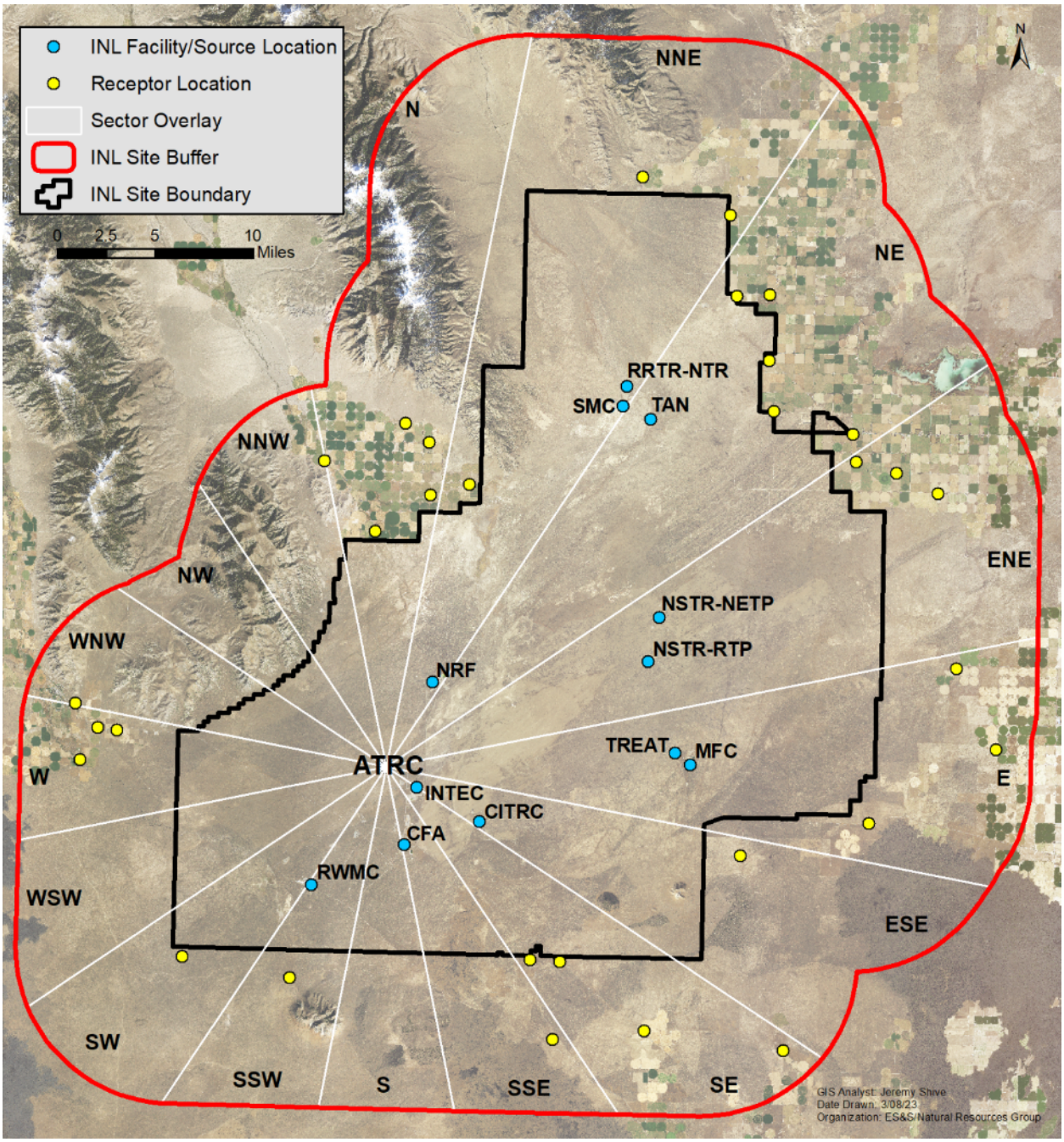

Figure 1. A 16-sector overlay centered on ATR complex with receptor locations shown.

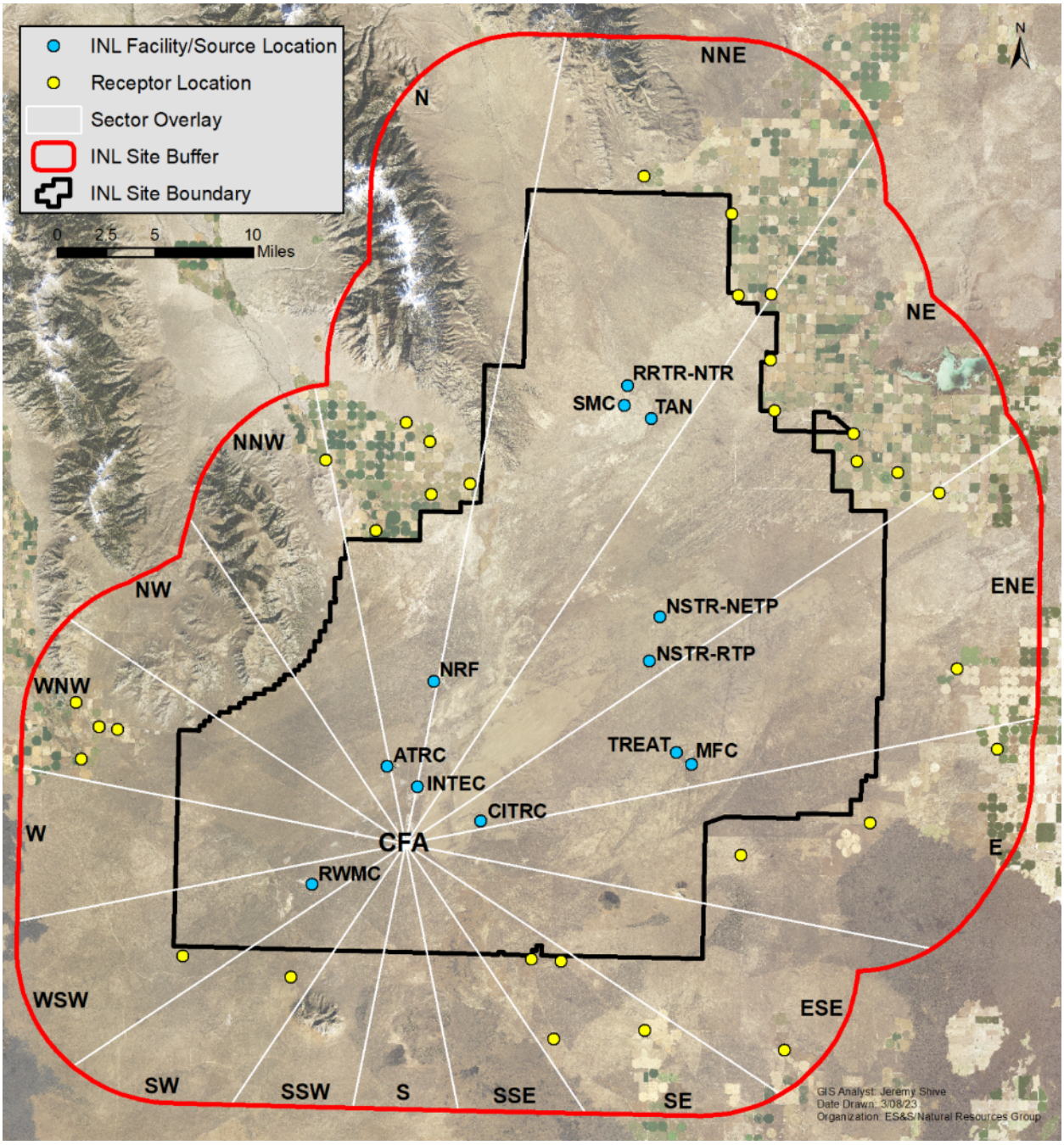

Figure 2. A 16-sector overlay centered on CFA with receptor locations shown.

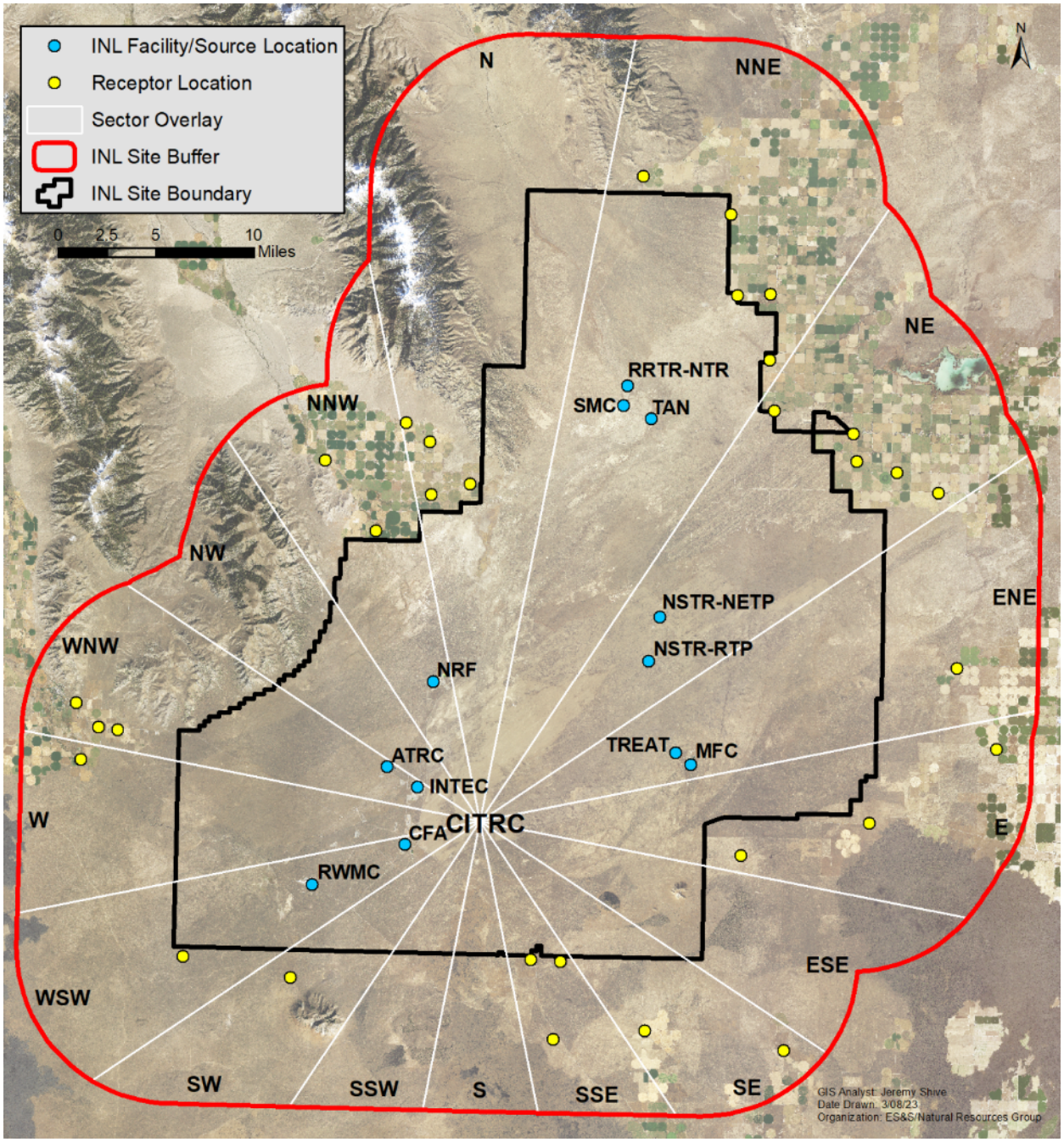

Figure 3. A 16-sector overlay centered on CITRC with receptor locations shown.

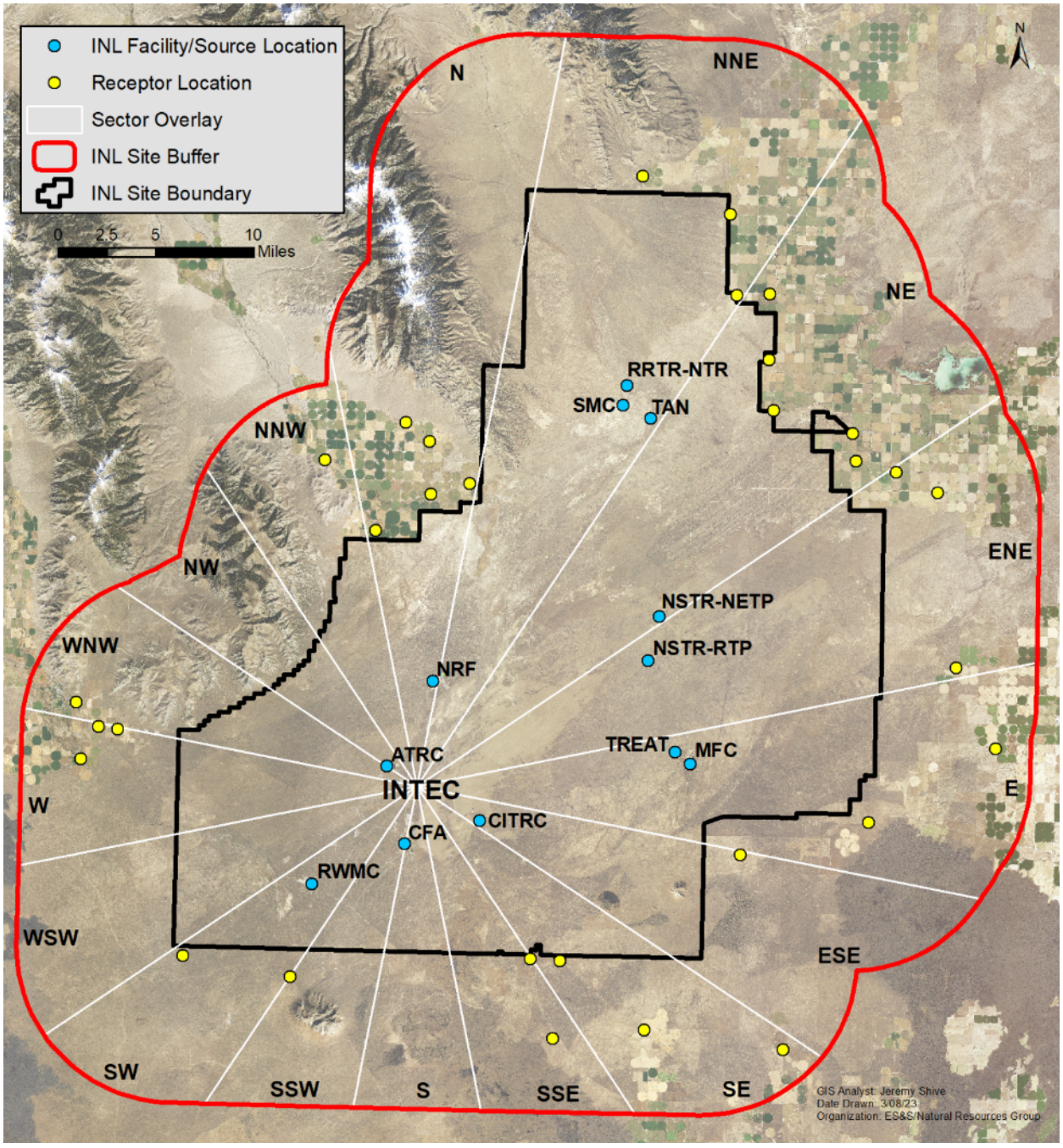

Figure 4. A 16-sector overlay centered on INTEC with receptor locations shown.

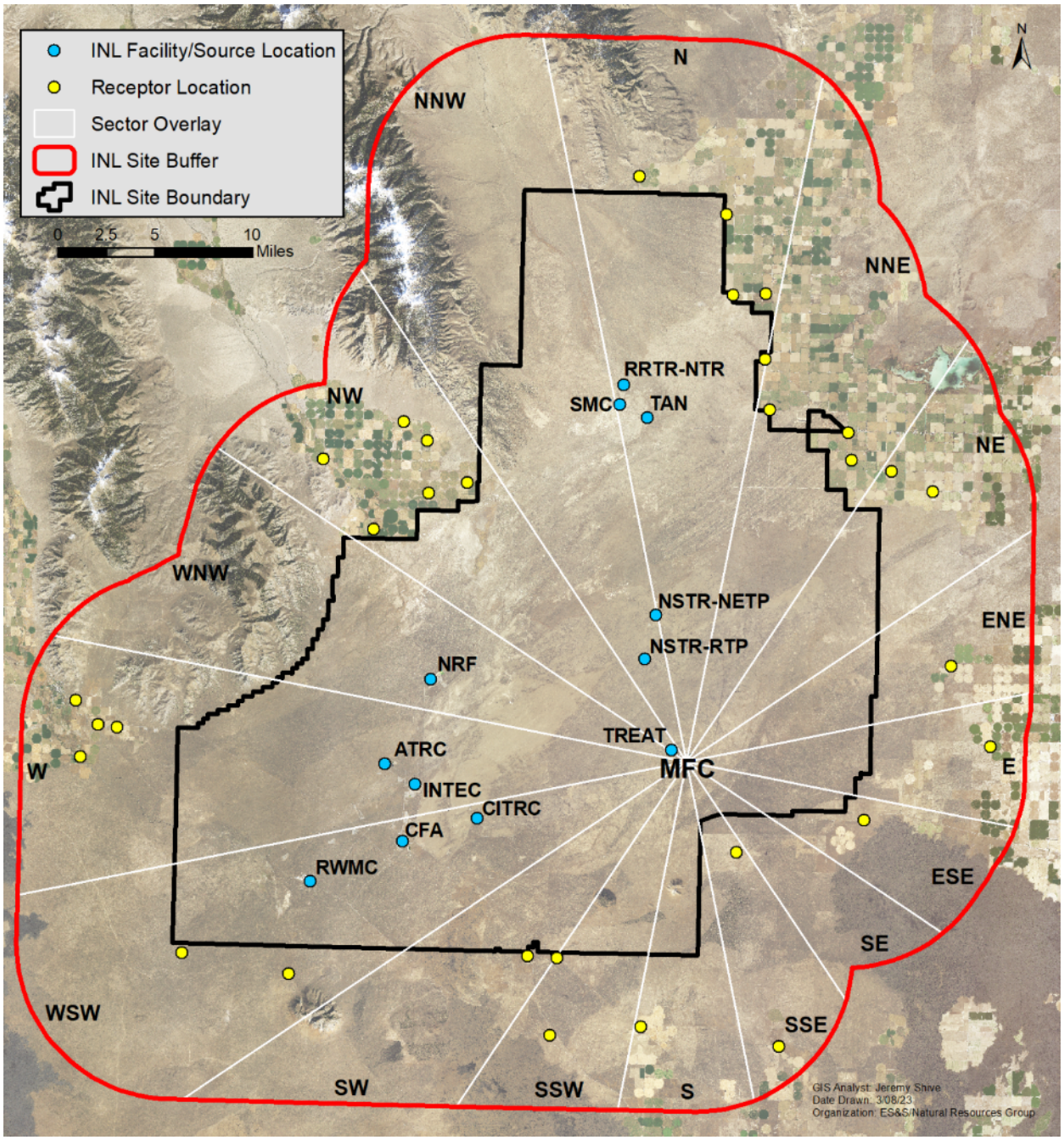

Figure 5. A 16-sector overlay centered on MFC with receptor locations shown.

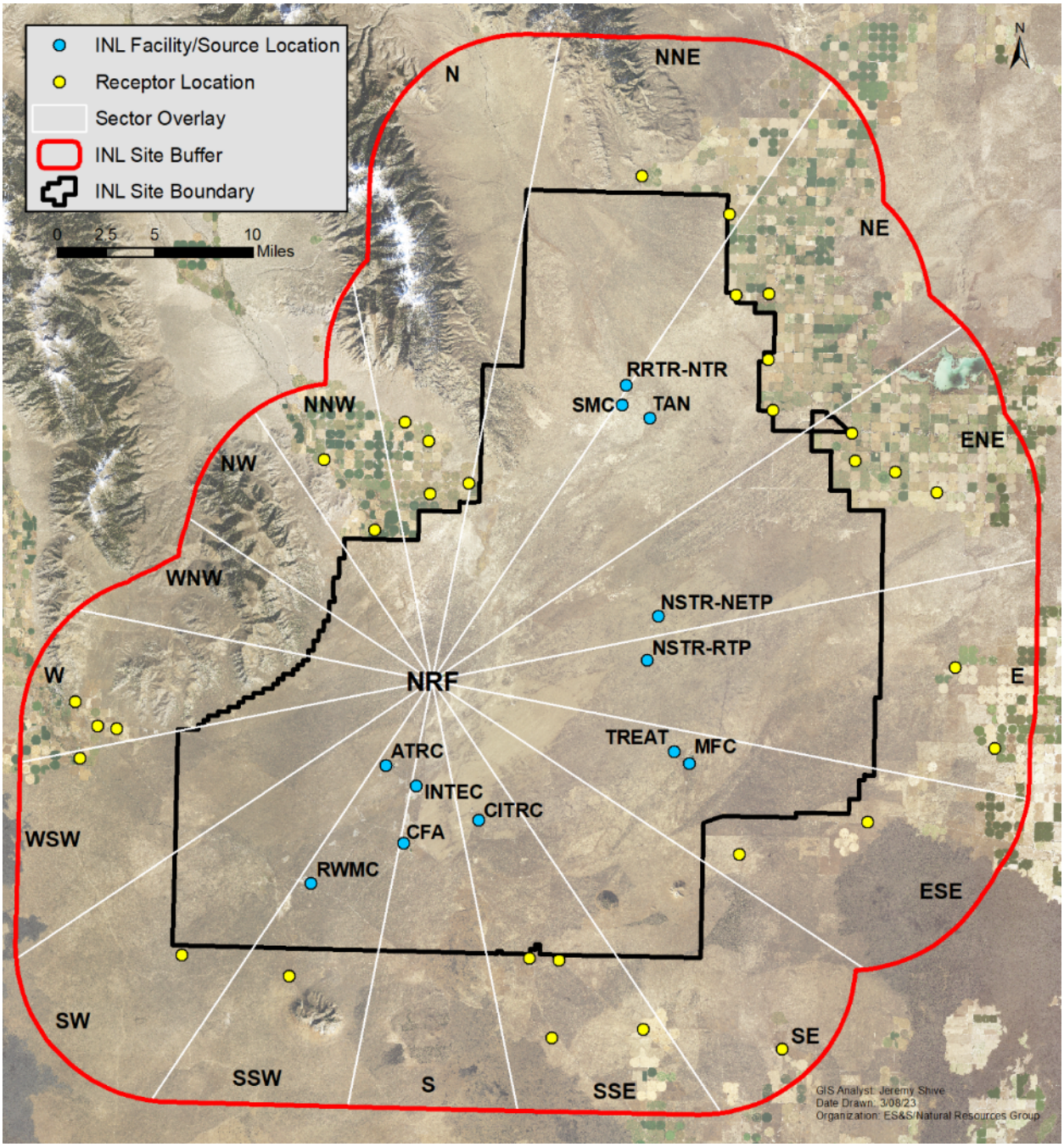

Figure 6. A 16-sector overlay centered on NRF with receptor locations shown.

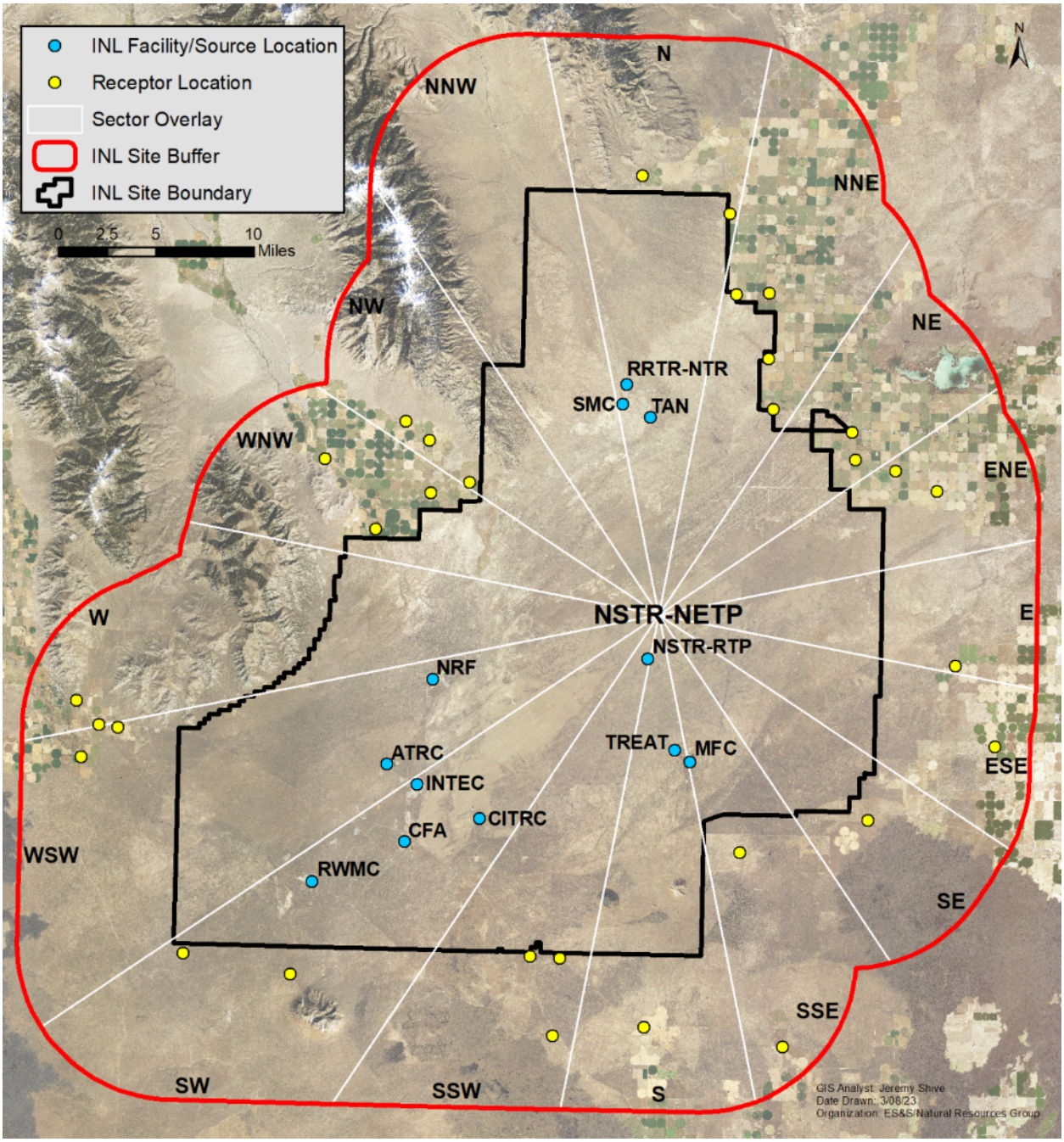

Figure 7. A 16-sector overlay centered on NSTR-NETP with receptor locations shown.

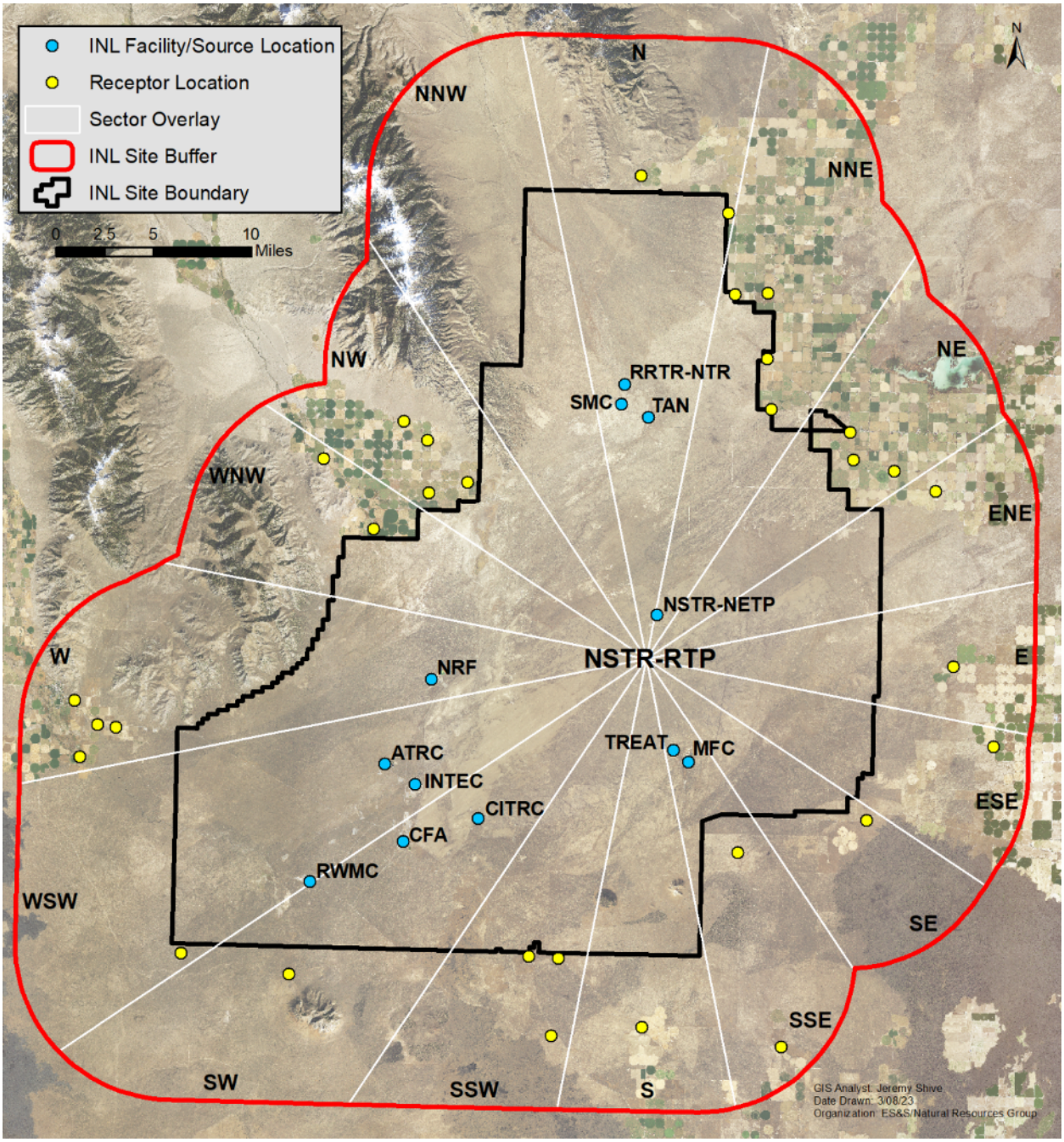

Figure 8. A 16-sector overlay centered on NSTR-RTP with receptor locations shown.

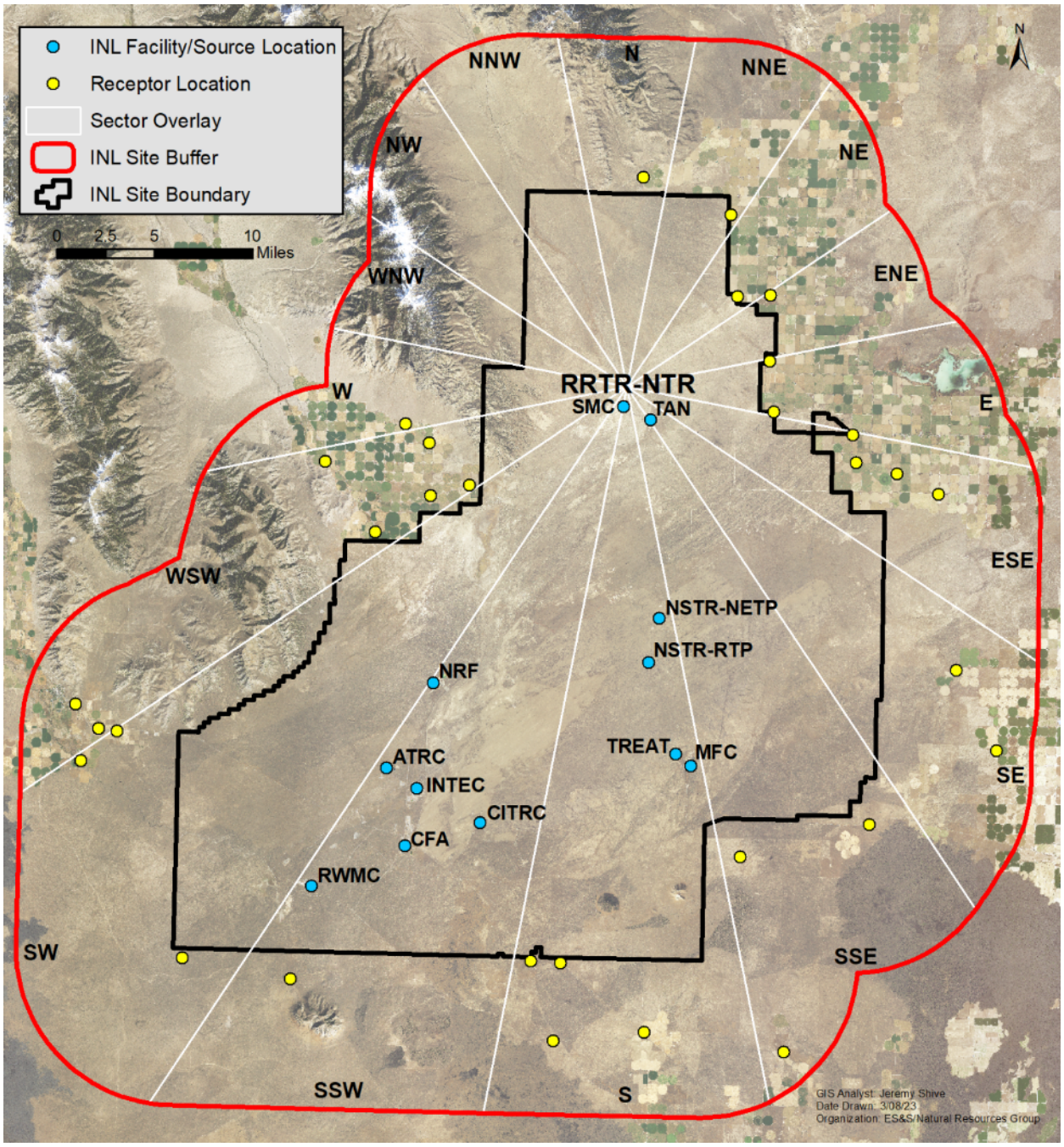

Figure 9. A 16-sector overlay centered on RRTR-NTR with receptor locations shown.

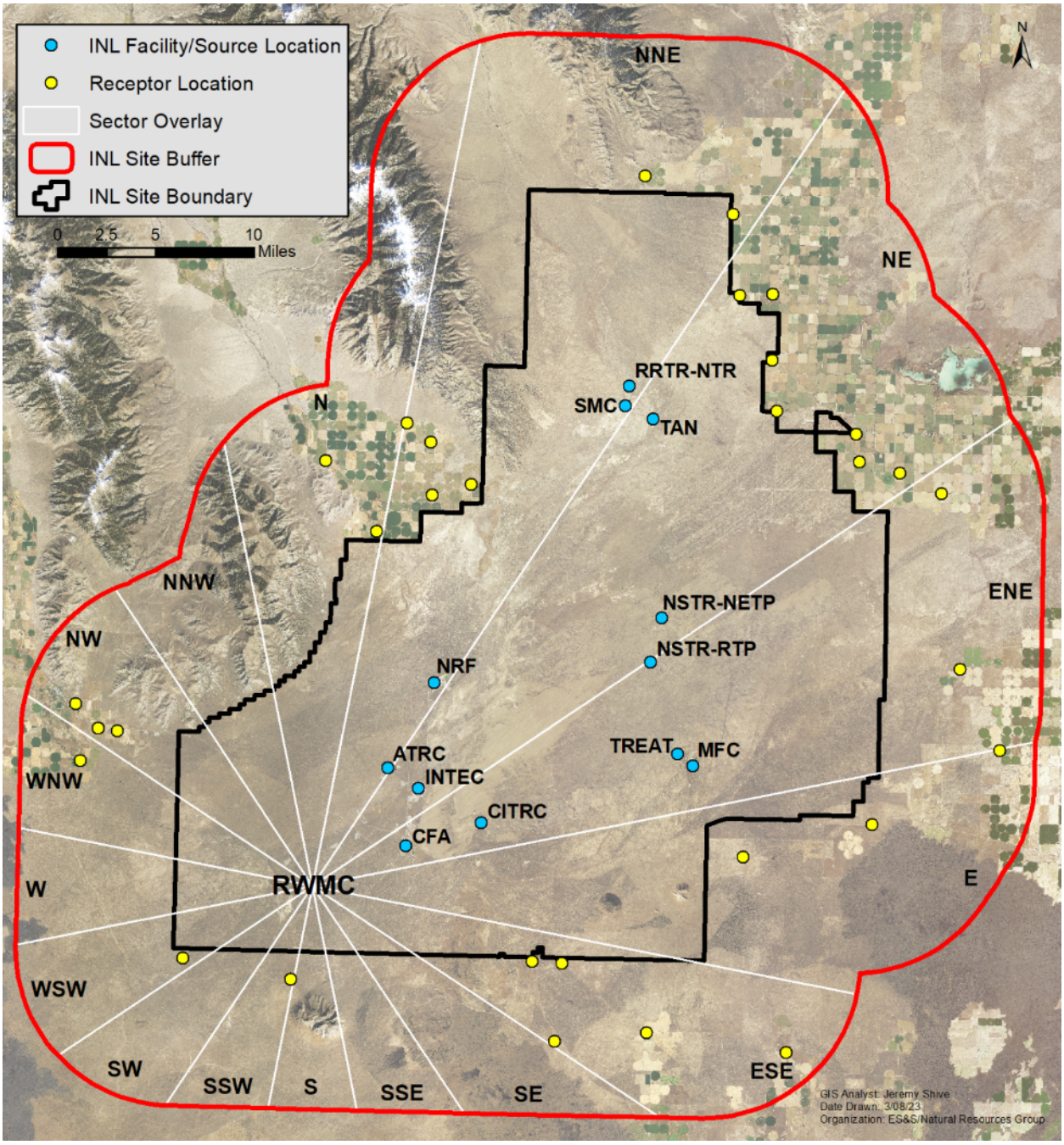

Figure 10. A 16-sector overlay centered on RWMC with receptor locations shown.

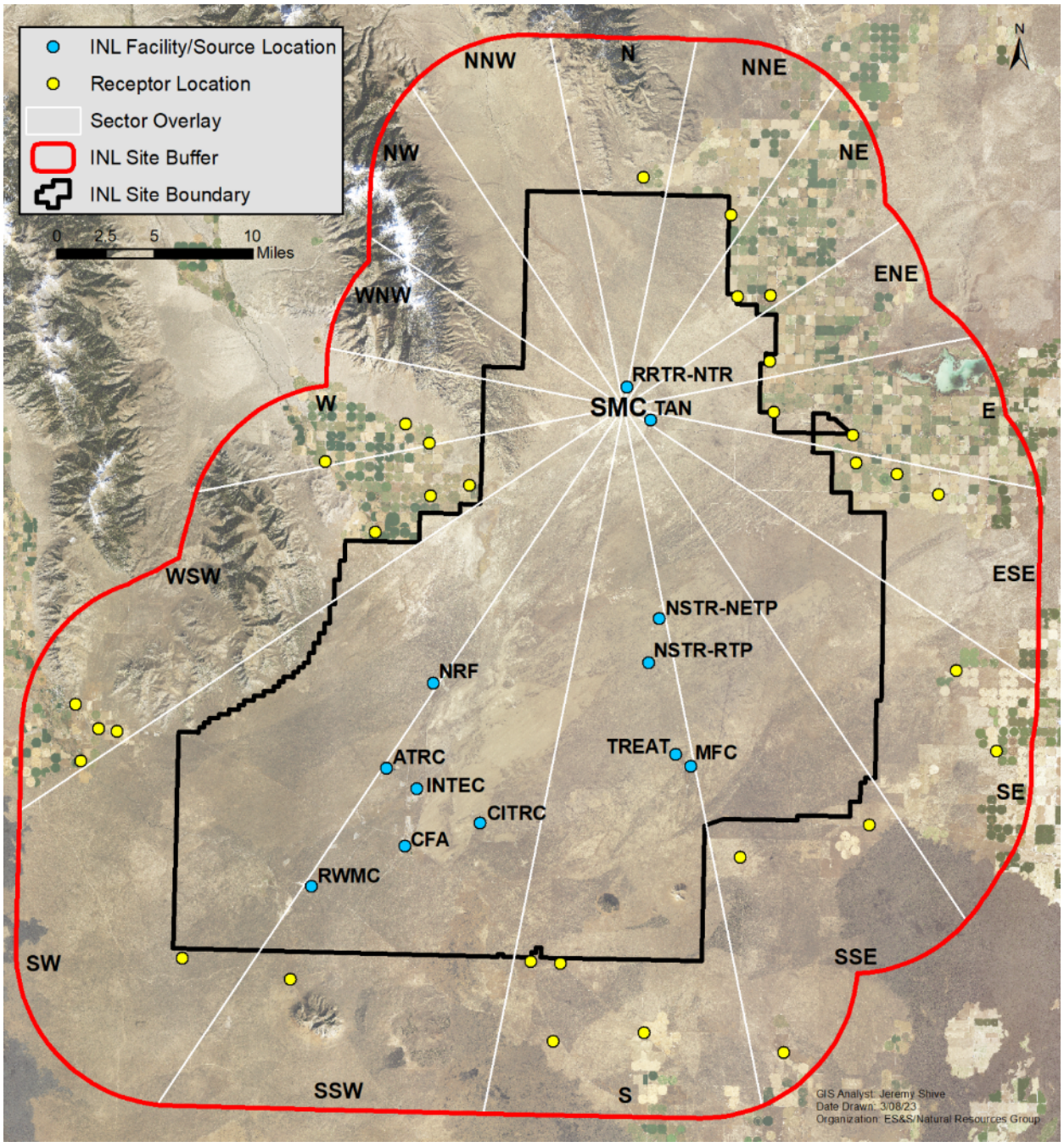

Figure 11. A 16-sector overlay centered on SMC with receptor locations shown.

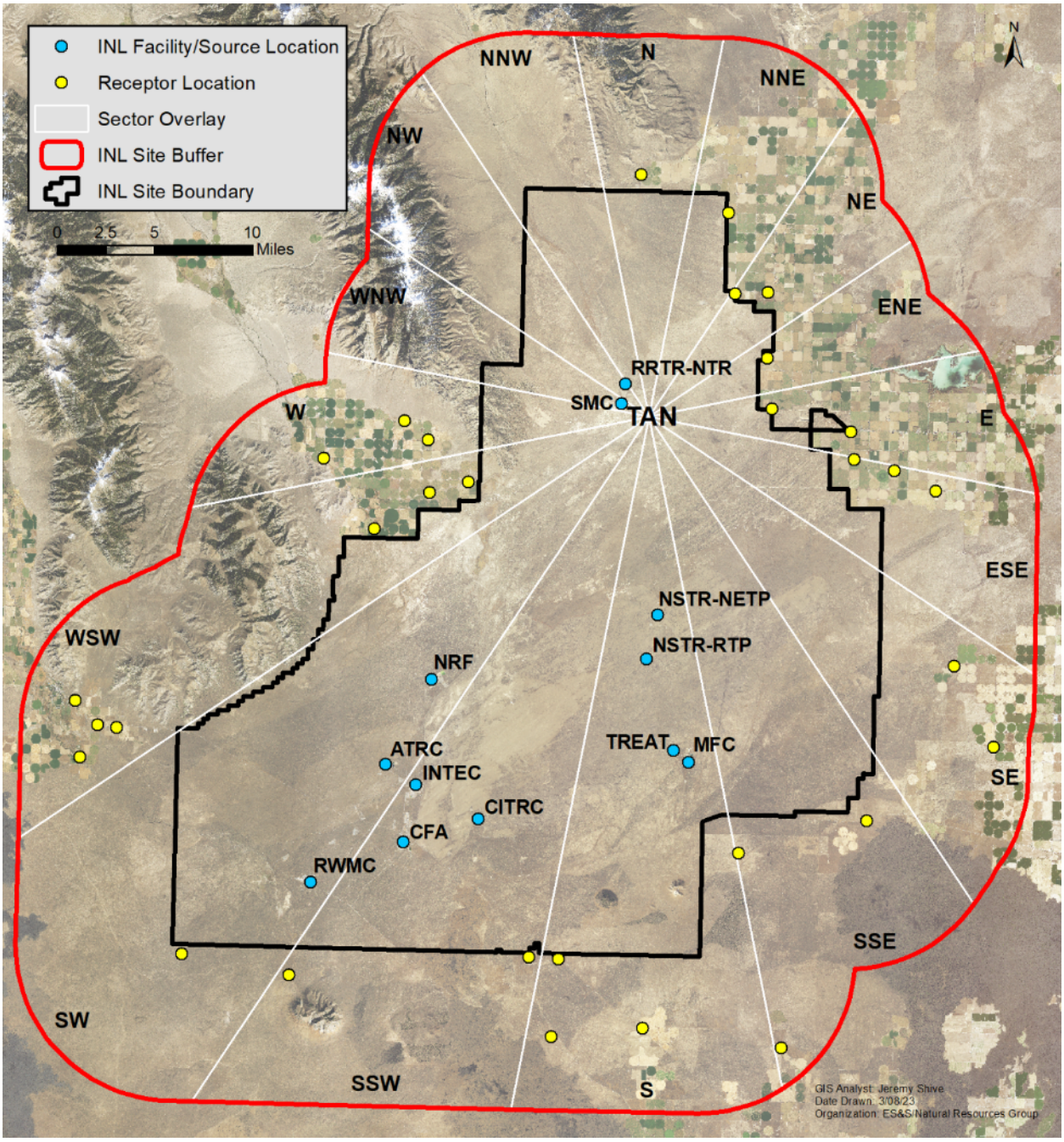

Figure 12. A 16-sector overlay centered on TAN with receptor locations shown.

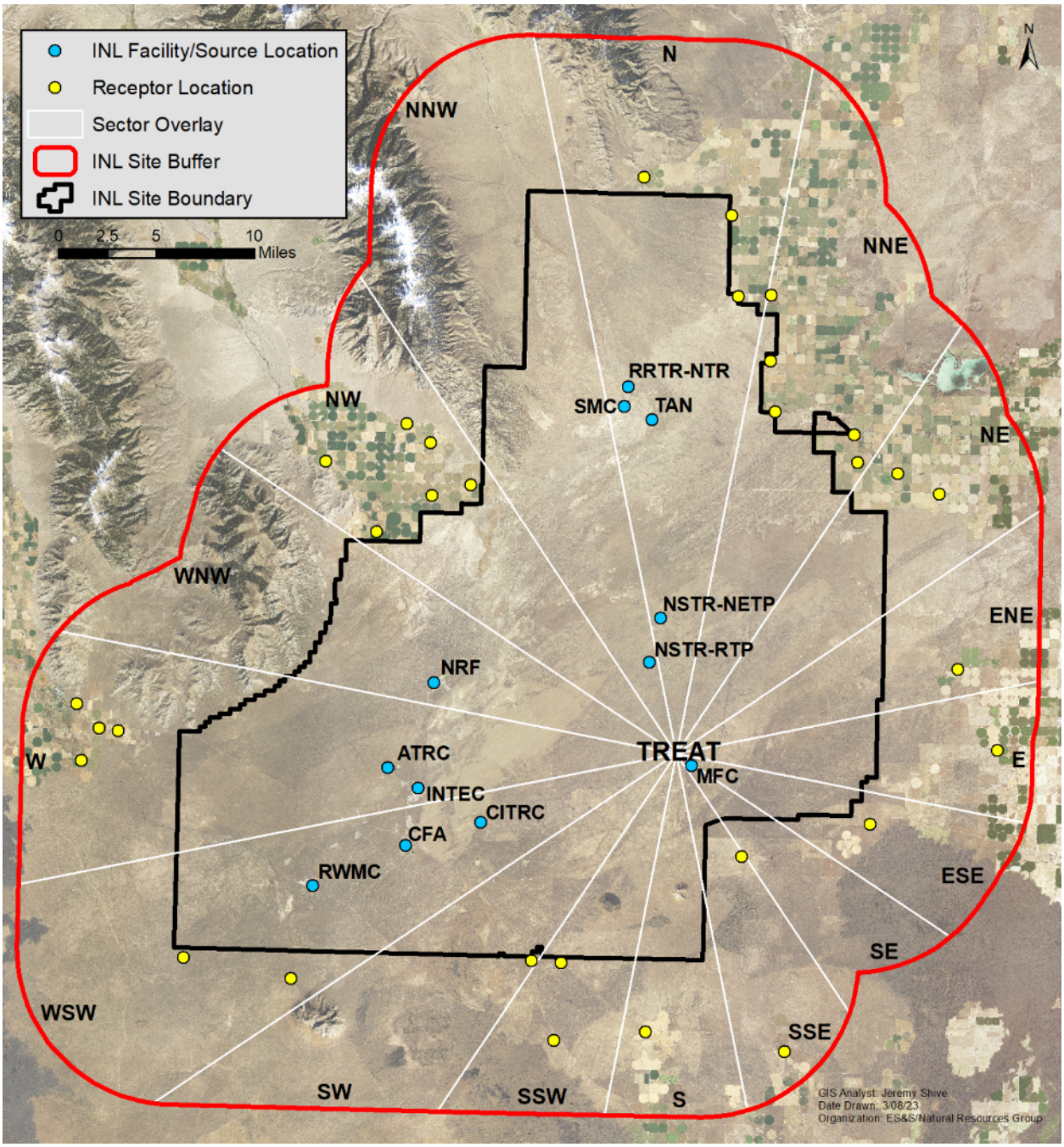

Figure 13. A 16-sector overlay centered on TREAT with receptor locations shown.

2.2. In-Town Facilities

The methodology associated with conducting NESHAP assessments for in-town facilities was recently updated to allow emission sources to be modeled separately, making it consistent with the INL Site methodology. Thus, a similar method was applied to identify receptor locations surrounding INL in-town (Idaho Falls) facilities, with a few distinct differences. First, there was no distance limit set as to how far from a source or boundary a potential receptor location could be. The red circular boundary shown in Figure 14, Figure 15, and Figure 16 are included only to show the extent of the receptor locations relative to the sources. This is because in-town facilities are not located within a unified INL property; rather they are separate buildings not surrounded by a government-controlled buffer. Second, there is no issue with abundance of potential receptors in any direction, as is the case for INL Site facility receptor locations. As such, receptor locations can be identified directly surrounding the emission sources, as opposed to miles away as is the case for INL Site facilities. For context, the greatest distance from an in-town source to a receptor is approximately 1.4 km (0.9 mi) (IF-683 to in-town Receptor 11), while the greatest distance from an INL Site source-to-receptor is approximately 65 km (40 mi) (RWMC to INL Site Receptor 14). These distances are found in Appendix A “Distance and Azimuth from Sources to Receptors.”

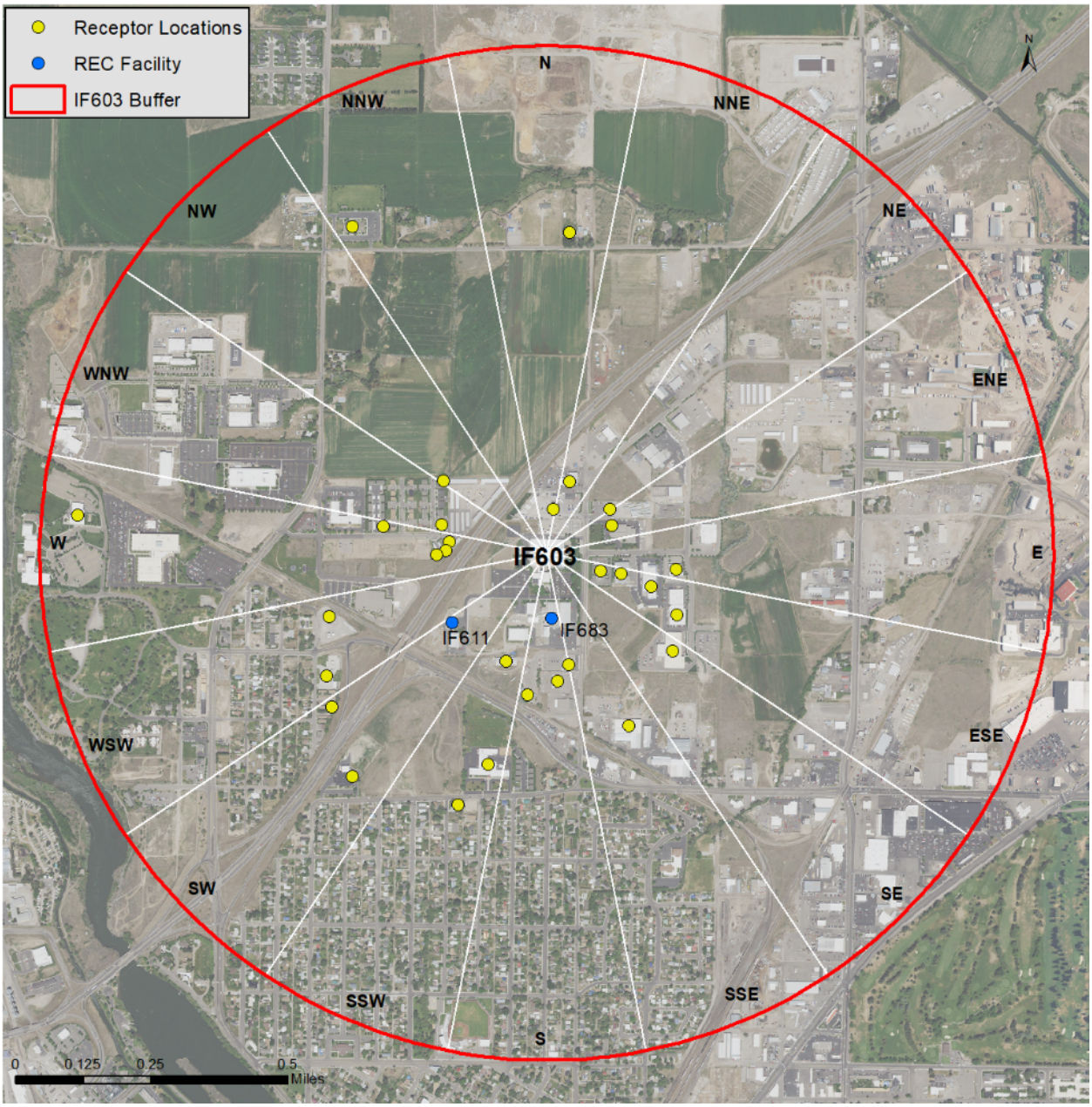

Figure 14. A 16-sector overlay centered on IF-603 with receptor locations included.

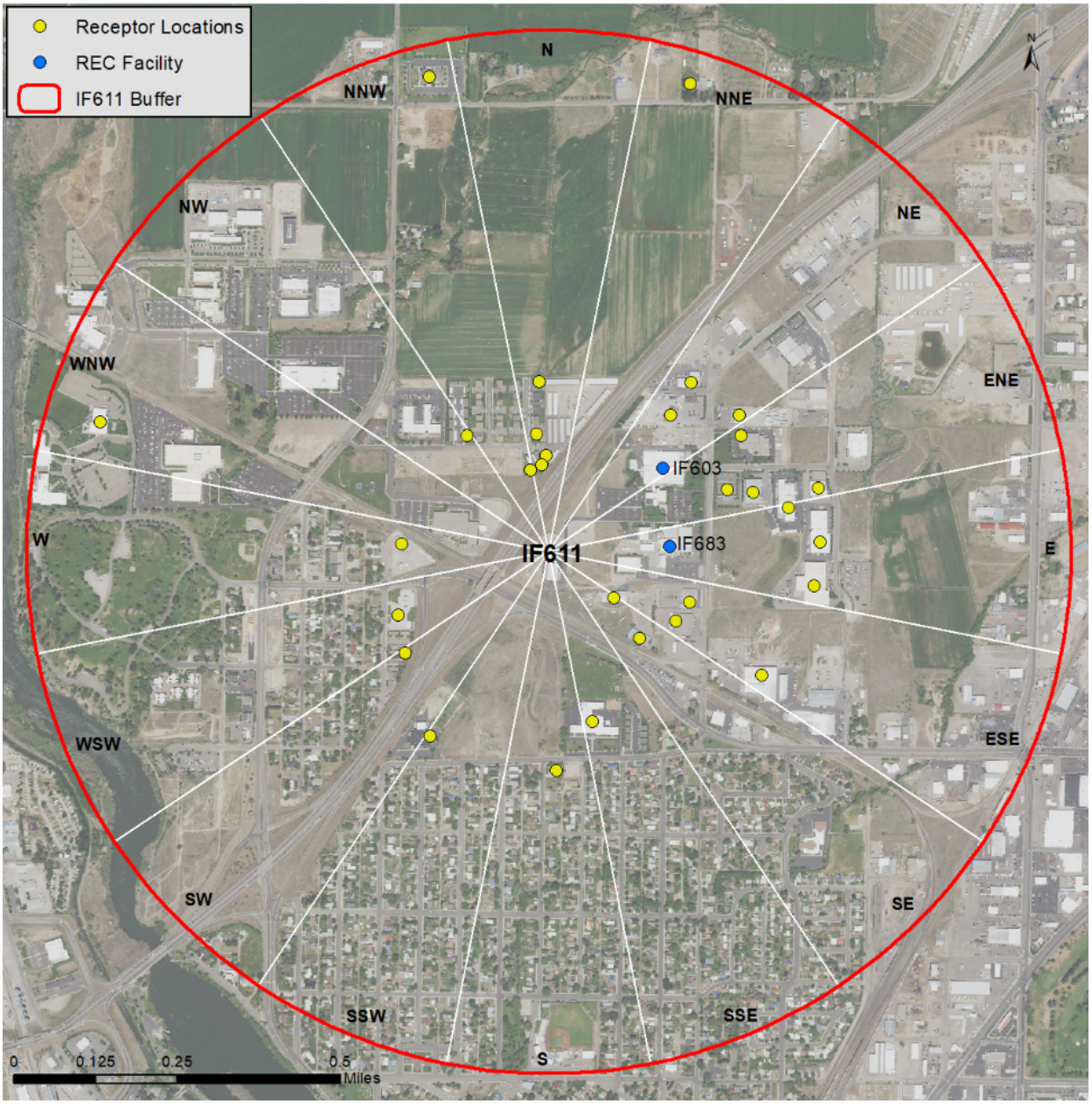

Figure 15. A 16-sector overlay centered on IF-611 with receptor locations included.

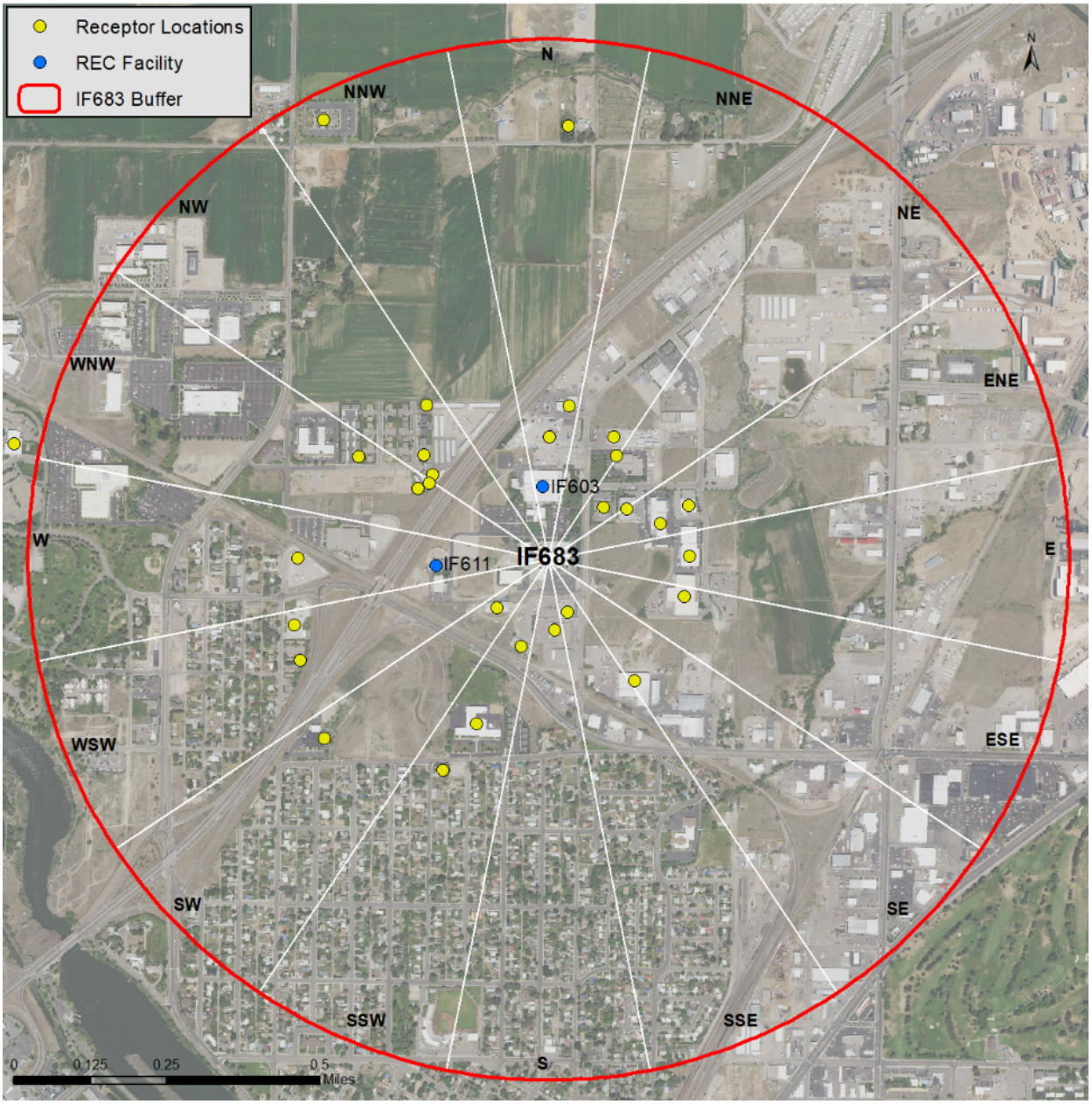

Figure 16. A 16-sector overlay centered on IF-683 with receptor locations included.

3. RESULTS

3.1. INL Site Receptor Locations

Figure 17 shows the 31 unique INL Site receptor locations for conducting NESHAP assessments. Areas without receptor locations indicate there are no structures that could potentially be inhabited by the public in the form of a residence, school, business, or office, and therefore, are not a viable receptor location. Table 1 contains the latitude and longitude for each INL Site receptor location along with the Universal Transverse Mercator (UTM) coordinates for the collection of points, referenced to the NAD83 datum and in the UTM Zone 12 projection. Appendix A contains the distance and direction (azimuth) from each INL Site facility to each receptor.

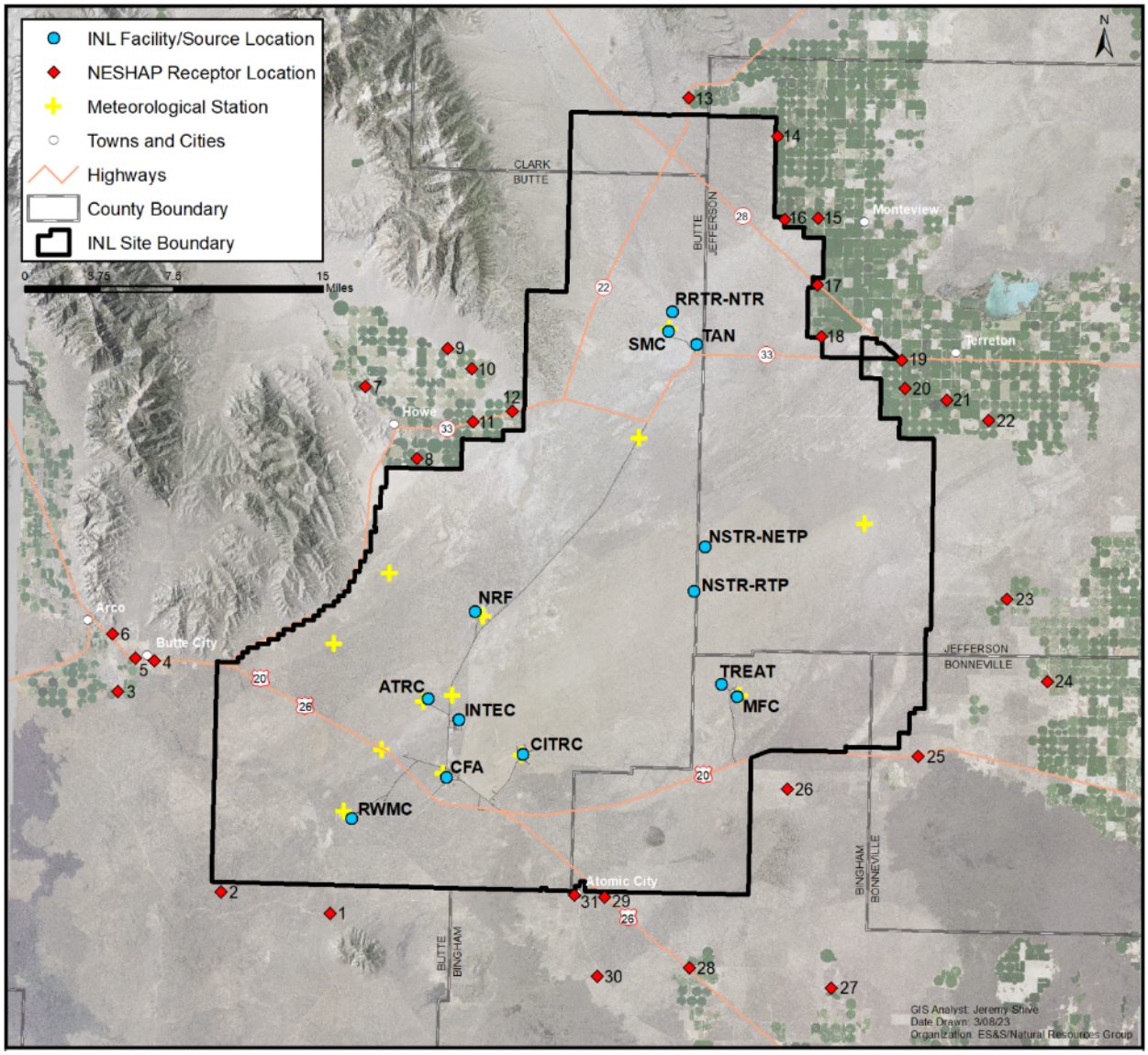

Figure 17. Updated receptor locations for INL Site NESHAP assessments, including meteorological towers, and INL Site property boundary. INL facilities shown are facilities for which radionuclide emissions are reported or may be reported.

In 2021, radioactive emissions were reported from each facility or source area shown in Figure 17 except for NSTR-NETP and NSTR-RTP. These source areas are new and were included because emissions are likely to be reported from them in the future.

Table 1. INL Site facilities NESHAP receptor location numerical identifiers, latitude, and longitude, and UTM coordinates.

Receptor ID	Latitude	Longitude	UTM Northing (m)	UTM Easting (m)
1	43.428856	-113.057282	4810496.0	333483.3
2	43.442629	-113.167092	4812251.0	324634.7
3	43.586028	-113.276066	4828412.5	316252.0
4	43.609149	-113.239772	4830900.7	319251.4
5	43.610644	-113.258853	4831108.6	317716.0
6	43.627931	-113.282676	4833081.1	315846.3
7	43.812572	-113.034669	4853068.0	336358.1
8	43.761153	-112.981547	4847253.4	340493.9
9	43.841698	-112.952941	4856144.5	343007.7
10	43.827702	-112.928482	4854543.8	344937.7
11	43.788876	-112.925607	4850226.2	345068.5
12	43.797202	-112.886084	4851077.6	348269.6
13	44.028128	-112.715476	4876427.5	362527.5
14	44.001216	-112.624664	4873290.9	369746.0
15	43.942365	-112.582555	4866688.8	372996.7
16	43.940832	-112.616235	4866570.9	370290.4
17	43.893688	-112.581993	4861281.4	372938.2
18	43.856013	-112.576476	4857088.6	373301.5
19	43.839991	-112.495122	4855187.6	379807.7
20	43.819825	-112.491302	4852942.3	380074.4
21	43.811912	-112.449532	4852003.8	383418.0
22	43.797297	-112.406962	4850321.4	386814.2
23	43.667628	-112.385414	4835890.5	388307.0
24	43.608139	-112.343304	4829227.8	391595.0
25	43.552001	-112.471819	4823168.8	381113.3
26	43.526498	-112.602013	4820530.8	370542.1
27	43.382587	-112.554454	4804475.1	374087.0
28	43.395134	-112.696435	4806092.8	362614.6
29	43.445381	-112.783072	4811819.6	355717.6
30	43.387457	-112.788729	4805396.5	355121.7
31	43.446034	-112.813352	4811945.0	353268.9

3.2. In-Town Receptor Locations

Figure 18 shows the 30 unique INL in-town receptor locations for conducting NESHAP modeling. Areas with no receptor location points indicate there are no structures inhabited by the public in the form of a residence, school, business, or office, and therefore, are not a viable receptor location. Table 2 contains the latitude and longitude for each in-town receptor location along with the UTM coordinates for the collection of points, referenced to the NAD83 datum and in the UTM Zone 12 projection. Appendix A contains the distance and direction (azimuth) from each in-town facility to each receptor.

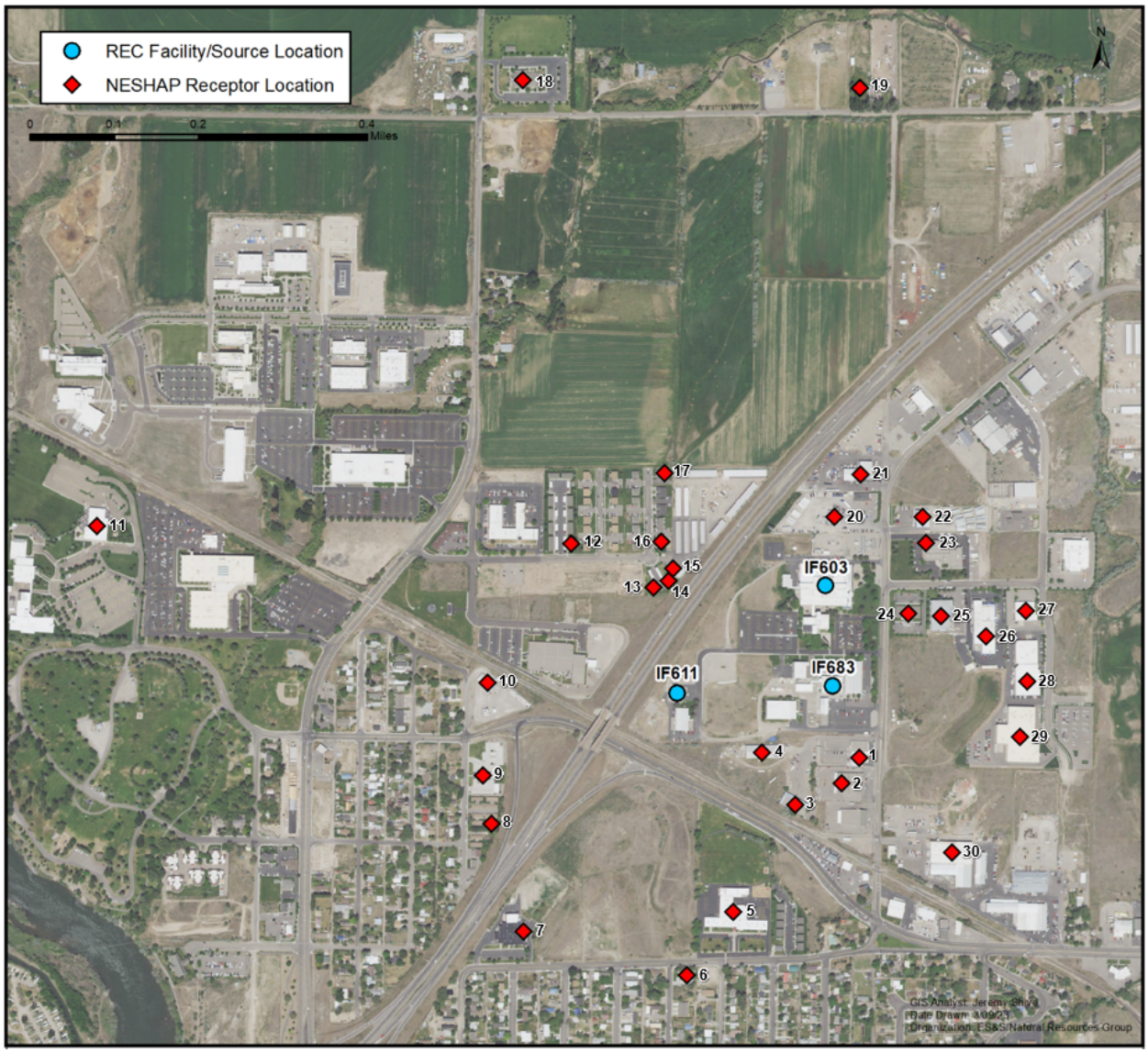

Figure 18. Updated receptor locations for INL in-town NESHAP assessments.

Table 2. INL in-town facilities NESHAP receptor location numerical identifiers, latitude and longitude, and UTM coordinates.

Receptor Point ID	Latitude	Longitude	UTM Northing (m)	UTM Easting (m)
1	43.51462306470	-112.03411553800	4818484.77	416417.56
2	43.51418695670	-112.03452546100	4818436.75	416383.83
3	43.51380752660	-112.03561647700	4818395.71	416295.12
4	43.51469603910	-112.03641731800	4818495.19	416231.62
5	43.51194592480	-112.03703802000	4818190.39	416177.64
6	43.51084975440	-112.03811908300	4818069.74	416088.74
7	43.51157340670	-112.04198095100	4818154.01	415777.59
8	43.51341008620	-112.04277854200	4818358.80	415715.68
9	43.51424080090	-112.04298925700	4818451.27	415699.81

Receptor Point ID	Latitude	Longitude	UTM Northing (m)	UTM Easting (m)
10	43.51583176510	-112.04290863300	4818627.88	415708.54
11	43.51844669030	-112.05217330200	4818927.72	414963.40
12	43.51824600580	-112.04097944200	4818894.05	415867.82
13	43.51750742470	-112.03902054400	4818810.05	416025.11
14	43.51762317850	-112.03866979100	4818822.55	416053.62
15	43.51784338490	-112.03855653400	4818846.89	416063.08
16	43.51830111040	-112.03885001700	4818898.02	416039.99
17	43.51947196310	-112.03879317400	4819028.00	416046.21
18	43.52620458600	-112.04225406900	4819779.22	415775.87
19	43.52613376020	-112.03429015700	4819763.32	416419.34
20	43.51876221050	-112.03476575100	4818945.12	416370.72
21	43.51949905860	-112.03416205500	4819026.34	416420.53
22	43.51877624740	-112.03268634500	4818944.59	416538.80
23	43.51833206720	-112.03260592900	4818895.18	416544.69
24	43.51711645600	-112.03300258800	4818760.57	416510.95
25	43.51707282290	-112.03222844400	4818754.95	416573.46
26	43.51673889280	-112.03115063600	4818716.78	416660.11
27	43.51718322330	-112.03022357400	4818765.20	416735.65
28	43.51597761600	-112.03017196200	4818631.25	416738.16
29	43.51501727560	-112.03033157700	4818524.76	416723.94
30	43.51302311910	-112.03190293800	4818304.86	416594.19

4. REFERENCES

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Ritter, P. D. February 1997. "Source-to-Receptor Range and Bearing to Potential Maximally Exposed Individuals for Use in Determining Compliance with the National Emissions Standards for Hazardous Air Pollutants (NESHAP), Based on the 1995 INEL Boundary Inspection Flight." Engineering Design File NES-95-004.2, Lockheed Martin Idaho Technologies Company.

Appendix A

Distance and Azimuth from Sources to Receptors

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Appendix A

Distance and Azimuth from Sources to Receptors

Table 3 contains the distance and azimuth from each INL Site source facility to each of the 31 NESHAP receptors.

Table 3. Distance and azimuth from each INL Site source facility to each receptor.

Facility	Receptor ID	Distance (m)	Azimuth (degrees)
ATRC	1	19067.9	204.6
ATRC	2	22905.3	227.1
ATRC	3	25179.3	271.3
ATRC	4	22384.7	277.9
ATRC	5	23934.1	277.9
ATRC	6	26111.5	281.6
ATRC	7	25740.1	348.6
ATRC	8	19444.2	357.3
ATRC	9	28357.3	3.2
ATRC	10	26942.4	7.5
ATRC	11	22689.3	9.2
ATRC	12	24233.0	16.4
ATRC	13	52980.3	23.5
ATRC	14	53559.9	31.9
ATRC	15	50066.9	39.1
ATRC	16	48311.3	36.7
ATRC	17	45956.6	43.3
ATRC	18	43268.0	47.5
ATRC	19	47134.1	54.5
ATRC	20	46090.8	57.0
ATRC	21	48453.5	60.1
ATRC	22	50655.9	63.6
ATRC	23	47570.0	80.2
ATRC	24	50189.9	88.4
ATRC	25	39961.6	96.7
ATRC	26	30018.7	104.1
ATRC	27	40154.1	125.6
ATRC	28	30357.6	135.7
ATRC	29	21463.2	138.2
ATRC	30	26285.7	148.6
ATRC	31	19815.8	143.3
CFA	1	14474.1	220.7
CFA	2	20480.2	243.3

Facility	Receptor ID	Distance (m)	Azimuth (degrees)
CFA	3	27561.4	284.6
CFA	4	25483.0	291.7
CFA	5	26988.9	290.9
CFA	6	29463.2	293.2
CFA	7	32275.6	348.3
CFA	8	25900.3	354.6
CFA	9	34677.2	0.1
CFA	10	33137.7	3.5
CFA	11	28838.7	4.3
CFA	12	30088.9	10.2
CFA	13	58351.7	19.6
CFA	14	58353.2	27.4
CFA	15	54307.9	33.6
CFA	16	52756.5	31.2
CFA	17	49859.9	37.0
CFA	18	46815.2	40.5
CFA	19	49974.6	47.6
CFA	20	48691.1	49.7
CFA	21	50717.2	53.0
CFA	22	52525.3	56.7
CFA	23	47619.7	72.4
CFA	24	49285.8	80.9
CFA	25	38227.1	87.4
CFA	26	27633.9	91.9
CFA	27	35494.6	118.6
CFA	28	24981.9	128.0
CFA	29	16023.6	127.0
CFA	30	20175.7	142.8
CFA	31	14060.3	132.6
CITRC	1	20227.1	230.5
CITRC	2	26866.4	245.6
CITRC	3	33238.1	278.8
CITRC	4	30791.2	284.2
CITRC	5	32331.1	283.9
CITRC	6	34650.7	286.3
CITRC	7	32336.6	336.8
CITRC	8	25407.5	340.2
CITRC	9	33357.4	349.5
CITRC	10	31472.0	352.4
CITRC	11	27178.6	351.5

Facility	Receptor ID	Distance (m)	Azimuth (degrees)
CITRC	12	27741.6	358.3
CITRC	13	54750.5	14.2
CITRC	14	54040.8	22.5
CITRC	15	49490.7	28.9
CITRC	16	48136.4	26.1
CITRC	17	44800.3	32.1
CITRC	18	41521.1	35.6
CITRC	19	44233.0	44.0
CITRC	20	42837.8	46.3
CITRC	21	44706.9	50.1
CITRC	22	46365.3	54.4
CITRC	23	41162.2	72.3
CITRC	24	42897.8	82.1
CITRC	25	32011.7	90.3
CITRC	26	21624.4	97.5
CITRC	27	31312.2	127.1
CITRC	28	21916.9	141.9
CITRC	29	13292.2	150.2
CITRC	30	18934.5	161.5
CITRC	31	12141.0	159.9
INTEC	1	18807.9	213.7
INTEC	2	23761.5	234.2
INTEC	3	27746.0	274.7
INTEC	4	25107.5	280.9
INTEC	5	26654.6	280.7
INTEC	6	28902.3	283.9
INTEC	7	27954.2	344.3
INTEC	8	21375.4	350.8
INTEC	9	30006.0	358.3
INTEC	10	28410.6	2.1
INTEC	11	24102.3	2.8
INTEC	12	25304.8	9.9
INTEC	13	53613.4	20.3
INTEC	14	53756.8	28.7
INTEC	15	49895.1	35.7
INTEC	16	48268.4	33.1
INTEC	17	45573.7	39.6
INTEC	18	42675.4	43.5
INTEC	19	46173.8	51.0
INTEC	20	45009.9	53.5

Facility	Receptor ID	Distance (m)	Azimuth (degrees)
INTEC	21	47217.9	56.8
INTEC	22	49247.4	60.6
INTEC	23	45456.7	77.6
INTEC	24	47788.4	86.3
INTEC	25	37327.0	94.6
INTEC	26	27223.0	101.9
INTEC	27	37159.1	125.7
INTEC	28	27429.8	137.0
INTEC	29	18572.5	140.5
INTEC	30	23592.2	151.6
INTEC	31	17014.9	146.6
MFC	1	37321.5	242.0
MFC	2	44676.5	249.3
MFC	3	50187.8	270.5
MFC	4	47275.0	273.5
MFC	5	48820.4	273.6
MFC	6	50845.0	275.7
MFC	7	39147.5	309.8
MFC	8	32299.7	306.6
MFC	9	36610.6	320.2
MFC	10	34148.5	321.0
MFC	11	30823.0	316.1
MFC	12	29360.6	321.8
MFC	13	48571.6	355.4
MFC	14	45397.9	4.2
MFC	15	39227.3	9.6
MFC	16	38749.2	5.7
MFC	17	33896.9	11.1
MFC	18	29874.0	13.3
MFC	19	30284.8	26.2
MFC	20	28414.5	28.7
MFC	21	29391.2	35.3
MFC	22	30212.9	42.4
MFC	23	23244.2	70.2
MFC	24	25186.2	87.2
MFC	25	15454.2	108.3
MFC	26	8534.4	151.3
MFC	27	24750.1	162.0
MFC	28	22251.8	189.9
MFC	29	19421.0	213.5

Facility	Receptor ID	Distance (m)	Azimuth (degrees)
MFC	30	25290.3	206.6
MFC	31	20775.7	219.3
NETP	1	42451.4	225.7
NETP	2	48135.8	234.6
NETP	3	49036.0	256.2
NETP	4	45559.9	258.3
NETP	5	47024.0	258.9
NETP	6	48534.0	261.6
NETP	7	30388.8	295.2
NETP	8	24425.9	286.9
NETP	9	26284.4	307.5
NETP	10	23779.0	307.3
NETP	11	21326.7	298.2
NETP	12	19043.0	305.0
NETP	13	36305.1	357.9
NETP	14	33661.9	10.1
NETP	15	28069.3	19.0
NETP	16	27194.3	13.7
NETP	17	23000.4	23.2
NETP	18	19393.3	29.1
NETP	19	21919.1	46.7
NETP	20	20652.4	51.7
NETP	21	22868.6	58.8
NETP	22	25105.2	66.1
NETP	23	24811.7	99.9
NETP	24	29804.1	111.5
NETP	25	24203.9	134.5
NETP	25	56831.0	112.5
NETP	26	20722.1	161.2
NETP	27	37108.1	164.0
NETP	28	34077.2	182.1
NETP	29	29475.3	196.0
NETP	30	35833.2	194.1
NETP	31	30126.3	200.6
NRF	1	27055.7	205.8
NRF	2	30596.2	222.4
NRF	3	29706.9	257.5
NRF	4	26299.2	261.3
NRF	5	27789.3	262.2
NRF	6	29458.5	266.5

Facility	Receptor ID	Distance (m)	Azimuth (degrees)
NRF	7	20265.1	334.0
NRF	8	13276.5	339.0
NRF	9	21404.0	354.0
NRF	10	19687.9	359.1
NRF	11	15368.9	359.3
NRF	12	16497.7	10.5
NRF	13	45016.3	22.6
NRF	14	45574.8	32.5
NRF	15	42225.5	41.1
NRF	16	40406.1	38.3
NRF	17	38272.1	46.3
NRF	18	35791.2	51.6
NRF	19	40092.8	59.5
NRF	20	39238.9	62.6
NRF	21	41841.1	65.8
NRF	22	44346.3	69.6
NRF	23	43068.2	88.6
NRF	24	46684.7	96.9
NRF	25	37719.3	108.1
NRF	26	29067.4	119.5
NRF	27	41888.6	136.5
NRF	28	33599.8	148.9
NRF	29	25304.8	155.6
NRF	30	31071.4	161.5
NRF	31	24275.7	160.7
RRTR	1	56005.6	209.7
RRTR	2	59481.4	218.0
RRTR	3	54468.8	235.6
RRTR	4	50589.7	236.1
RRTR	5	51757.6	237.2
RRTR	6	52328.5	240.1
RRTR	7	25593.3	256.2
RRTR	8	23896.8	240.1
RRTR	9	18456.7	260.6
RRTR	10	16919.6	254.2
RRTR	11	18451.8	241.1
RRTR	12	15259.5	238.1
RRTR	13	17324.9	4.3
RRTR	14	16511.6	31.1
RRTR	15	13983.8	57.4

Facility	Receptor ID	Distance (m)	Azimuth (degrees)
RRTR	16	11719.7	50.7
RRTR	17	11912.4	79.7
RRTR	18	12258.8	99.7
RRTR	19	19008.1	102.0
RRTR	20	19853.0	108.2
RRTR	21	23322.8	107.8
RRTR	22	27077.1	109.0
RRTR	23	35706.2	130.7
RRTR	24	42641.0	134.6
RRTR	25	41117.5	151.1
RRTR	26	39731.1	166.4
RRTR	27	56171.2	166.8
RRTR	28	53077.8	178.5
RRTR	29	47651.1	186.6
RRTR	30	54100.3	186.5
RRTR	31	47871.7	189.6
RTP	1	39335.3	228.6
RTP	2	45380.0	237.7
RTP	3	47427.4	260.2
RTP	4	44089.5	262.7
RTP	5	45587.7	263.2
RTP	6	47260.5	265.8
RTP	7	31348.7	301.9
RTP	8	24919.2	295.5
RTP	9	28003.3	314.5
RTP	10	25505.7	315.0
RTP	11	22556.9	307.4
RTP	12	20699.0	314.7
RTP	13	39912.8	359.3
RTP	14	37390.5	10.4
RTP	15	31790.2	18.4
RTP	16	30929.5	13.7
RTP	17	26690.7	21.9
RTP	18	23014.7	26.6
RTP	19	25133.5	42.0
RTP	20	23705.3	46.1
RTP	21	25641.2	52.8
RTP	22	27541.6	59.9
RTP	23	25333.0	91.4
RTP	24	29527.3	104.3

Facility	Receptor ID	Distance (m)	Azimuth (degrees)
RTP	25	22515.3	126.4
RTP	26	17684.1	154.7
RTP	27	33912.1	160.9
RTP	28	30426.8	180.7
RTP	29	25743.8	196.4
RTP	30	32098.1	194.2
RTP	31	26422.3	201.6
RWMC	1	7859.2	192.9
RWMC	2	12138.4	240.9
RWMC	3	21580.7	298.4
RWMC	4	20446.2	308.6
RWMC	5	21790.9	306.5
RWMC	6	24471.5	307.6
RWMC	7	34929.5	1.8
RWMC	8	29567.6	10.2
RWMC	9	38774.2	11.6
RWMC	10	37657.6	14.9
RWMC	11	33542.2	17.0
RWMC	12	35406.0	21.6
RWMC	13	64344.0	25.1
RWMC	14	65042.2	32.0
RWMC	15	61489.7	37.9
RWMC	16	59770.5	35.9
RWMC	17	57279.5	41.2
RWMC	18	54446.4	44.4
RWMC	19	57944.9	50.3
RWMC	20	56746.8	52.2
RWMC	21	58879.4	54.9
RWMC	22	60782.5	58.0
RWMC	23	55952.0	71.5
RWMC	24	57432.5	78.9
RWMC	25	46146.5	83.8
RWMC	26	35382.0	86.2
RWMC	27	41185.9	109.4
RWMC	28	29915.0	113.8
RWMC	29	21435.8	107.2
RWMC	30	23624.3	122.7
RWMC	31	19069.1	109.0
SMC	1	54462.7	210.2
SMC	2	58031.8	218.7

Facility	Receptor ID	Distance (m)	Azimuth (degrees)
SMC	3	53319.8	236.9
SMC	4	49450.1	237.4
SMC	5	50641.4	238.5
SMC	6	51274.9	241.5
SMC	7	24953.3	259.6
SMC	8	22862.2	243.2
SMC	9	17952.9	265.5
SMC	10	16248.4	259.3
SMC	11	17448.9	245.2
SMC	12	14197.6	242.9
SMC	13	18945.7	4.9
SMC	14	18052.4	29.3
SMC	15	15155.6	52.9
SMC	16	13016.5	46.1
SMC	17	12597.7	72.8
SMC	18	12404.8	92.1
SMC	19	19049.6	97.1
SMC	20	19715.4	103.5
SMC	21	23186.1	103.8
SMC	22	26898.7	105.6
SMC	23	34929.1	128.3
SMC	24	41762.2	132.7
SMC	25	39881.4	149.6
SMC	26	38254.3	165.4
SMC	27	54688.6	166.1
SMC	28	51487.0	178.1
SMC	29	46025.1	186.5
SMC	30	52474.6	186.3
SMC	31	46241.3	189.5

Table 4 contains the distance and azimuth from each in-town source facility to each of the 30 NESHAP receptors.

Table 4. Distance and azimuth from each in-town source facility to each of the 30 NESHAP receptors.

Facility	Actual ID	Distance (m)	Azimuth (degrees)
IF603	1	335.6705	168.8032
IF603	2	378.6115	175.2358
IF603	3	422.2463	187.794
IF603	4	340.9638	200.743
IF603	5	647.6789	195.6517
IF603	6	789.624	199.5042

Facility	Actual ID	Distance (m)	Azimuth (degrees)
IF603	7	875.2355	221.0504
IF603	8	782.7158	234.4344
IF603	9	746.6362	240.9292
IF603	10	670.2203	253.8723
IF603	11	1393.621	274.6783
IF603	12	491.1234	279.3746
IF603	13	327.2936	269.2985
IF603	14	298.8809	271.6286
IF603	15	291.1588	276.4754
IF603	16	323.4743	285.045
IF603	17	373.5118	304.945
IF603	18	1124.233	329.1495
IF603	19	951.6237	4.034848
IF603	20	132.3402	7.967367
IF603	21	222.9612	17.79819
IF603	22	227.5777	54.99987
IF603	23	208.7176	67.12814
IF603	24	167.3499	108.6385
IF603	25	228.8458	104.9682
IF603	26	322.74	107.5416
IF603	27	386.3719	97.26413
IF603	28	426.9021	115.3534
IF603	29	470.904	127.9039
IF603	30	563.691	154.5973
IF611	1	369.19	109.6196
IF611	2	358.0345	118.7091
IF611	3	310.0769	133.3945
IF611	4	197.6772	125.0573
IF611	5	432.0212	165.5453
IF611	6	539.3285	177.9876
IF611	7	540.5213	212.7252
IF611	8	433.4432	234.7859
IF611	9	402.1132	246.9462
IF611	10	361.775	273.0333
IF611	11	1151.467	286.0826
IF611	12	349.5771	324.7035
IF611	13	206.2114	347.4826
IF611	14	214.4231	355.6712
IF611	15	238.2481	358.3823
IF611	16	290.8159	354.1164

Facility	Actual ID	Distance (m)	Azimuth (degrees)
IF611	17	419.9241	356.7792
IF611	18	1206.822	345.9034
IF611	19	1206.331	16.84301
IF611	20	451.3355	41.81522
IF611	21	545.3487	40.0252
IF611	22	576.8475	54.39334
IF611	23	554.5824	58.90248
IF611	24	466.5461	71.00778
IF611	25	524.4496	73.81212
IF611	26	600.114	79.62796
IF611	27	683.9825	76.77635
IF611	28	668.7392	88.07042
IF611	29	659.5071	97.31557
IF611	30	606.0697	120.0916
IF683	1	146.9492	159.7371
IF683	2	186.6672	174.726
IF683	3	237.9318	197.5003
IF683	4	185.6827	226.6614
IF683	5	471.7608	203.6205
IF683	6	618.8096	206.6877
IF683	7	752.7354	231.4973
IF683	8	702.4174	247.9385
IF683	9	688.5264	255.5891
IF683	10	658.1522	270.4573
IF683	11	1436.049	282.2661
IF683	12	567.9122	298.5505
IF683	13	389.5983	298.7545
IF683	14	371.4393	302.5634
IF683	15	377.4385	306.4534
IF683	16	427.2671	310.1316
IF683	17	516.7369	321.6727
IF683	18	1298.745	332.9417
IF683	19	1141.907	2.643772
IF683	20	322.5147	0.720591
IF683	21	407.2939	7.599539
IF683	22	365.0863	28.13078
IF683	23	325.5366	33.15124
IF683	24	199.6153	46.28761
IF683	25	245.5035	57.38631
IF683	26	308.1795	72.21088

Facility	Actual ID	Distance (m)	Azimuth (degrees)
IF683	27	395.5699	68.87387
IF683	28	371.597	88.66977
IF683	29	370.4376	105.3192
IF683	30	390.8209	144.3968